



**INDIAN  
CENTRAL COTTON  
COMMITTEE**

**TWENTY-SIXTH  
ANNUAL  
REPORT**

**1947**

**TWENTY-SIXTH  
ANNUAL REPORT**

of the

**INDIAN  
CENTRAL COTTON COMMITTEE**

for the year ended

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# INDIAN CENTRAL COTTON COMMITTEE ANNUAL REPORT.

## CHAPTER I.

### GENERAL.

THE Indian Central Cotton Committee was established by the Government of India in 1921, in pursuance of the recommendations of the Indian Cotton Committee of 1917-18, and this is its twenty-sixth Annual Report covering the period 1st September, 1946, to 31st August, 1947. At first, the Committee was purely a technical advisory body to Government on matters connected with cotton. In 1923, however, it was incorporated under the Indian Cotton Cess Act and provided with separate funds to enable it to undertake work for the improvement of the growing, marketing and manufacture of Indian cotton. These funds are derived from the levy of a cess of two annas a bale on all Indian cotton consumed in mills in British India or exported from British Indian ports. The idea from the very beginning was that the Indian Central Cotton Committee should form a common meeting ground for all sections of the cotton industry with the Agricultural Departments of all the cotton growing provinces in India, at which the cotton problems of the country would be discussed and measures suggested for tackling them. It was realised from the outset that the cultivator's interests must be paramount in all matters considered and decided on by the Committee and that no permanent developments could take place unless they were in his interests.

The first task of the Committee was to arrange for a well-directed co-ordinated effort for the improvement of every aspect of cotton in India, including the improvement of the race of the plant by the application of the technique and principles of plant breeding. The Committee was not slow to realise that in no cotton producing area could the crop be improved and that improvement maintained without a widespread recognition of the principles of plant breeding and the practical application of those principles. Grants were made to Departments of Agriculture in the various cotton growing Provinces and States for specific investigations on cotton in which improvement of the variety was naturally given high priority. The policy in the main has been to supplement and not to supplant the work of the Agricultural

Departments in the cotton growing Provinces and States and though, as a matter of convenience, certain lines of demarcation have been laid down regarding the investigations which the Committee considers most appropriate for its grants, assistance, as a general rule, is given in the directions where it is most needed in the carrying out of a co-ordinated policy of cotton improvement in the country. While the Committee's constitution ensures a broad outlook on all matters falling within its purview, its primary concern is the interest and welfare of the cotton grower.

Under the Indian Cotton Cess Rules, members, who are not *ex-officio* members, hold office for three years and one-third of their number retire each year in rotation. The term of office of additional members appointed by the Governor-General under Section 4 (xi) of the Indian Cotton Cess Act is three years or such lesser period as may be specified in the notification appointing them. A list of members constituting the Committee, consequent on the passing of the Indian Independence Act, 1947, and the India (Adaptation of Existing Indian Laws) Order, 1947, and the various interests they represent, as on 31st August, 1947, is given in Appendix I. The composition of the various Sub-Committees of the Committee as on 31st August, 1947, is given in Appendix II. The functions of these Sub-Committees have been detailed in earlier reports of the Committee. It may be mentioned, however, that the day-to-day administration of the Committee is carried on in consultation with the Standing Finance Sub-Committee which exercises its powers under Rule 11 of the Rules under Section 16 of the Indian Cotton Cess Act and is the principal executive body of the Committee.

Mr. D. N. Mahta continued as Secretary of the Committee up to the 17th February, 1947, when he relinquished his office to take up the appointment of Secretary to the Government of Bombay, Agriculture and Rural Development Department and Agricultural Commissioner. To mark its appreciation of the services rendered by Mr. Mahta, the Standing Finance Sub-Committee passed the following resolution at its meeting held on the 22nd April, 1947 :—

“The Standing Finance Sub-Committee desires to place on record its appreciation of the services rendered by Mr. D. N. Mahta as Secretary of the Indian Central Cotton Committee covering a period of over nine years. During his tenure of office the work of the Committee reached a high standard of efficiency and Mr. Mahta's help and guidance were of inestimable value to the members of the Committee in dealing with the



many and important matters affecting the cotton grower and the cotton trade and industry which came up for consideration, especially during the period of the war and the years immediately following it. In order that the benefit of his knowledge and experience of the work of the Committee may continue to be available to the Committee, the Sub-Committee recommends to the Government of India that Mr. Mahta be appointed as an additional member of the Committee under Section 4 (xi) of the Indian Cotton Cess Act."

Mr. C. J. Bocarro, Assistant Secretary of the Committee, was appointed to officiate as Secretary of the Committee and Rai Sahib Ajodhya Sahai, Superintendent of the office, as Assistant Secretary. Mr. D. L. Sen, Senior Research Assistant at the Technological Laboratory, continued to officiate as Director of the Laboratory.

The total receipts of the Committee up to the 31st March, 1947, amounted to Rs. 2,25,80,601-4-2 of which Rs. 1,69,01,357-13-11 represent collections from the cotton cess. The receipts during the year amounted to Rs. 16,20,457-2-7 and the total expenditure to Rs. 11,08,001-10-2. A statement of the receipts and expenditure as well as the Balance Sheet for the year as at 31st March, 1947, are contained in Appendix III.

Sardar Bahadur Sir Datar Singh (President), Mr. R. G. Saraiya, (Vice-President), Sir Chunilal B. Mehta, Rao Bahadur Sir Madhaorao Deshpande, Rai Bahadur Kalidas Sawhney, Dr. G. S. Cheema and the Secretary represented the Committee on the Board of Governors of the Institute of Plant Industry, Indore, during the financial year ending 31st March, 1947. During the same period, Sir Roger Thomas represented the Committee on the Imperial Council of Agricultural Research. Under Article 51, as amended, of the Articles of Association of the East India Cotton Association, the Indian Central Cotton Committee is entitled to nominate from amongst its growers' representatives three persons, whether members of the Association or not, not having dealings in forward contracts, as Directors of the Association. Rao Bahadur Sir Madhaorao Deshpande, Rao Bahadur F. B. Loxmeshwar and Mr. L. Madhava Reddi were elected by the Committee as its representatives for the cotton year 1946-47. As the term of membership on the Committee of Mr. L. Madhava Reddi expired on the 31st March 1947, Mian Mohammad Nurullah was appointed in his place for the remaining period of the cotton year.

Only one meeting of the Indian Central Cotton Committee was held in the year under report on the 31st January and the 1st February, 1947, under the presidency of Sardar Bahadur Sir Datar Singh, Vice-Chairman, Indian Council of Agricultural Research. Due to the constitutional changes which became effective from the 15th August, 1947, the usual monsoon meeting was postponed to a date beyond the close of the cotton year. One of the important subjects affecting the interests of cotton growers in particular, and of the cotton industry as a whole, considered at the meeting was that relating to the acreage that should be sown under cotton in the 1947-48 season. This subject was, in the first instance, considered by the Planning Subcommittee of the Indian Central Cotton Committee. At the meeting of the main Committee, it was unanimously agreed that provided the food position in the country permits of it, the Committee should press for an increase in the cotton area for the 1947-48 season. It was further decided that the Government of India should be requested to receive a delegation consisting of the President, the Vice-President, Sir Purshotamdas Thakurdas, Major S. R. Pocock, Sir Chunilal V. Mehta, Sir Roger Thomas, Sir William Roberts, Mr. Madhava Reddi and Mr. D. N. Mahta, the Secretary of the Committee, to enable the views of the Committee to be placed before Government. Necessary action was taken in the matter and the delegation waited on the Hon'ble Member for Food and Agriculture on the 2nd April, 1947, at New Delhi. As a result, the Government of India urged upon the Provincial Governments the necessity of not enforcing vigorously their schemes of reducing the area under cotton and of releasing a portion of the land diverted from cotton to be reverted to cotton.

Another important subject which received attention was the export duty on cotton and in this connection the following resolution moved by Mr. R. G. Saraiya was unanimously passed :—

“ The Indian Central Cotton Committee has given careful consideration to the recent imposition of an export duty on cotton. The Committee assumes that this duty was imposed only as a temporary measure and it accordingly recommends that it should be abolished forthwith as it has already begun to act as a handicap to the export of Indian cotton. The export duty on cotton, of which there is a surplus in the country and of which there are alternative supplies in other parts of the world, can only act as a handicap to the prospect of selling Indian cotton in the world's markets and lead to a permanent reduction in the monetary return to the cotton growers of the country. In this connection, the Committee desires to draw the attention of the Government of India to the tendency for the narrowing of the dis-

parity between Indian and world cotton prices, to the large discounts in the quotations for distant months in the New York Cotton Futures Market, and to the fact that a subsidy of 4 cents per lb. is granted on exports of American cotton,—and urges, in the interests of the Indian cotton grower, that the duty should be abolished forthwith. The Committee further recommends that the proceeds of the duty collected should be placed at the disposal of the Indian Central Cotton Committee for undertaking measures for the benefit of the Indian cotton grower ”.

The Government of India, however, expressed their inability to accept the recommendation of the Committee for the removal of the export duty on cotton.

The Committee considered the reply received from the East India Cotton Association to the resolution, passed by the Committee at its meeting in July 1946, expressing concern at the very large variations in survey and appeal awards on cotton tendered against the Indian Cotton Contract and requesting the Association to look into the matter and to adopt adequate measures to avoid recurrence of such variations. It was decided, however, that no useful purpose would be served by discussing the various points contained in the reply, since the whole question was then being examined by a Committee of Ministers of the Bombay Government. For the same reason, the Committee also postponed consideration of the views of the East India Cotton Association on another resolution passed by the Committee at its meeting in July 1946 recommending the adoption of the official American cotton staple standards for assessing staple length of cotton tendered against the Hedge and Delivery Contracts in India.

While reviewing the position regarding the introduction of legislation to prohibit the mixing of cotton in India, the Committee unanimously agreed that the Government of India should be informed that, in the opinion of the Indian Central Cotton Committee, Government's present cotton policy—particularly as regards the fixation of the ceiling price of *desi* cotton at a low level—was encouraging the malpractice of mixing of short with medium and long staple cottons and thereby nullifying all the good work done by the Committee during the last twenty years in the matter of improvement of the staple and quality of Indian cotton. It further expressed the view that, unless immediate steps are taken to remedy this position, irretrievable damage might result to the purity of the new and improved types of cotton, and all the skill, money and labour spent on their improvement and extension over a number of years would be wasted.

On the agricultural side of its work, the Committee examined the progress and final reports on the research and seed distribution schemes in operation

in Madras, Bombay, the Central Provinces and Berar, Sind, the United Provinces and the Mysore, Baroda and Hyderabad States and made recommendations with regard to their future conduct. The scheme for cotton physiological research and the scheme for breeding Egyptian and Sea Island cottons in Mysore were extended for five and three years, respectively. The Committee approved of new schemes for improvement of cotton in the Udaipur State, the Nimar tract of Holkar State and the Parbhani, Bhir and Aurangabad districts of Hyderabad State.

The Committee, in reviewing the work done on cotton in the various provinces and States, unanimously agreed that the standards of living of cotton growers are largely determined by their purchasing power and that their purchasing power can be considerably improved by increasing the productivity of their lands and by improving the quality of their produce. The Committee, therefore, approved of the appointment of a Special Sub-Committee to examine the present measures adopted by the Indian Central Cotton Committee to attain these ends and to make recommendations as to the nature and scope of those activities of the Committee which will best serve to hasten the tempo of development.

In connection with the adoption of measures for improvement of cotton yields in India, the view was expressed that the commonly accepted direct methods of improving cotton yields were well-known, as for instance, extension of irrigation, breeding and distribution of heavier yielding varieties, manuring, desirable crop rotations, prevention of erosion and conservation of rain water in unirrigated tracts, crop inter-cultivation and weeding, control or evasion of insect pests and diseases, and it was suggested that if the existing knowledge on these measures were applied in practice, a very substantial rise in crop yields would result. The Committee was also of the opinion that the factors militating against progress, as for example rural indebtedness, land tenure systems, fragmented holdings, ignorance of the traditions, customs and taboos of the village folk society, the absence of organised village councils, inefficient methods of village publicity, propaganda and demonstration, inadequate training given to the staff engaged on extension work and the impracticability of some of the recommendations made to farmers, also required a close study in dealing with the problem. As aids to this end for adoption of a short range programme, the Committee recommended that early steps should be taken (1) to undertake desirable extension schemes for the application of the econo-

mic results of research to the cotton crop and (2) to undertake desirable research schemes on the agronomic aspects of cotton cultivation, especially crop rotation.

The Committee also considered the desirability of establishing regional cotton research stations in India so located as to serve the interests of each major cotton growing region. In its opinion there was need for closer co-ordination of the work within each tract and also for greater specialisation in investigations of local cotton problems. Team work was essential in the investigation of problems concerned with plant breeding, cotton genetics, agronomy, crop rotations and plant diseases between suitably qualified scientists in charge of each of these subjects at each station. The Committee accordingly recommended that regional cotton research stations, with a full complement of scientific sections including a micro-spinning unit, should be established in the first instance in the following regions :—

*Oomras* (C. P. & Berar),  
 Central India (Indore),  
 Broach and Gujerat,  
 Indus Basin (comprising the Punjab, Sind etc.),  
 Northern, Westerns, Tinnevelles, Cambodia and *Karunganni*  
 (Coimbatore),  
*Oomra* and *Bani* (Hyderabad), etc.

The Committee considered Mr. Mahta's report on his visit to Egypt and the United Kingdom and agreed that the following aspects are of special interest and should be further considered by the appropriate Sub-committees :—

(a) Cotton Marketing, (b) Cotton Research Board, (c) Cotton Seed Control Law and Prohibition of mixing and (d) Spinning-Test Mill and Technological Laboratory, especially with regard to methods adopted in micro-spinning and their adoption at the Committee's Technological Laboratory.

The Committee placed on record its appreciation of the valuable report submitted by Mr. Mahta embodying much useful information collected by him during his deputation to Egypt and the United Kingdom.

## **CHAPTER II.**

### **RES EARCH.**

Most of the research schemes of the Committee are concerned with the improvement of the race of the plant, the object being to enable the grower to secure the most profitable yield. To do this there have to be taken into account the quality of the lint, on which demand and prices depend, and yield. A number of research schemes, among which the most important are those for cotton breeding for the improvement of quality, are in operation in the various cotton growing Provinces and States. The majority of these schemes are financed entirely by the Committee, while the cost of others is borne partly by the Committee and partly by the Provincial Government or State concerned. The Committee also makes grants to Departments of Agriculture in the various cotton growing Provinces and States for specific investigations on cotton, not necessarily confined to the breeding of new varieties, the aim being to arrange for a well-directed co-ordinated effort for the improvement of every aspect of cotton in India. Since January 1943, the expenditure on new schemes and extensions of old schemes sanctioned by the Committee, which are for the benefit of cotton growers, is being met from the Cotton Fund at the disposal of the Government of India. Research on cotton technology is carried on at the Committee's Technological Laboratory and in addition trained Technological Assistants are posted at the Cotton Research Stations at Lyallpur, Mirpurkhas, Cawnpore, Surat, Dharwar, Coimbatore and Nanded to help the botanists in charge in their work of breeding improved varieties of cotton.

### **COTTON TECHNOLOGY**

Research on cotton technology, ginning and the testing of cotton fibres, yarns and cloth is carried on at the Technological Laboratory at Matunga. A brief summary of the work done during the year is given below ; full details are given in the Annual Report of the Laboratory which is issued as a separate publication.

The work carried out in both the research and testing sections of the Laboratory progressed satisfactorily during the year. Valuable assistance was rendered to cotton breeders by testing their improved strains at an early stage thus enabling them to select types which would bring better monetary return to the cultivators and be more acceptable to the trade and the industry.

The interests of the latter were served not only by carrying out tests for them on trade varieties but also by undertaking scientific investigations on the causes of defects in processing etc., and suggesting suitable remedies for removing them. The ginning section was fully occupied with a series of experiments on the pre-cleaning of Indian seed-cottons on different opening machines and on suitable speeds and settings in the saw and roller gins for ginning different varieties of Indian cottons satisfactorily. Comparative ginning tests on 124F and *Jarila* both in up-country ginning factories and at the Laboratory were also carried out. The total number of samples received for tests of all kinds was 1204 on which 255 reports were issued. Several Indian States, Hyderabad, Indore, Baroda, Kathiawar, etc., took full advantage of the facilities at the Laboratory.

The tests carried out on agricultural samples included tests on certified Vijay cotton grown at different centres in Middle Gujerat and in Baroda State, S31, S24-2 and Mathio grown in different localities in Kathiawar, comparative tests on hybrids to replace *Jarila*, *Jarila* raised from seeds of rain-fed and irrigated crops, comparative tests on *Suyog* and 1027 A.L.F., *Suyog* grown at different centres in Baroda State, long staple Lasani strains evolved in the Punjab and longstaple hybrids evolved at Mirpurkhas.

Spinning tests were made, as usual, on representative standard and trade varieties of Indian cottons, the results of which were published for general information of the trade and the industry in technological bulletins and circulars.

The Testing House of the Laboratory carried out tests on 279 samples of textile fibres, yarn and cloth for firms and mills. These included spinning tests on 77 samples, fibre tests on 139 samples, yarn tests on 42 samples and cloth tests on 21 samples.

With a view to improving the pre-cleaning and ginning processes of Indian cottons, experiments were carried out by opening the seed-cotton by single passage in openers and studying the effect of saw speed in the saw gins and overlap and grid settings in roller gins on the ginning percentage, output, quality of ginned lint, etc. Technological Leaflets were published on each variety, namely, Sind American M4, P.A. 289F/K25, *Gaorani* 6 and *Jayawant*. Experiments were also made on *kapas* samples with a view to ascertaining the relative efficiency of the pre-cleaning machines by opening them twice either by double passage in the same opener or in combination with two of the three pre-cleaning

machines. The effects of using different rates of feed in the saw gin and different roller speeds in the roller gins were also investigated. Technological Leaflets dealing with these tests were also published on each variety, namely, Surat 1027 A.L.F., P.A. 4F, Verum, P.A. 289F/43 and P.A. 289F/K25 during the period. A summary of the main conclusions drawn from tests on all cottons was published in the Indian Cotton Growing Review. The causes of difference in the spinning performance between saw ginned and roller ginned samples of the same cotton were also investigated. With the co-operation of the B.C.G.A., ginning tests at their factory at Khanewal and at the Laboratory were made on 124F cotton in saw gin and single roller gin. Similarly, comparative ginning tests were also made on *Jarila* cotton in saw gin and single and double roller gins, with the co-operation of Messrs. Volkart Brothers Ltd., at their factories at Khamgaon and Amraoti and at the Laboratory. With a view to standardising the technique for ginning small samples, experiments were made with different small gins and it was found that the Platts hand gin (12" roller) is quite efficient both for single plant produce and the produce of rows and plots. Different trials with various combinations of pre-cleaning machinery on cottons containing different amounts of foreign matter are also being made with a view to evolving a technique of cleaning *kapas* to yield better quality lint.

Good progress was recorded in technological investigations, some of which were of a fundamental nature while others were of direct practical value to the trade and industry. Plain cloths manufactured in a mill from the yarns prepared from the saw-ginned samples of 289F/K25 and Sind Sudhar after combing to the extent of 18% were tested. Results indicated that good quality Indian cottons can be used with advantage to replace East African cottons now being used by Indian mills for this purpose. Causes leading to neppiness in Indian cotton yarns were investigated in detail. Tests on medium staple Indian cottons to ascertain their suitability for manufacturing hosiery yarns were made. Formulae were developed with a view to estimating the strength of yarn spun with different twist-multipliers. Causes of abnormal spinning performances of certain Indian cottons having longer lengths were under investigation. New regression equations have been worked out for different botanical varieties which have been found to estimate the spinning value more precisely than the equations based on technological classification. In addition, chemical cotton was prepared from various grades of linters removed from Indian cotton seeds by the method specially evolved in



the Laboratory. Many lengths of translucent cellulose sheets have been produced by the viscose method and efforts are being made to make transparent sheets. Preliminary investigations were carried out to render the cotton bale cover (hessian) fire-proof by using some of the cheaper inorganic chemicals.

In addition to the above investigations, work is in progress on the spinning quality of mixings of Indian cottons with special reference to fibre-properties; on the influence of different length-groups of fibre on yarn-strength; on the comparison of different methods of measuring halo-length; on the effect of agronomical factors on the physical properties of the cotton fibre; on the effect of storage of Indian trade bales in up-country centres and in Bombay godowns; on acetylation of textile materials, etc.

Bulletins on (1) Dyeing properties of Indian cottons, (2) Estimation of wax-content and feel of a cotton from its physical characters, and (3) A new method for the determination of the average diameter of textile fibres, filaments, fine wires, etc. were published during the period under review.

### FUNDAMENTAL RESEARCH

Fundamental research on cotton is carried out at the Institute of Plant Industry, Indore, which was established with the object of providing a central research station in the black soil areas of the Malwa Plateau. In April 1940, the working of the Institute was reorganised, and as a result, fundamental research on genetics and plant breeding, physiology and field plot technique was carried out under a special scheme—the Cotton Genetics Research Scheme. The work done on this Scheme was re-transferred to the Institute with effect from the 1st June, 1946, to enable it to function as an Agricultural Research Institute for cotton (including Cotton Genetics) and its rotation crops, such as, jowar, gram, linseed, etc., and also to provide a two years' course of training in cotton growing, general agriculture, horticulture and animal husbandry up to the diploma standard. A review of the progress made during the year under report is given below :—

**Cotton Genetics.**—During the season under review experiments were continued on the following problems :—

(a) **Fuzziness.**—Studies regarding the genetics of fuzziness in Indo-American cottons were completed and written up for publication. These results showed that this character was a simply inherited one (single factor). Its phenotypic expression regarding grade of fuzziness was, however, greatly influenced by the modifier complex which itself varied with different varieties of the same species.

(b) **Boll locular composition and boll size.**—These studies were also completed during the season and sent to the press for publication. According to them the boll locular composition showed monogenic inheritance, a 5-lock condition being simple recessive to the normal 3-locked condition. It was also noted that the boll size inheritance was polygenic in nature and that larger boll size was associated with narrow leaf shape.

(c) **Chlorophyll deficiencies.**—Studies were commenced during the season to elucidate the genetic basis of chlorophyll deficiencies as they appeared in the *desi* cotton plants. Seven plants showing varying degrees of chlorosis were detected during the year occurring as vegetative segregations and bud mutations. All these have been crossed with suitable parents for further study and grafted on to normal stocks for maintenance for future work.

(d) **Jassid resistance.**—Previous work has shown that resistance to jassid in Malwa Uplands is of hereditary nature and resistant and susceptible progenies have been evolved by simple selection on the basis of leaf curling. These progenies will now be examined for their lint characters with a view to finding out if, in the course of selection for jassid resistance, these characters have undergone any change.

(e) **Seed weight.**—Earlier investigations at Indore had shown that larger and heavier seed coming from bulk produce of any strain gave a higher yield of *kapas* than that obtained from the small and lighter seed from the same lot. Studies were commenced during the season to explore the extreme limits of genetic selection for seed weight in a strain and to note its effect on other economic characters, such as, *kapas* yield, halo length, ginning percentage, etc. Fifteen progenies of each of the large and small seeded lots of two strains, *viz.*, Dhar 43 and *Jarila*, with two unselected controls were grown in a replicated trial. The results, although not analysed statistically so far, indicate that progenies coming from larger seed sizes have given higher *kapas* yield, better stand, better halolengths, heavier weight of harvested seed but lower ginning. Progenies selected for lower seed weight gave lower *kapas* yield, poorer stand,

shorter halo length, lighter seed and higher ginning. Further selections of single plants towards extreme values of seed weight have been made during the year and progenies will be tested in the following season.

## 2. Interspecific Hybridisation :—

A few years back work was started at Indore to explore the possibilities of transference of pest, disease and drought-resistance of the wild American species to our cultivated types. These species, viz. *Gossypium thurberii* and *Gossypium raimondii*, were, therefore, crossed with the cultivated types belonging to *G. arboreum* in case of *Thurberii* and *G. hirsutum* in case of *Raimondii*. The hybrids so obtained, being sterile, their chromosome complement was doubled by colchicine and they were then repeatedly backcrossed to the normal fertile types to restore fertility. During the year under review a large number of seeds obtained from this material was grown and observed for fertility etc., details of which are summarised below —

	No. of seeds sown.	Germina- tion.	Final stand.	No. of fertile plants:
<i>Thurberii</i> crosses ..	6532	3878	3621	680
<i>Raimondii</i> crosses ..	265	121	83	10

The data regarding the economic characters of the above fertile plants have been collected and progenies will be grown in the ensuing year in order to continue selection for higher fertility and desirable agricultural characters.

## 3. Seed treatment studies :—

(a) **Mechanical sorting.**—The data collected from different experiments conducted in the season confirmed the previous finding that mechanically sorted out larger and high density seed of a cotton strain gives higher *kapas* yields than the unselected bulk seed.

(b) **Non-genetic increase in seed weight.**—In addition to the above work efforts were also directed towards finding out simple methods to enable the crop to produce larger and heavier seed which in turn would give higher *kapas* yields in the following season. During the year under review, therefore, seed obtained from last year's *Jarila* crop grown under 24 agronomic treatments (consisting of 4 levels of spacings, viz. 18", 12", 6" and 3", two levels of manuring, viz., manured @ 40 lbs. of nitrogen per acre and unmanured, and three

levels of seed sizes, *viz.* large, small and unselected bulk) was tested under uniform agronomic conditions in four randomised blocks, the individual plot size being 16' X 2'. The data have not been statistically analysed so far but the examination of the mean values of *kapas* yield per plot shows that (i) the wider the spacing of the previous crop, the higher are the yields of *kapas* obtained from its seed in the following season, (ii) seed harvested from the plots sown with large seed gives higher *kapas* yields than those obtained from the seed got from the crop raised out of small and unselected bulk seed, (iii) seed obtained from different spacings of manured plots did not show any difference, whereas that from the unmanured plots showed difference in the crop raised therefrom. The crop from the seed obtained from the unmanured widely spaced plots gave 20% higher yields than that obtained from the seed from closely spaced crop, (iv) similarly, crops obtained from larger seed grown under wider spacing gave seed which had a higher yielding potentiality than that obtained from small seeds grown under wider spacings. The unmanured, wide-spaced crop grown from large seeds gave the best seed for raising a high yielding crop in the following season.

Further, during the year under review, *Jarila* crop was again grown under thirty-six agronomic treatments (consisting of three levels of seed categories, *viz.*, control—unselected, heavy—saline density, and heavy—water density; four levels of spacing, *viz.*, 18", 12", 9" and 3"; three levels of manuring, *viz.*, no manure, manured with  $(\text{NH}_4)_2 \text{SO}_4$  and manured with  $\text{NaNO}_3$ ) for obtaining seed which could be tested for *kapas* yield in the ensuing season to confirm the results of the trial mentioned above.

#### 4. Vernalization:—

(a) Cold treatment.—In 1944-45 experiments were commenced to study the effect of "cold treatment" on cotton seeds with a view to vernalising the same. It was reported last year that the progenies of x 4463 (an American strain) grown from one of the cold treatments of seed had given significantly higher yields in the season 1945-46 even without additional treatment, showing thereby that the effect of the initial cold treatment was of a permanent nature. Progenies grown out of this material (without fresh treatment) during the year under review showed, however, that the progeny which had given a significantly high yield last year gave a positively lower yield than the control this year.

(b) **High temperature treatments.**—It was realised that in the case of *desi* cottons of black cotton soils of India, high temperature seed treatment was likely to give better results than the low temperature. However, it had become difficult to carry out experiments with the former due to simultaneous fungal growth on seed which the higher temperature coupled with moisture encouraged. Accordingly, a preliminary trial was conducted during the year with various fungicides including Nomarsan, Perenox and copper sulphate, to protect the seed from fungal attack during temperature treatment. The conclusion was that no fungicide could protect the seed of Upland varieties but on *desi* varieties copper sulphate was probably the best. *Desi* and American seed have been subjected to constant temperature (28° C) for 10, 20 and 30 days this summer and the treated seed will be sown in the field this season.

(c) **Agronomy:**—

1. **Manurial trial.**—A manurial trial on cotton is in progress at the Institute as part of the co-ordinated trials that are being conducted at different centres and past results have shown that cotton yield can be increased by the application of nitrogen either as ammonium sulphate or groundnut cake. This year's trial included phosphate as an additional treatment and graded doses of nitrogen up to 100 lbs. in two forms, ammonium sulphate and groundnut cake, were tried in combination with 0 and 40 lb. P<sub>2</sub>O<sub>5</sub>. Each trial had three replications. The locally bred Malvi strain, Dhar 43, was sown. Germination was spoiled by a heavy shower of 9.86 inches received two days after sowing and the trials were resown in both fields. Yields are consequently poor in both trials and results are similar.

Nitrogen had an adverse effect on stand but the application of phosphate helped in maintaining a better stand in both trials. In yields adjusted for stand differences, nitrogen steadily increased yield up to 75 lbs. and phosphate also increased yield significantly in both trials; but nitrogen as ammonium sulphate was less effective than groundnut cake. Phosphate in combination with ammonium sulphate brought about a greater increase in yield than in combination with groundnut cake. These results are shown below:—

	Yield of <i>Kapas</i> lb. per acre. Average of two kinds of nitrogen.					
	O N	25 lb. N	50 lb. N	75 lb. N	100 lb. N	Sig. diff.
Good field ..	137	174	197	234	251	54
Poor field ..	27	79	127	155	150	32

## Effect of nitrogen (average of all doses) and phosphate.

	Good field.		Poor field.	
	0 P <sub>2</sub> O <sub>5</sub>	40 lb. P <sub>2</sub> O <sub>5</sub>	0 P <sub>2</sub> O <sub>5</sub>	30 lb. P <sub>2</sub> O <sub>5</sub>
Amm. sulphate ..	146	226	87	102
Groundnut cake ..	210	230	143	142
Sig. diff. .. ..		54.30		32.04

The experiment is being repeated.

2. Phosphatic manuring of leguminous crops preceding cotton.—A trial has been started in order to study the beneficial effect of leguminous crops on the succeeding cotton crop and the extent to which the cotton responds to the phosphate applied to these crops. The trial included jowar as the control and the legumes grown were, groundnut, *sann*, *tur*, soyabean and cowpea. Each crop was grown with an application of 30 lbs. P<sub>2</sub>O<sub>5</sub> per acre and without any phosphate. There were thus 12 treatments replicated 4 times. A part of the field in which the trial was laid out being rather waterlogged, the growth of crops was uneven. The following yields of grain and stalks were obtained:—

Crop.	Yield lb. per acre.		Stalks.	
	No phosphate.	30 lbs. P <sub>2</sub> O <sub>5</sub> .	No phosphate.	30 lbs. P <sub>2</sub> O <sub>5</sub> .
Jowar .. ..	198	214	371	414
Groundnut ..	129	164	267	276
<i>sann</i> .. ..	181	164	414	310
<i>Tur</i> .. ..	224	293	492	518
Soyabean ..	371	336	690	621
Cowpea .. ..	124	172	250	302

All crops including jowar except *sann* and soyabean apparently produced a better growth and gave a higher yield by the application of phosphate. The lower yield of both grain and stalks in the case of *sann* and soyabean was, however, presumably due to shedding of considerable leaf in phosphate plots which matured earlier and partial shattering of pods before the crop was har-

vested. Field observations clearly indicated the better growth of the phosphate treated plots of *sann*.

Next year cotton will be sown in these plots and each plot will be divided into two halves, one of which will be manured with nitrogen at 30 lb. per acre.

3. Effect of seed size on the yield of cotton.—Experiments at Indore during the past two years have shown that by sowing large well filled seed of *desi* cotton, germination and vigour of plants is improved and the yield increased by 10 to 20 per cent over unselected seed. The experiment was repeated this year on two varieties, *Jarila* and Dhar 43. The procedure employed for selecting large heavy seed was first to remove all damaged seed, then to pass the seed through a sieve with 25 square meshes to a square inch, thus separating large and small seed, and finally to put the large seed in a bucket of water and rub it well so that sinking and floating seeds are separated. The sinking portion is taken as large heavy seed. From bulk seed the following proportions of different types of seed could be sorted out :—

Seed.	Variety.	
	Dhar 43.	Jarila.
Large sinking .. ..	40%	25%
Large floating .. ..	23%	9%
Small .. .. .	30%	57%
Bad .. .. .	7%	9%

The seed treatment included in the field trial were : (1) large heavy seed (5.80, 5.61), (2) large seed (5.40, 5.36), (3) small seed (4.53, 4.46) and (4) unselected bulk as control (4.79, 4.82). Figures in brackets show weight of 100 seeds in gms., the first for Dhar 43 and the second for *Jarila*. Seed rate for sowing was adjusted on the basis of seed weight to a standard seed rate of 20 lbs. per acre for control. The trial was replicated in 8 blocks. Germination was affected by heavy rain which fell soon after sowing and as there was a considerable difference in the germination of the two varieties, thinning was carefully done to equalize the stand for different seed treatments within each variety as far as possible. In both varieties germination was highest for large heavy seed, followed by large seed, control and small seed. For small seed the stand after

thinning also continued to be less than the other three treatments. Differences in plant vigour were observable and plots with large heavy seed were best in each block. Differences in yield both crude and adjusted for stand were consistent for different seed treatments and significant in both varieties, the order being large heavy seed, large seed, control and small seed.

	Yield of <i>kapas</i> .		Lbs. per acre.
		Crude.	Adjusted.
Large heavy seed ..	382	370	
Control . . . . .	232	329	
Sig. diff. . . . .	38	30	

There was thus an increase of 15.1 per cent over control in crude yield and 12.5 per cent. in yield after removing differences in stand, by sowing large heavy seed. The results confirm previous findings that yield can be increased by using large heavy seed by 10 to 15 per cent. besides securing better germination and vigour. It is proposed to carry out the trial by treating all bulk seed to be sown at the Institute farm in this manner in the coming season.

In the harvested produce of the present trial neither seed weight nor ginning percentage differed in the different size treatments thus confirming the previous result that seed size differences are principally non-genetic within each variety.

**4. Soaking of seed in nutrient solutions.**—A preliminary trial was carried out this season on two *desi* (Dhar 43 and *Jarila*) and two Upland (M.U. 4 and X4463) strains in which the seed was soaked in different concentrations ( $\frac{1}{2}$ , 1 and  $1\frac{1}{2}$  of molar, of solution of mono, dia and tri potassium phosphates for twenty-four hours before sowing. There is an indication that both boll number and yield of *kapas* were increased by this treatment and a  $\frac{1}{2}$  molar solution of  $K_3PO_4$  was most effective in the two *desi* varieties. Among the Upland varieties, there was no apparent effect on the Coimbatore strain x 4463, but in the local strain M.U. 4 there was some increase in boll number and yield though there was no appreciable difference between the different phosphates. It is proposed to repeat the trial with proper replications and with the inclusion of three more salts, *viz.*, ammonium sulphate, potassium nitrate and ammonium phosphate.

**5. Seed source and place effect on *Jarila*.**—This trial was started in 1943-44 in order to study the variation in ginning percentage and quality



of *Jarila* grown at different places. The technological results for the produce of the third year's trials (1945-46) at Indore, Jalgaon and Akola are now available and are given below :—

Trial	Fibre length inch.			Fibre wt. millionth oz.			H. S. W. C.			Fibre strength index (1944-45).		
	I	A	J	I	J	A	I	A	J	I	J	A
Indore .. ..	.80	.78	.76	.148	.141	.139	28	26	24	7.03	6.49	6.32
Akola .. ..	.84	.83	.80	.165	.162	.156	27	26	26	7.06	6.90	6.02
Jalgaon .. ..	.83	.80	.79	.161	.163	.161	32	30	27	7.63	7.43	7.29

I—Indore seed. A—Akola seed. J—Jalgaon seed.

The first two years' data discussed in the previous report had shown that in all trials the produce from Indore seed had consistently the longest staple, Akola seed came next and Jalgaon last. Analogously, the produce from Indore seed gave the highest spinning value with Akola next and Jalgaon last. The results shown above are in general agreement with these earlier results. In two trials Indore seed stands first for fibre length and in the third it is second. Similarly Akola seed stands second in two trials and first in the third. There is little difference in the spinning values for different sources of seed in the trial at Akola ; but in the other two trials, Indore and Akola seed stands either first or second.

Fibre strength was measured only on the 1944-45 samples and the results again bring out that Indore seed was consistently first in fibre strength while Akola seed stood second in two out of the three trials. Fibre strength also appears characteristic of the locality, it being highest in samples from Jalgaon trial and least in samples from Indore, irrespective of the source of seed.

Fibre weight is influenced mainly by locality and in all three seasons it was generally the lowest at Indore.

The trial was continued for the fourth year in 1946-47 at all the three centres ; but the one at Indore was damaged owing to heavy rain soon after sowing. The results for the other two trials differed from previous results in respect of ginning percentage and seed weight. Whereas ginning percentage and seed weight were the highest in the Akola trial in the past, this year ginning

percentage and seed weight were both higher at Jalgaon than at Akola. The Jalgaon trial this year was, however, located on exceptionally fertile and heavily manured land. In yield no definite trends were observable either this year or in the past, but it was generally found that when heavier seed was sown a better yield was obtained and seed from Akola was usually the heaviest. The trials are now discontinued.

## COTTON RESEARCH IN PROVINCES AND STATES.

### BOMBAY.

(a) **Broach Cotton Breeding Scheme.**—The Cotton Breeding Scheme at Broach has been in operation since April 1932. The original object of this scheme was to obtain, by selection or hybridization, suitable types of cotton possessing wilt-resistant, high yielding, high ginning and superior spinning qualities, to replace the local mixture, a large proportion of which consisted of *Goghari* a short staple, high ginning (40%) variety. In view, however, of the Committee's policy to replace, wherever possible, short staple with medium and long staple cottons, attention is now being concentrated on wilt-resistance, high yield and fibre length.

The breeding of wilt-resistant types originally formed part of the Broach Breeding Scheme, but as it was considered desirable that this work should be done under optimum conditions of wilt infection, and as the required conditions, especially soil temperature in pots, were difficult to maintain at Broach, this part of the work was transferred to Poona, in June 1935, together with similar work on cottons for the Jalgaon tract.

The synthetic strain *Vijaya* (Segregates 1-2 and 1-6) evolved under the scheme is stated to be highly wilt-resistant besides possessing a ginning percentage of 41 against 33.7% of B.D.8 and 41.3% of Broach Local and a spinning value of 38s compared to 38-1/2 of B.D.8 and 13-1/2s of Broach Local. In respect of yield, it is reported to be on a par with B.D.8.

It is stated that as a result of the examination of 234 hybrid selections representing 93 families of the crosses and back crosses between 1027 A.L.F.x B.C. 1-2, B.C. 1-6 and B.C. 5-18, 51 selections were found promising in respect of all the economic characters. Of these, the best ten are proposed to be tested both in the wilt sick and wilt free soil; in addition, about 150 individual plant selections from all the hybrids will be tried in progeny row trials during the next season,

The study of some 47 early maturing selections in the  $F_2$  generation showed that most of them mature one to two weeks earlier than the B.C. 1-2 and B.C. 1-6. Forty-one early maturing plants combining high ginning, long staple and freedom from partial wilting have been selected for further study.

The experiment to test whether *Vijaya* of stages A, B & C grown in the district had undergone any deterioration compared with Farm grown *Vijaya*, B.C. 1-2 and B.C. 1-6, showed that the District *Vijaya* of all the three stages, A, B. & C, was statistically on a par with Farm *Vijaya*, B.C. 1-2 and B.C. 1-6 in respect of yield of seed cotton and lint ; as regards ginning percentage the three stages of the District *Vijaya* and B.C. 1-6 were found significantly higher than B.C. 1-2 by 0.6 to 0.9 per cent. The result of the spinning tests of the strains under trial for the season are not available but the results of the 1945-46 season showed that B.C. 1-2, B.C. 1-6 and Farm *Vijaya* were suitable for spinning 39s highest standard warp counts, while District *Vijaya* of stages A and B was slightly lower in spinning capacity than the above three strains.

(b) **Jalgaon Cotton Breeding Scheme.**—This scheme has been in operation since April 1932. Its original object was to obtain, by selection or hybridisation, suitable wilt-resistant types with heavy yielding, high ginning and good spinning qualities to replace the local mixture of N.R. and *Banilla* cottons in Khandesh. Wilt-breeding work was originally included in the Broach and Jalgaon Cotton Breeding Schemes, but, in August 1936, it was decided that the wilt work should be treated as a separate scheme from the 1st April, 1937. In July 1941, the wilt-breeding scheme was extended up to 31st March 1947.

During the year under report the two promising cultures, *viz.*, 197-3 and 670-4 were tried with *Jarila*, in six replications, at ten places in the district and at six more places in duplicate plots. Their average performance regarding *kapas* and lint yield per acre and ginning percentage indicates, as in the past 3 years, that both the cultures are superior to *Jarila* and amongst the two, 197-3 ranks first and 670-4 second. In point of staple length 197-3 stands first, while the three do not differ practically from each other regarding the other fibre and lint characters, except fibre weight, which is the lowest in *Jarila*. The two new cultures are highly wilt-resistant under field conditions giving a mortality per cent. less than one.

The following crosses are being pursued with a view to pick out segregates showing better performance than 197-3, either in one or more of its attributes, like yield, ginning percentage, lint quality and wilt-resistance.

Cross IV.—[(*Jarila* x N.R. 5) x *Jarila*] Bc.4.

Five best progenies of last year and 74 promising individual plants are retained for further trial.

Cross VII.—{[(197-3 x 176-2) x 670-4]. (670-4 x 9-2-8-3)]} F1. from this 60 promising plants have been chosen for further trial.

Cross VIII.—*Jarila* x N.R. 5 x *Jarila* (new back-cross). The back-cross has been made this year and will be pursued further.

(c) **Scheme for breeding wilt-resistant cottons in Surat area.**—This scheme was sanctioned by the Committee in August 1936 and commenced work in April 1937. The object of the scheme is to obtain a strain of cotton completely resistant to wilt and suited to the natural conditions obtaining in the Surat tract. This is sought to be achieved either by selection in 1027 A.L.F. or by crossing this cotton with B.D.8 or other wilt-resistant strains.

During the year under report cultures from the following three crosses were tested in wilt-sick plot at Shera :—

(1) [(8-1 x K.F.) x 8-1] x 8-1] F4.—The material of this cross is found to be completely resistant to wilt under field conditions. It shows good bearing combined with earliness. However, it does not come up to the standard of ginning per cent. and staple feel required for Surat tract.

(2) (8-1 x B.C. 1-6) F8.—Of the three cultures of this cross, *viz.*, 2266-1-4-2, 2266-1-4-3 and 2231-6, the first has lower ginning per cent. with rather coarse staple feel. The second, *viz.*, 2266-1-4-3 is practically similar to 2266-1-4-2 in ginning outturn and required staple length, but has a better feel. The third culture is characterised by very high ginning per cent. and better feel although shorter in staple length. Selection for higher g.p. from 2266-1-4-2 and longer staple from 2231-6 is being done.

(3) (1027 A.L.F. x B.C. 1-6) F8.—Culture 3652-22-2-11 of this cross has been found to be promising as it has a high ginning percentage (37%-40%)

and a staple length approaching 1027 A.L.F. (24.2 mm. to 24.8 mm.) and is highly wilt resistant under field and glass house conditions. This is being tested for yield and other economic characters. Further selection in this material is in progress. Its staple length will be further improved by suitable crosses during the extension period.

(d) **Scheme for improvement of Wagad cotton at Viramgam and Jagudan.**—

While examining the possibility of growing medium and long staple cottons in the short staple areas of India, the Committee, in August 1935, decided that, in view of the absence of any serious attempt to improve the cotton of the large *Dholleras* tract, a comparative study of Indian and Iranian *herbaceum* cottons should be undertaken, with the object of finding out one or more suitable types for the tract. A special officer was deputed to Iran to collect *herbaceum* types of cotton grown there and, in August 1936, a five-year scheme was sanctioned for the improvement of *Wagad* and *Mathio* cottons, the work on *Wagad* cottons being centred at Viramgam and that on *Mathio* at Amreli. The objects are the improvement of *Wagad* cottons for (a) quality and yield and (b) earliness in order to escape frost. These are sought to be achieved by (a) selection in *Wagad* cotton, (b) hybridization with Surti-Broach quality cottons like 1027 A.L.F. and B.D.8 and (c) hybridization with Iranian *herbaceums* known to be early and of better quality.

The whole of the *Wagad* area is divided into two main tracts: (i) the Viramgam tract, characterised by low rainfall and (ii) the Dholka tract with greater and more regular rainfall. The main breeding station is situated at Viramgam and simultaneously a small immune area is being maintained under irrigation at Jagudan to safeguard the work at Viramgam. In July 1941, it was decided to establish another sub-station at Dholka for conducting botanical work on the promising material obtained from Viramgam.

During the year under review, K.72-2 and (S x 99 x 163) 7 were tested against *Wagotar* and Local-*Wagad* in randomised blocks at Viramgam, Bavla and Jagudan. It is reported that the results showed that K.72-2 maintained its superiority over *Wagotar* and Local-*Wagad* in respect of yield, ginning percentage and spinning quality. Type (S x 99 x 163) 7, though good from the point of fibre properties and early flowering, was definitely inferior to all other types in yield. This is attributed to a severe boll-worm attack, to which all

early types are subject, and to the consequent shedding of buds, flowers and bolls. Mill tests of K.72-2 and *Wagotar* are reported to have been conducted in three mills. It was found that both the types are capable of spinning 20s under mill conditions. K.72-2, however, was found superior to *Wagotar* in respect of strength, staple and feel.

In view of the popularity of K.72-2 and the consequent keen demand for its seed, the whole of the *Wagad* tract is expected soon to be covered by this variety under the seed extension scheme recently sanctioned by the Committee.

(e) Scheme for improvement of cotton crop in Kaira District. This scheme was sanctioned by the Committee in August 1939, subject to the condition that it would not come into operation until the Government of Bombay had declared Kaira district as a protected area under the Cotton Transport Act to prevent the import of inferior cotton from Nandurbar. In April 1941 the Government of Bombay issued a notification creating the Mahi-Sabarmati Zone (which includes the whole of the Kaira district) a protected area under the Cotton Transport Act, 1923 ; the scheme came into operation in September 1941.

Kaira district grows two kinds of cotton, (1) *G. herbaceum* var *frutescens*, popularly known as *Kanmi* and (2) *G. arboreum* var *typicum* known as *Rozi*, the former is an annual cotton of superior type and is generally grown in black soils, while the latter, which is found as a subordinate crop with cereals in *goradu* soils, is a perennial type, with short, coarse staple and 25 to 26% ginning outturn. The area grown under these two cottons is, on an average, 78,000 acres, that under *Rozi* being 10,000 acres. Though the bulk of the cotton grown is the better *Kanmi* quality, its reputation has, of late, been spoiled by the admixture of *Rozi* cotton in the gins. The object of the scheme is to find a superior type of cotton by selection or by introduction and trial of other perennial or annual cottons, to replace the *Rozi* type on the *goradu* soils of the Kaira district.

As no tangible progress had been achieved in the improvement of *Rozi* cotton, combined with the fact that it covers only a relatively small area, the scheme was terminated in September 1946.

(f) **Scheme for interspecific hybridisation in cottons at Surat.**—This scheme was sanctioned by the Committee in January 1938, for a period of five years, with the object of obtaining, if possible, fully fertile hybrids between Asiatic and American cottons, combining the useful agronomic characters of both, particularly the good staple length of the American and hardiness and adaptability to Indian climate of the Asiatic. Work on crossing Asiatic and American cottons, begun at Surat in 1932, had already yielded 23 hybrids in which the American parents used were mostly the acclimatised Upland types from different parts of India, while the Asiatic parents were forms of *G. herbaceum* and *G. arboreum*. The hybrids produced from these were, however, sterile and efforts to induce fertility in them were successful only when they were back crossed to American types. In January 1940, the Committee sanctioned, in view of the rapid strides that the scheme had made, an expansion of the scheme so as to include cytological studies during the remaining period of its continuance. In July 1943, the scheme was extended for a further period of five years from the 1st November, 1943.

During the year under review, ten synthetic types derived from the advanced generations of the back crosses, [(American x Asiatic) x American cottons], were tested in big replicated plots against *Suyog*, the local Asiatic improved type and Co. 2, an American type from Coimbatore growing fairly well at Surat. Five of them were found to be on a par with *Suyog* and one significantly better than Co.2 in respect of yield. Though they were as good or better than *Suyog* in staple length, they were found slightly inferior to it as regards ginning outturn.

Of the 240 cultures tested in progeny rows, twelve selections combining good yield, high ginning and long staple have been retained for further study.

During the year under report, the interspecific material is stated to have been sent to seven places in India for trial and the results, received from five places so far, revealed that at Viramgam, Broach and Jalgaon the local improved strains K.72-2, *Vijaya* and *Jarila*, which were used as controls at these centres, respectively, gave significantly better yield and higher ginning outturn than the interspecific cultures. At Gadag and Kopergaon (Deccan Canals) two of the interspecific strains were found promising at each of the places. The results of the previous year at Adilabad (Deccan) and Coimbatore are stated

to have shown that two strains possessed the desirable combination of characters.

It is reported that new crosses have been effected with the object of introducing into cultivated cottons some of the desirable characters of the wild species, such as, *G. Anomalum* and *G. Tomentosum* and the material is said to be in the  $F_2$  generation.

(g) **Scheme for Improvement of Dharwar-American Cotton.**—This scheme was sanctioned by the Committee in July 1941 for a period of five years, and commenced work in April 1942. It was extended in February 1947 for a further period of five years. The object of the scheme is to improve the Dharwar-American cotton crop grown in the Kannada districts of the Bombay Province, the adjoining areas of the Madras Province and in Hyderabad and Mysore States. This is sought to be achieved by the development, by selection or hybridisation, of an early maturing type, superior to Gadag 1 in respect of yield, staple length and ginning percentage, and which is, at the same time, more resistant to 'red-leaf' blight. The work is being done at Gadag, where conditions of soil, climate, rainfall, etc., are suited to the cultivation of *hirsutum* cottons.

The season under report is stated to have been abnormal owing to continuous heavy rains and absence of the cold easterly winds. The crop in consequence matured very late with defective boll opening, and suffered to some extent from "black-arm."

During the year, three synthetic strains, *viz.*, 9-3, 9-10 and 9766, derived from the cross (Gadag 1 x Co. 2), were compared in large scale replicated yield trial against G. 1 as control. The results indicated that strain 9-3 was the best, combining all the desirable economic characters including early maturity. It has been adjudged suitable for spinning 40s H.S.W.C. against 30s of the control. It is stated that efforts are being made through selection to minimise the percentage of immature fibres, which is the main drawback of this strain. In another experiment sibs of the 2 cultures, 9-3 and 9-10, were tested in progeny rows against G. 1, 4411 and 9766 and it was found that those derived from 9-3 showed the best all-round characters.

It is reported that village trials of 9-3 and 9-10 with G. 1 were conducted at Ron, Gadag and Hossahalli, for the first time during the year. At Ron,



the experiment failed due to heavy rain ; at Gadag the yield of 9-3 was on a par with that of G. 1, while at Hossahalli, 9-3 gave significantly superior yield compared with G. 1. Strain 9-10 was found to be very late at both the places.

In the tests with some 68 new selections from hybrid material in the F<sub>3</sub> stage, those involving M4 and Perso-American gave the best all-round performance. The interspecific material from Surat did not prove to be superior to the Dharwar-American strains.

With the object of studying the effect of the application of ammonium sulphate on the incidence of red leaf blight, nitrogen at 3 levels 20, 40 and 60 lbs; per acre is stated to have been applied to G. 1 in a randomised replicated experiment in accordance with Prof. Dastur's instructions. Although progressively higher yields were obtained by the increasing dose of nitrogen, there was no differential effect in the incidence of red leaf. It has been suggested that this might probably be due to the very mild nature of the disease during the season under report. The trial is proposed to be repeated.

(h) **Scheme for investigation of 'small leaf' disease of cotton.**—This scheme is an off-shoot of the Mungari Cotton Breeding Scheme. It was sanctioned by the Committee in January 1942, for a period of three years and came into operation on the 1st June, 1943. It was extended in August 1946 for a further period of two years. The object of the scheme is to investigate the causes of "small leaf" disease of cotton, and to determine whether or not the disease is of virus origin. The work is being carried out at Poona.

During the year under review, experiments on transmission of the virus of the disease to healthy plants of cotton were carried out at the Government Main Farm, Raichur, through the agency of the undermentioned insects :—

1. An unidentified jassid.
2. *Empoasca devastans*.
3. *Empoasca* sp.
4. *Aphis gossypii* and
5. An unidentified *Membracid*.

In no case, however, clear evidence of the transmission of the virus of the disease was obtained. In a few plants inoculated with unidentified jassid, smalling of leaves was noticed, but the symptoms did not progress. It is proposed to start transmission experiments early this season as during the year under report, this was not possible owing to late receipt of sanction to the scheme.

## SIND

(a) **Scheme for production of long staple cottons in Sind.**—Ever since the opening of the Lloyd Barrage, the question of the establishment of a compact block of long staple cottons in Sind has engaged the attention of the Indian Central Cotton Committee. Although attempts in the introduction of long staple quality cottons in Sind in the past have not met with the success it was anticipated they would, the project, nevertheless, is considered to have possibilities which are well worth investigation. Accordingly, a five-year scheme for cotton-breeding investigations for the production of long staple cottons has been launched. The scheme came into operation in April 1940. In July 1944, the Committee sanctioned an extension of the scheme for a period of five-years from the 19th April, 1945. The experimental stations are situated at Mirpurkhas and Oderolal. The most important problem to be tackled is to see whether high quality cottons, preferably of the American types, but possessing a better staple than Sind Sudhar, can be produced. The aim is to evolve a cotton longer than 1-1/16" which would spin about 60 counts and give a high acre cash value of *kapas* relative to the commercial cotton crops now being grown in Sind. This is sought to be achieved by selecting extra long staple Upland types from a wide range of places all over the world, and after testing them under Sind conditions, hybridising the best of them with the hardiest Upland types of cotton, such as Sind *Sudhar* and M4, now grown on a commercial scale in Sind.

During the year under review, a number of single plants combining yield, staple and ginning along with the desirable agricultural characters in the field were selected from a large F<sub>2</sub> population of the hybrid material, and their progenies of the F<sub>3</sub> generation were tested under replicated trials during the 1943-44 season. Progenies which, in addition to maintaining the same yield and ginning out-turn as the Sind-American controls (S.S.\* and M4), possessed an extra staple length of  $\frac{1}{8}$  inch and more, were further tested in replicated

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\* S.S. = Sind *Sudhar*.

F<sub>4</sub> progeny row trials in 1944-45. Of a large number of such F<sub>4</sub> progenies tested, about half-a-dozen held out promise as the following results show:—

S. No.	Parentage.	Strain No.	Yield.		Staple mm.	Ginning %
			ozs. per plot (actual).	Maunds per acre (Calculated).		
1.	(M4 × Wilds) M4 .. ..	45/2	25	18.4	28	32
2.	Wilds × S. S. .. ..	7b/4	24	17.7	28	33
	M4 Control .. ..	..	26	19.2	24	33
	S. S. Control .. ..	..	22	16.2	23	32
3.	D. T. Webber × M4 .. ..	41/4	32	23.6	29	32
4.	Wilds × M4 .. ..	32/4	31	22.9	28	32
5.	Wilds × M4 .. ..	33a/2	30	22.1	28	31
6.	Wilds × M4 .. ..	33b/5	30	22.1	28	32
	M4 Control .. ..	..	39	28.7	23	31
	S. S. Control .. ..	..	20	14.8	23	29

These 6 long staple strains were introduced into a replicated Varietal Test in 1945-46 season at Mirpurkhas. Out of the six strains tested only two, 41/4 and 45/2, proved healthy and productive in the field and ultimately gave satisfactory yields. While they were both good ginners, only 41/4 possessed good staple and consequently fetched a premium higher than that of the best East Africans, while 45/2 was inferior to it though better than the M4 control.

Strain.	Yield in maunds per acre.	Ginning.	Grader's Report.	
			Staple length.	Premium above contract rate (Rs. 458 on 16-4-1946).
41/4 S. G. .. ..	12.48	33.5	1½"	Rs. 550
.. R. G. .. ..	..	..	1-3/16"	510
45/2 S. G. .. ..	10.88	35.3	31/32"	270
.. R. G. .. ..	..	..	1"	240
M4 Control S. G. .. ..	11.76	34.4	7/8"	200
.. R. G. .. ..	..	..	29/32"	170

With a view to verify these results and test the strains extensively, district varietal trials were arranged at 5 representative centres during the 1946-47 cotton season.

The calculated acre-yields in maunds and seers for the different centres on an average of early and late sowing are as follows :—

Strain.	Mirpurkhas.	Denisar.	Bodar.	Oderolal.	Dokri.
45/1	21 4½	9 1½	13 9	15 34½	6 16
45/2 ..	21 31	8 11½	12 19	16 5½	5 8
41/4 ..	18 30½	8 1½	11 33	15 30½	7 6
M4 Control ..	24 23	10 18½	14 7	16 36½	7 32

The ginning percentages and Grader's Report furnished by the Technological Laboratory are presented below :—

Strain.	Mirpurkhas.			Denisar.			Oderolal.		
	G. P.	Staple length.	*Pre-mium	G. P.	Staple length.	Pre-mium	G. P.	Staple length.	Pre-mium.
		(inch.)	Rs.		(inch.)	Rs.		(inch.)	Rs.
45/1 ..	33.7	¾	200 on	33.4	¾	190 on	33.8	¾	195 on
45/2 ..	34.6	¾	135 on	33.0	¾	100 on	33.0	¾	125 on
41/4 ..	34.6	1½	255 on	32.7	1½	205 on	33.0	¾	195 on
M4 Control ..	32.7	¾	140 on	33.8	¾	100 on	32.2	¾	95 on

\* Above Contract rate of Rs. 430 on 19-4-1947.

The above results indicate that during the 1946-47 season, the long staple strains have shown a tendency to lag behind the M4 control in yield. As regards ginning, all the 3 strains were as good as M4. In respect of staple length, strain 41/4 is outstanding as it has been assessed by Commercial graders at 5/32 of an inch longer than M4 and valued on an average at Rs. 106 over M4.

(b) **Scheme for bollworm investigation and clean-up campaign in Sind.**—

This scheme was sanctioned by the Committee in January 1940, for a period of 3-1/2 years, and it came into operation on the 1st September, 1940. The work proposed to be carried out under the scheme during the first seven months was (a) to survey the host plants during the off-season of cotton, and (b) to test the efficacy of the implements evolved elsewhere. During the remaining period, it is proposed to carry out a clean-up campaign and to study its effect on succeeding year's crop. The investigations are confined to the Tharparkar district.

In July 1943, the scheme was extended for a period of three years, with effect from 1st March, 1944. During the extension it is proposed (1) to survey all the cotton growing tracts of Sind to study the status, distribution and the various host plants of the pest, and to determine the time suitable for carrying out control measures, (2) to carry out control measures in a compact area of 1,200 square miles in the rice tract of Tharparkar district and to extend them to the Hyderabad district during 1946-47. The scheme terminated on the 28th February, 1947.

It is reported that the carry-over of the pest from one season to another was mainly by cotton itself (the pest harbouring in the stubbles left over after harvesting of the crop) and other host plants like *patiteer* (*Abutilon* sp.), Lady's finger and holly-hock. Destruction of all the host plants during the off-season was the only effective remedy and as in the Punjab, *kudali* was found to be a more suitable implement for uprooting cotton stubbles than the plant puller.

In all, 5 successive clean-up campaigns were undertaken in the worst affected areas in the Tharparkar and Hyderabad districts, covering an area varying from 500 to 1200 sq. miles in each case with about 87,000 to 1,12,000 acres under cotton. The area cleaned during each campaign ranged from 96 to 98% of the total cotton area; the remaining 2-4% remained uncleaned, being Government nonbarrage land. As a result, the pest was practically absent from the cleaned area from May to July. During August to November, the attack on buds and bolls in the treated area was 3-5 times less in 1942 and 2-3 times less in 1943 than that in the uncleaned area. As a result of the night caging experiments it is reported that the difference in yield obtained from the caged and uncaged plants in the cleaned area was negligible as compared to the difference in the yield obtained from similarly treated plants in the uncleaned area which was

very marked. The average yield per acre from the cleaned area was higher than that obtained from the uncleaned area by about 2 mds. or 25.6% in 1942-43 and 1.7 mds. or 21% in 1943-44; in addition, the quality of cotton was also better. In 1943-44, with about 93,000 acres under cotton, the increase in yield was 1,39,500 mds. estimated at 28 lacs of Rupees.

It has been observed that the attack of the pest remained low throughout the Province during July, gaining, however, in intensity after this month; early maturing varieties like M.3 were able to escape the severity of attack to a great extent. Jassid and Pink-bollworm, which were minor pests, made their appearance in a severe form in 1944, 1945, and 1946 in the Hyderabad and Tharparkar districts during the months of September to November. The humid and mild climate of these districts is reported to be favourable for the propagation of these pests which threaten to become serious and thus offer handicaps to the successful cultivation of cotton.

### PUNJAB.

#### (a) Scheme for improvement of cotton in Jhang district, Punjab.—

This scheme is an offshoot of the Punjab Botanical Scheme and was sanctioned by the Committee in July 1944 under certain conditions for a period of five years. At its meeting in January 1945, however, the Committee reduced the sanctioned period of the scheme from five to two years as it decided to review the position at the end of 18 months in regard to the extent of the elimination of *desi* cotton in the Canal Colonies. The scheme came into operation on the 1st March, 1945. In August 1946, an extension of the scheme was sanctioned for a period of 3 years from the 1st March, 1947. The object of the scheme is to produce long staple American cotton over a compact block of 1,14,000 acres in the district of Jhang, where at present medium staple cotton like 4F is grown.

It is reported that two promising strains, 244F and 268F, which during the past five years, gave consistently better yields than 4F, the strains now under cultivation in the tract, have again proved to be better yielders than the standard variety. 268F has been found to be the better of these two strains, combining all the desirable economic characters, *viz.*, high yield, good ginning outturn—34% against 31.5 of 4F,—spinning quality—39s to 44s H.S.W.C. against 25s of 4F—and a high degree of jassid resistance. It is stated that in addition to this strain, there are also other new selections, *viz.*, A.C. 96, A.C. 71 and

365F, which are promising in all respects. 268F is said to fulfil the objects in view and the prospects of converting the medium stapled cotton area of the Jhang district into a long stapled area are considered bright.

**(b) Scheme for improvement of cotton of south-eastern districts of the Punjab.—**

This scheme is an offshoot of the Punjab Botanical Scheme and was sanctioned by the Committee in July 1944, subject to certain conditions, spread over a period of five years. At its meeting in January 1945, the Committee, however, reduced the sanctioned period of the scheme from five to two years, as it decided to review the position at the end of 18 months in regard to the extent of the elimination of *desi* cotton in the Canal Colonies.

The object of the scheme is to replace the area under *desi* cotton by high quality American cottons in the irrigated portions of the tract without, however, losing sight of the desirability of breeding improved *desi* types which will continue to be grown in certain parts of the districts in question. The scheme came into operation at Hansi on the 1st March, 1945. In August 1946, an extension of the scheme was sanctioned for a period of 3 years from the 1st March, 1947.

As a result of the work done already on *desi* cottons, Mollisoni 60A<sub>2</sub> has been under distribution since 1940, but as it appeared to show signs of deterioration, the breeding of a selection to replace it was undertaken. Accordingly a new strain, 231 Rosea, possessing significantly higher yield, greater ginning percentage and slightly superior technological properties to M. 60A has been obtained which is considered suitable for replacing M. 60A<sub>2</sub>.

In view of the demand for medium stapled cottons in preference to short stapled types, work on building up of strains by crossing Punjab Mollisoni x Chinese Million Dollar and Jubilee x *anomalum* was taken up. As a result, 5 D.C. strains were evolved and tested against the control, M.60A<sub>2</sub>. Out of these, 4 gave yields comparable with that of the standard and a satisfactory ginning outturn. Strains D.C. 100 and D.C. 102, which have been found to combine all the desirable characters, are proposed to be included in large scale tests during the next year.

As regards the work on American cottons, 216F, which has been included in large scale yield tests, appears most promising and is expected to cover 870 acres during 1947-48. As earliness is a desirable factor for successful cultivation of cotton in this zone, crosses between Cambodia and Punjab-

American types were effected resulting in several new strains three of which, AC105, AC107 and A94, have manifested superiority in yield and ginning percentage over the standard 216F. With a view to exploiting the economic possibilities of this hybrid material to the greatest possible extent, further selection work is stated to be in progress.

(c) **Scheme for improvement of cotton in south-western tract, Punjab.**— This scheme is an offshoot of the Punjab Botanical Scheme and was sanctioned by the Committee in July 1944, for a period of five years. At its meeting in January 1945, however, the Committee reduced the sanctioned period of the scheme from five to two years as it decided to review the position at the end of 18 months in regard to the extent of the elimination of *desi* cotton in the Canal Colonies. The scheme came into operation at Multan on the 1st March, 1945. In August 1946, an extension of the scheme was sanctioned for a period of three years from the 1st March, 1947.

It is reported that as a result of the work done during the last twelve years at the Multan sub-station, three improved varieties, *viz.*, 119 Sanguineum, a *desi* strain, 124F (Victory) and 199F (Sultani), two American strains, have been distributed to the cultivators of the tract. Strain 119 Sanguineum, on account of its higher yield, better ginning percentage and greater earliness than the Sanguineum mixtures, spread over 50,000 acres during the first year of its release; its further progress, however, has stopped owing to the change in the Departmental policy of discouraging the cultivation of *desi* cottons during the war. Strain 124F, renamed 'Victory', has ousted 289F/K.25 and 289F/43, chiefly on account of its excellent yield, high ginning percentage, good technological properties, early maturity and drought-resistance. It is reported to cover several lakhs of acres in the three districts of Multan, Muzaffargarh and Dera Ghazi Khan and to rank as the most important commercial variety of the tract. The second American strain, 199F, renamed 'Sultani', has out-yielded all the commercial varieties in the region; further it possesses a high ginning outturn and very good lint qualities. Its acre cash value is higher than all the acclimatised American varieties. Several new promising strains, particularly good in staple length, are on hand and it is hoped to evolve even better strains than 'Sultani'.

(d) **Scheme for improvement of cotton in Lower Bari Doab Canal Colony.** — This scheme is an offshoot of the Punjab Botanical Scheme and was sanctioned by the Committee in July 1944, spread over a period of five years.



At the meeting of the Committee in January 1945, it was decided to reduce the sanctioned period of the scheme from five to two years, it being agreed to review the position at the end of 18 months in regard to the extent of the elimination of *desi* cotton in the Canal Colonies. The scheme was put into operation on the 1st March, 1945. In August 1946, an extension of the scheme was sanctioned for a period of three years from 1st March 1947.

The object of the scheme is (i) to improve the purity of the 289F/K.25 crop and breed from it jassid resistant strains, and (ii) to evolve high ginning types of 289F/43.

During the year under review, the trials with 6 reselections from 289F/K.25 and two selections from the cross 289F/K.25 x 289F/43 showed that the reselection 330F was better than its parent type in regard to yield of *kapas*, ginning percentage, technological characters and jassid resistance. Another selection, A.C.85, was also found to be very promising in all the economic characters. Of the reselections obtained from the commercial variety 289F/43, four strains, 238F, 260F, 261F and 262F, are stated to possess higher ginning percentage than the parent variety. In replicated yield tests carried out with these strains 238F proved to be better than the others, its yield being on a par with 289F/43 while its technological characters were superior to those of the control.

(e) **Physiological Scheme.**—Arising out of the work done in the Punjab under this scheme and in view of the desirability of investigating the applicability of the results achieved under it to other areas, the Committee, at its meeting in January 1944, sanctioned a new scheme for CottonP hysiological Research with headquarters at Indore. Under this scheme it is proposed to commence work in three cotton tracts, *viz.*, (1) irrigated, (2) partially irrigated and partially rainfed and (3) totally rainfed. The province of Sird will receive special attention as the problems to be tackled there are almost similar to those in the Punjab, though the climatic and soil conditions are different. The aim will be to find out the fundamental facts and then attempt to apply the knowledge gained into practice for mproving the quality and quantity of ootton in general. In February 1947, the scheme was extended for a period of five years, with effect from the 1st March, 1947.

The object of the scheme is to obtain, as far as possible, precise knowledge of the inter-relationship between the soil and climatic factors and the growth of different varieties of cotton and to endeavour to utilise the knowledge thus gained for improving the quality and yield of cottons in general.

During the year under report an attempt was made to determine the physiological differences, if any, existing between the cultivated varieties of American cottons grown in Sind and the Punjab, to study the effect of climatic conditions on the physiological characters of these varieties and to find out if possible the physiological or biochemical factors that may be associated with the earliness and lateness in maturity, characteristic of different strains. The main conclusions which may be regarded as tentative are summarised below.

The early maturing varieties produced less vegetative growth, as measured by the dry weight method, than the late varieties both in Sind and the Punjab. The formation of the first fruiting branch occurred at a relatively lower node and at an earlier date in an early maturing variety than in a late variety. The square period was the same for all varieties. The early varieties showed a higher setting percentage of buds into flowers than the late varieties with the exception of 289F/124. Under the climatic conditions of Sind the reproductive phase set in earlier than in the Punjab. The buds appeared in 38 days after sowing in Sind and in 57 days in the Punjab. The development also proceeded more rapidly in Sind than in the Punjab. The buds matured into flowers six days earlier and flowers matured into bolls twelve days earlier in Sind than they did in the Punjab. As the maturation period of boll under Sind conditions was only 38 days, it did not appear to be a favourable condition for the growth of lint in length. The genetic character for long lint in *hirsutum* cottons may not perhaps find full expression under Sind conditions. The vegetative growth and flower production declined as the crop was planted late. The buds appeared a little earlier as the sowing was delayed. There was an increase in the setting percentage of buds into flowers and flowers into bolls as the crop was planted later. The above-mentioned data are being statistically analysed.

Further work on the growth of Sea Island cotton bearing the leaves with *hirsutum* characters has yielded two important results.

(i) So far the hybrids of *hirsutum* and *barbadense* plants showed no stability and split up into a variety of forms in the first two generations. In the third generation it was observed that seeds from a selected plant gave a good number of individuals showing the same combination of parental characters. This was indicative of some hope by more concerted efforts of getting stable plants of required combination of characters.

(ii) The behaviour of these plants when sown in May was normal, i.e., the yield was the same as in plants sown in April. That was not the case with pure *barbadense* plants, which required to be planted in March-April for getting some yields.

The chemical method developed in the scheme for the detection of mixtures of American cottons with *desi* has been found to give reliable results for determining quantitatively the percentage of coarse *desi* (*Arboreum*) in a mixture of American with coarse *desi*. There was also now a possibility of using the same method for detecting a mixture of coarse *desi* with fine *desi* cotton. The causes of the preferential absorption of one dye by *desi* cotton and the other by the American cotton from a mixture of the two dyes were under investigation.

The problem of the causes of higher yields of seed cotton obtained under wider spacing in the black cotton soils of Gujerat was further investigated. The chemical analysis of the leaves of the crop grown in 1944-45 season had indicated a higher concentration of potash as the spacing became wider but it was now found that higher potash content under wider spacing was not causing an increase in yields. The chemical analyses of the leaves of the crop in the experiment comprising of three spacings and three nitrogen treatments laid out in 1945-46 season showed that there was an accumulation of nitrogen in the leaves of manured plants under wider spacing while there was a marked fall in the phosphate content under the same combination of treatments. The results suggested that the full utilisation of the absorbed nitrogen (as well as potash) for the purposes of growth and yield did not occur in the widely spaced manured crop on account of a low phosphate content. In order to obtain evidence for this conclusion, an experiment to study the effect of nitrogen, potassium and phosphorous singly and in combination with one another on the growth and yield of cotton under four different spacings was laid out in 1946-47 season. The results showed that neither potash nor phosphorous singly or in combination had any effect on yields under the four spacings while nitrogen had significantly increased the yields under all spacings. Phosphorous or potash in combination with nitrogen had also produced an appreciable, though not significant, effect on yield. The most important result, however, was that the increase in yield due to phosphorous in the presence of nitrogen was greater in the case of widely spaced crop than in the case of closely spaced crop. The second order interaction NPS was also found to be appreciable. This was not

the case with potash in combination with nitrogen. The data, therefore, further supported the conclusion that phosphorous in the case of manured crop became a limiting factor under wider spacings and the application of superphosphate removed the deficiency of this element and a marked increase in the yield of the widely spaced crop was thus obtained.

The main finding of the whole investigation was that the higher yield obtained under wider spacings was caused by greater availability of nitrogen. When 100 lb. N in the form of groundnut cake or sulphate of ammonia was applied, phosphorous that was available from the soil was not adequate for the full utilisation of nitrogen absorbed by the widely spaced crop and an application of phosphates was necessary. Thus application of phosphate in combination with nitrogen would prove beneficial to the cotton crop which was as a rule very widely spaced in Gujerat.

Nearly similar results were obtained under Indore conditions except for the difference that the highest yield was obtained in the closely spaced crop (1/2 sq. ft. per plant) and not in the widely spaced crop.

The investigations on *tirak* in Sind-American cottons have been finally completed. The results of the experiments conducted in 1946-47 have been written up and submitted to the Director of Agriculture, Sind. The District staff have been instructed to give practical effects to the recommendations made for cotton sowing with close spacings in co-operation with the staff of the scheme. A leaflet in English and in Sindhi briefly summarising the main findings and practical recommendations has been written up and was in the press.

It was again confirmed by experiments that the yellow-red leaf on light sandy lands could be effectively remedied by the application of sulphate of ammonia and a substantial increase in yield could be obtained by such applications. More extensive work to demonstrate to cotton growers the remedial effect of sulphate of ammonia on the yellow-red leaf has been undertaken during the current season.

### CENTRAL PROVINCES AND BERAR.

**Central Provinces and Berar Cotton Breeding Scheme.**—The Central Provinces and Berar Cotton Breeding Scheme was sanctioned by the Committee for a period of five years with effect from the 1st April, 1939, and replaced the Central Provinces Botanical Scheme which terminated on the 31st March,

1939. It was extended from the 1st April, 1944, for three years and for six months from 1st April 1947. The object of this scheme is to evolve, by selection or hybridisation, suitable new strains of cotton which can compete successfully with the local *Oomras* in point of ginning outturn and yield and which, at the same time, possess a staple capable of spinning between 20s and 25s highest standard warp counts. The scheme is worked at Nagpur and at Akola, to suit the special requirements of the Central Provinces and Berar, respectively.

The Central Provinces Cotton Breeding Scheme is concerned with the breeding of improved strains of cotton suitable for Nagpur, Wardha, Chanda and parts of Chhindwara districts and capable of replacing the ordinary short staple mixed cotton of these areas. The scheme at Akola is concerned with the production of high-yielding superior strains of cotton suitable for the Berars and possessing a staple of at least  $\frac{3}{4}$ " , with the softness, colour and strength of V. 434 and a ginning percentage above 33. Breeding of high ginning new strains of Buri cotton for the Burhanpur tahsil also forms part of this scheme.

During the year under review the season was reported on the whole to have been unfavourable to the cotton crop. The average outturn per acre was 329 lbs. against 322 in the previous year. The area covered by V.434 was 289,990 acres against 316,718 in the previous season and that by *Jarila* 1,452,103 acres against 1,616,661 last year. The reasons for the fall in acreage have not been stated.

Field tests of H.420 against V.434, *Jarila* and local *Jadi* carried out in representative localities of the Province revealed the superiority of H.420 over V.434 and *Jarila* in a majority of the centres. In Nagpur district it gave the highest yield closely followed by local *Jadi* and V.434. In Nimar district, however, it was equal to *Jadi*, while in Wardha and Chhindwara districts, it was closely followed by local *Jadi*. In all the districts, it has definitely proved itself to be superior to V.434 and *Jarila* and distinctly superior to both in quality of lint. It is reported to have given the highest cash value per acre in all the districts except Wardha and to be rapidly replacing *Jarila* and even local *Jadi*, owing to its popularity.

The yield trials in Berar were conducted at 13 places with H.420, V.434, *Jarila* and local *Jadi*; in 8 of them, H.420 yielded more than the local *Jadi*. Compared with *Jarila*, the yields of H.420 were better than those of *Jarila* in the Akola, Amraoti and Yeotmal districts and superior to V.434 in Akola and Yeotmal districts.

Buri 107, which is grown on a large scale in Burhanpur Tahsil, has spread to certain parts of Berar, particularly in Amraoti district. It was grown over 23 acres on the Akola Farm and its yield averaged 248 lbs. per acre against 333 lbs. in the previous year. As a result of further selection improved strains showing a definite improvement over Buri 107 are reported to have been evolved.

### MADRAS.

(a) Scheme for Improvement of Mungari Cotton in Madras Province.— This scheme was sanctioned by the Committee in 1937 and has for its object the evolution of strains suitable to the red soils and combining the quality of the Westerns with the yield of Mungari, to replace the inferior Mungari, the existence of which affords opportunities for mixing, with the result that the better cottons of the tract fail to get their proper value. On the black soils of Anantapur, Bellary and Kurnool districts of the Madras Province, cottons commercially known as Westerns and Northernns are grown. These are medium staple varieties, capable of spinning 24s to 32s. The type of cotton grown on the red and mixed soils, on the other hand, is that known by the name of Mungari, which is a coarse, short staple variety, similar to Bengals, and not fit to spin more than 8s or 10s. The co-existence of these widely different varieties in the same tract favours undesirable mixing, with the result that the better cottons suffer in value. It is to overcome this difficulty that the Mungari scheme was started. In January 1942 the scheme was extended for five years from the 24th May 1942 and in February 1947 for a further period of three years.

It is stated that, during the year under review, selection 881F, which had previously given consistently promising performance both in the varietal tests on the farm and in the village trials on cultivators' fields, maintained its parity in regard to yield with the local at Adoni and at different centres in Bellary, Anantapur and Kurnool districts. The behaviour of *Umri* and *Jarila* in three trials is said to have been erratic. In respect of quality, ginning and adaptability, 881F is reported to be the best selection obtained so far and the cultivators are said to have expressed their desire to multiply it voluntarily.

Thirty-four single plant selections from the twenty-one promising cultures of the previous year's progeny-row trials and twenty-two plants of the second generation hybrids were compared with the local for yield and earliness in replicated row tests. Of these, three progenies, *viz.*, 3943, 3963 and 3961 derived from crosses with *Jarila* or V.434, are reported to be superior to the local in yield and staple length and equal to it in ginning.

During the season, owing to low incidence of stenosis, all varieties included in the test for comparative study of the degree of resistance to small leaf were practically free from attack. An examination of their economic characters revealed that three strains, G9, Hiroshima and Chutchica 12, were superior to local in respect of yield. Selections were made from those types for further study.

(b) **Scheme for Improvement of Cocanadas cotton in Madras Province.**— This scheme was sanctioned by the Committee in November 1938, for a period of five years. The work was started from 1st February, 1940. The object of the scheme is to improve the yield and ginning percentage of Cocanadas cotton, preserving at the same time the light pinkish colour of its lint owing to which it is in great demand for the manufacture of dyed yarns. In July 1944, an interim extension of 6 months from 1st February, 1945, was sanctioned to complete the harvest season and in January 1945, a further extension of 4½ years from 1st August 1945 was sanctioned.

It is stated that during the year under review, nine promising families consisting of three old strains and six new selections were tested in big bulk trials against two controls, *viz.*, G.1 and Palnad bulk in duplicate sowings in August and September. One of the new selections, 599A 4-1, excelled both the controls in respect of yield in two centres while six of the selections were on a par with the controls. All these seven selections are said to possess a deeper colour of lint than the controls.

The study of fourteen inter-strain and four inter-forma hybrids in replicated row trials showed that derivatives of 336 in the inter-strain crosses and Manipur Khaki in inter-forma group contained the largest number of desirable combinations.

Two early white varieties, *viz.*, 881F and *Jarila*, were compared with local *chinnapathi* and the results obtained indicate that in respect of lint length and ginning, both the types are superior to the control but on a par with it in yielding capacity. Arrangements are said to have been made to sow scattered blocks of 881F and *Jarila* in the Kharif season also.

The improved Cocanadas strain, G.1, has been adjudged superior to unselected bulk in quality both by the trade and the consuming mills. Its yield performance was in no way inferior to that of the local and the cultivator is expected to realise an additional Rs. 12/- per acre.

Strain G.1 is reported to have had a considerable natural spread in Nellore district and the immediate substitution by G.1 in the whole of this district and in the red northern area of Kurnool district, which at present grow a very light brown, inferior, non-descript variety, is expected to tone up the quality of the cotton marketed from this area. A survey of the isolated red northern pockets in Kurnool and Anantapur districts disclosed that the variety was cultivated on marginal lands, prized for its strength and adaptability to poor soils, and capable of being replaced by the improved G.1.

(c) **Scheme for breeding Cambodia cotton in ceded districts in Madras Province.**—This scheme was sanctioned by the Committee in July 1944, spread over a period of five years.

The co-existence of a multiplicity of varieties differing in quality, the paucity of variation in the indigenous or hybrid *desi* material resulting in no progress being made in the improvement of the 'Northerns' and 'Westerns' cottons and the prospect of bringing a million acres or more under the Tungabhadra irrigation project are the main reasons for undertaking this scheme. The aim is to investigate the possibilities of replacing *desi* types by American varieties. The objects of the scheme are (1) to evolve a long staple American variety capable of giving good yields when grown as an irrigated *rabi* crop, and (2) to breed an exotic type suitable for cultivation in the unirrigated regions not served by the Tungabhadra project.

The breeding trials were conducted at three centres—Siruguppa, Hagari and Nandyal representing three distinct regions, *viz.*, (1) irrigated black soil, (2) unirrigated black soil, subject to variable rainfall, and (3) unirrigated black soil, characterised by heavy rainfall and early season.

The year under review is stated to have been, on the whole, favourable for cotton. During the year, in the yield trial conducted at Siruguppa under irrigation, seven of the best of the American types of the previous season, six fresh synthetic tetraploids from Surat and three types from Nanded were tested against H.A. 11; four varieties, *viz.*, M.A. II, Parbhani American, LII-42-8079 and LII-40-594, are reported to be significantly superior in yield to the control. Of these M.A. II was distinctly earlier in habit while Parbhani American, three types from Nanded and three Surat backcrosses were outstanding in lint length.



The possibility of increasing the mean values of the economic characters of H.A. 11 by reselection has been undertaken and the selections made from bulk H.A. 11 were tested under irrigated and rainfed conditions in three centres, Siruguppa, Hagari and Nandyal. Eight cultures were found to give significantly superior yields to H.A. 11 bulk. Their lint length varied from 23 to 29 m.m. and ginning outturn from 32 to 40%.

In the unirrigated trials conducted at Siruguppa and Hagari H.1 cotton, which was used as control, is said to have been subjected to severe wilt attack and most of the Cambodia varieties included in the trial compared favourably with the control in respect of yield.

### UNITED PROVINCES.

**Scheme for hybridisation in arboreum cottons.**—This scheme was sanctioned in July 1943 and it came into operation on the 1st April, 1944.

The object of the scheme is to evolve strains of *desi* cotton, primarily for the rainfed areas of the Province, which, while possessing the earliness, hardiness, yield and ginning qualities of C.520 would be capable of spinning higher counts than the latter. This is proposed to be achieved by crossing some of the promising strains obtained under the United Provinces Botanical Scheme with superior quality cottons, such as *Jarila*, *Verums*, *Indicums* (*Banis* and *Gaoranis*), *Shans* and *Million Dollars*.

During the year under review, work on *desi* cottons was carried out at the Bulandshahr and Raya experiment stations and the hybrid material available in the different stages of F1, F2 and F5 to F8 was studied. Successful fresh hybrids were obtained and these will be tested during the ensuing season. A few selections are stated to have given significantly better yield than the control whilst some others were found to be superior to the parental types in one or more economic characters.

The work on American cottons has for its object the evolution, by hybridisation or selection, of strains superior to Perso-American in yield and quality. Several successful crosses have been made, using Perso-American, Punjab-American, Parbhani-American, Cambodia, *Irans* and *M.4* as parents and, from these, selections superior to the parents in one or more economic characters have been obtained.

### HYDERABAD STATE.

(a) **Gaorani cotton improvement scheme.**—This scheme, which is an offshoot of the Hyderabad Botanical Scheme, was sanctioned by the Committee in July 1943, for a period of 5 years from the 1st April, 1944.

The objects of the scheme are:—(1) production of suitable, fine quality wilt-resistant strains of *bani* cotton for the three different zones, viz., North-East, Central and South-West portions of the *Gaorani* protected area, and (2) evolution of a suitable upland strain for the highlands of Adilabad. Work in connection with the production of wilt-resistant types of *Gaorani* is being conducted at Parbhani as part of the newly sanctioned scheme for the improvement of *Oomras* cotton.

During the year under review, G.6 covered some 4,00,000 acres in Nanded district. Two other improved strains, G.12 F-2 and G.6.E-3, covered 2,000 and 6,000 acres in Latur taluq and Wadi Buzurg village in Nanded taluq, respectively.

As in previous years, four *Gaorani* improved strains—G.6.E-3, G.-12,F-2, G.145 and G. 160—were tested against *Gaorani* 6 in randomised replicated varietal trials at Nanded. The results obtained indicated that G.6.E-3 was the best spinner, spinning 45s H.S.W.C. while G.145 gave the highest yield. Out of another set of six new improved varieties tested against G.6, only two sub-strains of G.6.E-3, viz., II-42-7310 and N-II-43-165, appeared to be promising in respect of wilt-resistance.

Three new improved varieties, viz., II-39-5354, M.II-42-344 and M.II-42-350, were included in a comparative varietal trial at Madhol, with *Gao.6* and G.6.E-3 as controls. None of the new varieties, however, proved to be superior to the controls in field or economic characters.

Preliminary tests in connection with the evolution of a suitable Upland strain for the highland area of Adilabad were conducted with thirty Upland strains using Adilabad-American and Parbhani-American as controls, in a replicated trial on a cultivators' field at Adilabad. Of these, six strains proved promising and they will be further tested in the ensuing year.

During the year, district trials were conducted with three or four improved varieties of cotton at eleven centres in the *Gaorani* protected area and in two places in the Adilabad plateau. Results of the trial at Hingoli were not received.

Of the varieties tried at the other centres, *Gao.160* and *Gao.12-F-2* gave significantly better results than the control.

(b) Scheme for improvement of cotton of Oomras tract in Hyderabad State.—This scheme was sanctioned by the Committee in August 1940, for a period of five years, and it came into operation on the 8th October, 1941 and terminated on the 3rd March 1947.

The scheme was concerned with the improvement of cotton of the 'Oomras' tract of the State by :

- (1) the development of an early maturing and high ginning strain of *Gaorani 12F*, for the eastern half of Parbhani district and Hadgaon taluq of Nanded district, to cover an area of about 500,000 acres,
- (2) the production of an early maturing and high ginning strain of Parbhani-American, for the *Ghat* area of Aurangabad district, for an area of about 200,000 acres,
- (3) the evolution of a wilt-resistant strain from *G.160* by crossing it with New Million Dollar, for the Western half of Parbhani district and part of Bhir district, for an area of nearly 400,000 acres. and
- (4) the production and development of a high ginning, quick maturing, wilt and drought resistant variety, capable of spinning 12-16s highest standard warp counts, for the southern half of Aurangabad district, for an area of about 200,000 acres.

The work in connection with the scheme was carried out partly at the Cotton Research Station, Parbhani, and partly at the Government Main Farm, Parbhani, much of the material produced in the Hyderabad Botanical Scheme being utilised as the nucleus of work in the scheme.

The following results are stated to have been obtained :—

- (1) *Gaorani 12F-2*, earlier maturing and better spinning strain than the Local, suitable for Parbhani district, has been obtained from *Gaorani 12F*. Eight more new higher ginning sub-strains have also been isolated from *G.12F*; of these, one, *viz.*, II-43-35, appears very promising.

- (2) A strain, H-41-6838, from *Gaoran's* 16C, which is definitely more resistant to wilt in the field than the parent culture has been evolved. Three sibs from this new strain are reported to be very promising, being resistant to wilt even under optimum conditions of soil temperature, moisture and wilt infection at Poona and at the same time retaining the field fibre characters of their parents.
- (3) Thirteen higher ginning strains of Parbhani-American have been evolved. Of these, two combine earliness with good ginning percentage, whilst two others are definitely early maturing.
- (4) Five high ginning, quick maturing and fairly wilt-resistant strains suitable for the Bhir district and the southern part of Aurangabad district have been bred. These, however, need further testing on large scale.

(e) **Scheme for improvement of Kumpta cotton.**—The scheme was sanctioned for a period of five years and it came into operation in November 1937. The object of the scheme is to develop certain strains of Kumpta cotton bred from the local variety of Raichur which, in the preliminary tests conducted at the Government Experimental Farm, Raichur, prior to the starting of the scheme, had given better yields of both seed-cotton and lint than either the local variety or improved *Jayawant*. After two years' work, the strain Raichur-Kumpta 15 was selected for further development. It was sown in 1939-40 on an area of about 40 acres in a cultivator's field, and an average yield of 293 lbs. of seed cotton per acre was obtained. Though this yield was a good deal better than the average of the local variety in the adjoining fields, the Committee, at its meeting held in August 1940, suggested that this strain should not be distributed on account of its susceptibility to wilt, and that strain R. K. 19 should be tested instead and attempts made at once to produce a wilt-resistant Kumpta type. In January 1942, it was extended for five years from 28th November 1942. This work was being carried out during the extension period of the scheme. At its meeting in January, 1944, the Committee approved of the release of Raichur Kumpta strain 19 for large-scale cultivation. It is reported that during 1945-46 this strain was cultivated over an area of 800 acres near Raichur.

During the year under review, thirteen promising strains were tested against Local Kumpta, Hagari and R.K.19, out of which only one strain,

II-44-2918, gave significantly higher yield than the local variety. This strain is stated to possess the same degree of wilt-resistance and the dark creamy colour of lint as R.K.19. Strains II-44-2919, II-43-2541, 47A and 32A, though on a par in regard to yield with Local Kumpta, were more wilt-resistant than R.K.19. The latter three strains, viz., II-43-2541, 47A and 32A, are reported to have definitely a better colour of lint and higher ginning percentage than R.K.19.

Varietal trials conducted with three improved varieties, viz., II-42-2011, II-42-2074 and II-43-2472, using Local Kumpta, Hagari and R.K.19 as controls, indicated that II-43-2472 is an all round variety combining wilt-resistance, yield, ginning percentage and brighter colour of lint. This variety is proposed to be included in the district trials of the next season.

It is reported that R.K. 19 has covered an area of nearly 3000 acres during the year under review and it is expected to be cultivated over 12,000 acres in 1947-48. The multiplication and distribution of seed is said to be financed by the Hyderabad Government.

### BARODA STATE.

**Scheme for improvement of Mathio cotton at Amreli.**—This scheme has for its object the improvement of Mathio mixture in respect of yield, ginning percentage and quality and the trial at Amreli of the early strains of *Wagad* evolved at Viramgam with a view to replacing, if possible, inferior *Mathio* by early *herbaceums*. The scheme came into operation in June, 1937. In January 1942, it was extended for five years from 1st June 1942, and in August 1946, for a further period of 5 years from 1st June, 1947.

During the year under review, the new strain Pratap was tested against the local *Mathio* in large scale comparative trials at four centres in Kathiawar, viz., Amreli, Junagadh, Bhavnagar and Kodinar. The trial at Kodinar had, however, to be given up owing to the failure of the crop due to continuous heavy rain during July and August. The results of the other three trials indicated that Pratap was slightly better than the control in respect of yield of *kapas* but in regard to lint yield it was found to be outstandingly superior to *Mathio*, the increase being 21% at Amreli and 27% at Junagadh. Information regarding the Bhavnagar trial is incomplete as the State authorities are stated to have not responded in the matter of the supply of the produce. The technological

tests on the fibre properties revealed once again the superiority of Pratap to the local in staple length and spinning performance. It is adjudged suitable for spinning 26s highest standard warp counts, but the yarn has been reported to be slightly more neppy than that of *Mathio*. Its lint has been valued at Rs. 39 on an average, over *Mathio*. Mill tests were carried out at (1) the Century Spinning Manufacturing Co., Ltd., Bombay, (2) the Bombay Dyeing and Manufacturing Co., Ltd., Bombay, and (3) the Sarangpur Cotton Manufacturing Co., Ltd., Ahmedabad, and the results are stated to be in conformity with those obtained at the Technological Laboratory.

### MYSORE STATE.

**Scheme for breeding Sea Island and Egyptian cottons in Mysore.**—This scheme, which is an off-shoot of the Mysore (Doddahathi) cotton scheme, was sanctioned by the Committee in January, 1944, for a period of three years from 1st November, 1944, and was extended from 1st November, 1947, in February 1947 for a further period of three years.

It is concerned with (1) the acclimatisation and breeding of Egyptian and Sea Island cottons, and (2) the testing, in large-scale trials, of Mysore-American strains evolved under the Doddahathi scheme.

It is reported that the seasonal conditions during the year under review were not favourable for successful cultivation of cotton under irrigated or rainfall conditions. The two new homozygous Mysore-American strains M.A.X. and M.A.XI were tested for the third time on the Irwin Canal Farm along with Co.4 and other Mysore-American strains in comparative yield trials; the results confirmed that, as in previous years, M.A.V. is the best, having recorded significantly higher yields than all other Mysore-American strains. M.A. X and XI did not come up to the level of either Co.4 or M.A.V.

The results of the tests conducted at the Babbur Farm, with Co.4, M.A.V., M.A. VI and M.A. X., showed that M.A. V. was the best in regard to yield, M.A. X, inspite of its early maturing habit, being comparatively poor in this respect.

In the seasonal varietal trials with Egyptian varieties on the Irwin Canal Farm, Giza 12 gave the highest yield in all the three plantings done in October, November and December; Giza 7 and Marad came next, while Sakel and Ashmouni recorded low yields. It was found that after acclimatisation

Maarad had improved and was as good as Giza 12 or Giza 7 in vigour and approached them in yield. The trials indicated that seasonal sowings done during October—December gave very vigorous plants, optimum yields being recorded for October sowings.

It is stated that M.A. V had been included as a control in all the three seasonal trials, and its yield varied from 400-500 lbs. per acre against 585 lbs. of Giza 12.

Similar seasonal trials conducted on the Babbur Farm are stated to have given no conclusive results regarding the best time of sowing. In the preliminary trials, however, the indications were that good yields are obtained in May, June and July sowings. In the yield trials with Giza 12, Giza 7, Sakel and Maarad, Giza 7 is reported to have given the highest yield, followed by Giza 12, Maarad and Sakel.

During the year under report progenies of a large number of Egyptian selections possessing a combination of earliness, yield, high ginning percentage and long staple were raised. Selections from these are proposed to be tested in compact family blocks in the ensuing year.

The manurial trials conducted on Giza 12 with different levels of nitrogen is stated to have been vitiated on account of shortage of water.

Seasonal and varietal trials on S.I.V. 135 were conducted along with other Egyptian varieties ; the crop in all the seasons came up well.

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### CHAPTER III.

## PROGRESS IN THE INTRODUCTION OF IMPROVED VARIETIES OF COTTON.

The area under improved varieties of cotton during the year under review was tentatively estimated at 8,320,000 acres or 56% of the total cotton area as compared with 8,623,000 acres or 59% of the total in the previous year. The reduction was mainly under *Oomras*, the acreage of which was greatly reduced in the previous year owing to the 'Grow-More-Food' campaign. The improved varieties disseminated were mainly of medium and long staple types in accordance with the policy of the Committee to increase the production of such cottons. The extent to which the average staple of the crop has been raised as a result of this policy, which was carried out in collaboration with the Provincial and State Departments of Agriculture, is illustrated in the table below :—

Year. 1st September to 31st August.	Production in thousand bales of 400 lbs. net.			% of long and medium staple to total production.
	Long and medium staple $\frac{7}{8}$ " and above.	Short staple below $\frac{7}{8}$ ".	Total all staples.	
1	2	3	4	5
Average 1922-27	1,622	3,827	5,449	30
„ 1927-32	1,327	3,879	5,206	25
„ 1932-37	1,650	3,665	5,315	31
„ 1937-42	2,117	3,480	5,597	38
1942-43	2,890	1,812	4,702	61
1943-44	3,313	1,945	5,258	63
1944-45	2,352	1,228	3,580	66
1945-46	2,370	1,160	3,530	67
1946-47	2,318	1,248	3,566	65
Average 1942-47	2,649	1,478	4,127	64

It will be seen that the proportion of cotton of staple length  $\frac{7}{8}$ " and above to the total production increased from 30% in the quinquennium 1922-27 to 64% in the quinquennium 1942-47. The extension of the improved varieties of long and medium staple cottons received a great fillip during the last



war in consequence of the loss of the Continental and Far Eastern markets for Indian cotton. The improvement in the average staple of the crop during the war has also generally been maintained since the cessation of hostilities. During the quinquennium 1942-47, the annual production of cotton of staple length 7/8" and above increased, on the average, by a million bales as compared with the quinquennium 1922-27.

It is worthy of note that the improvement in the quality of cotton has been accompanied by a not inconsiderable rise in the yield per acre of cotton. This will be evident from the following table in which two sets of figures of yield, one based on the official crop forecasts and the other on the figures of actual crop arrived at from cotton pressed, unpressed cotton consumed in mills, extra factory consumption etc., are given :—

Year. (1st Sept.— 31st August.)	Area. (Thousand acres).	Production. Government estimates (Thousand bales of 400 lbs. net).	Yield per acre (lbs.) Col. 3 — Col. 2.	Approximate commercial crop. (Thou- sand bales of 400 lbs. net).	Yield per acre calcu- lated from approximate [commercial] crop. (lbs.) Col. 5 — Col. 2.
1	2	3	4	5	6
Average 1922-27	24,723	5,449	87	*5,954	96
„ 1927-32	24,738	5,206	84	*5,851	95
„ 1932-37	23,912	5,315	89	*6,447	108
„ 1937-42	23,656	5,597	95	†6,457	109
1942-43	19,203	4,702	98	†4,961	103
1943-44	21,086	5,258	100	†5,723	112
1944-45	14,843	3,580	97	†4,534	122
1945-46	14,668	3,530	96	†4,144	113
1946-47	14,860	3,566	96	†4,203	114
Average 1942-47	16,932	4,127	97	†4,793	113

\* Calculated from mill consumption (mill consumption in Burma included up to 31st March, 1937) plus exports (exports from Burma included up to 1934-35) plus extra-factory consumption (the figure of 450,000 bales for the whole of India, based on enquiries conducted by the Committee in selected areas, has been used throughout). Variation in stocks has not, however, been taken into account.

† Best estimates of the crop as arrived at by the Indian Central Cotton Committee in connection with the annual post-mortem examination of all-India cotton forecasts.

‡ Provisional.

Although the figures given in column 6 indicate a progressive improvement, with some lapses, in the average yield per acre of the crop, there is still much scope for improvement in this direction and measures to achieve the end in view are under the active consideration of the Committee.

The main principle adopted by the Committee in making its recommendations for the spread of improved varieties of cotton is the extra monetary return to the grower, and on the basis of the data furnished by Provinces and States in respect of the improved varieties for the extension of which seed distribution schemes have been put into operation with the aid of funds provided by the Committee, it is estimated that the additional benefit accrued to the growers of improved varieties of cotton during 1945-46 was of the order of 10.73 crores of rupees. This figure represents an extra income to the cultivator, in one year alone, of nearly five times the total expenditure of the Committee to date since its inception.

The progress made in the introduction of improved varieties of cotton in the major cotton growing Provinces and certain Indian States is dealt with below:—

### **BOMBAY PROVINCE.**

The total estimated area under cotton in the Province during 1946-47, as reported in the final cotton forecast for that season, was 22,26,353 acres which includes 9,52,742 acres in Indian States in the Province.

#### **Broach Tract :—**

The total estimated area under *Vijay* Cotton was 1,84,750 acres, against 1,19,927 acres in 1945-46. The Agricultural Department controlled a seed multiplication area of 20,009 acres (including 2074 acres grown with Farm Pedigree Seed), against an area of 15,569 acres (including 1,536 acres grown with Farm Pedigree) in the previous year. Out of a total quantity of 14,93,507 lbs. of *Vijay* seed handled this year, against 7,12,541 lbs. in the previous year, 11,44,537 lbs. were distributed by the Agricultural Department, and in addition 3,48,980 lbs. of seed were directly supplied to the growers by the Co-operative Societies in Middle Gujarat under the supervision of the Agricultural Department.

In all, 6,637 full pressed bales of pure *Vijay* Cotton were produced under Departmental control and disposed of at premiums varying from Rs. 70/- to Rs. 110/- per Bombay candy f.o.r. Bombay, on the March and May I.C.C. quotations.

Vijay cotton has already established its popularity due to its intrinsic quality which accounts for its demand by the trade ever since its introduction.

#### Wagad Tract :—

During the year under review the total quantity of *Wagotar* seed available for distribution was 3,95,463 lbs. of which 3,70,463 lbs. were distributed under Departmental supervision, the balance being sold direct to merchants by the farmers. The seed handled by the Department was sufficient to cover about 20,137 acres. Owing, however, to unfavourable seasonal conditions, the area controlled was 13,652 acres against 20,940 acres under cotton in Wagad tract, during the year under report.

A scheme for multiplication and distribution of *Kalyan* cotton (an improved variety of cotton over local *Wagad*) has been sanctioned by the Indian Central Cotton Committee. As a preliminary preparation, this cotton was grown on an area of 130 acres in selected villages of Viramgam Tauka in 1946-47 and from this area 903 *kachha* maunds of seed were procured for further multiplication. This seed was distributed during the current year in selected villages in various Talukas of the *Wagad* tract. At present about 1,660 acres under this variety are mainly concentrated in the Viramgam and Dholka Talukas.

#### Khandesh—Jarila Tract.

*Jarila* cotton, which has been introduced into general cultivation in Khandesh, is superior to local or *Banilla* in staple and is highly wilt-resistant. Its yield and ginning outturn are equal to those of the local type and it has admirably adapted itself to the conditions of the Khandesh Tract. *Jarila* is now the established and recognized variety of this Tract and is appreciated both by the cultivator and the trade.

The seed multiplication scheme for *Jarila* subsidised by the Committee was continued. During the year under report, 23,625 lbs. of pure seed of stages, I, and II, produced at the Jalgaon and Mamurabad Seed Farms under strict Departmental supervision and another quantity of 1,06,23,990 lbs. of seed were stocked by the Department through approved stockists, *viz.*, the co-operative organizations. Of these, 9,68,91,25 lbs. of seed were distributed, the area covered being 236,986 acres, out of which 88,647 acres were organized under stages, III, IV, V, and VI by the Department for seed multiplication. The total area under *Jarila*, including natural spread, is estimated at about 2,44,297 acres, the area sown with the controlled seed being about 2,07,6,60

acres. The production of *Jarila* including natural spread is estimated at about 61,000 bales which works out, roughly, to 100 lbs. of lint per acre. The season under report was not very favourable for cotton and as such the yield and quality were affected to a certain extent. On an average, prices realised by growers of *Jarila* during 1946-1947, varied from Rs. 21/- to Rs. 51/- over the standard *Jarila* quotations per candy in Bombay. The marketing of *Jarila* was satisfactory.

The Cotton Control Act has been applied to this tract from the 1st November, 1944, and the Cotton Transport Act from the 14th March, 1946, by rail only.

There are 23 Group Co-operative Cotton Sale Societies, now working in the division for marketing and agmarking pure *Jarila* cotton. The work of agmarking, however, could not be done owing to small production of cotton and the sale by members of the Societies of their cotton without pressing.

No other cotton but *Jarila* is now grown in the Khandesh Division.

#### Surat Tract :—

The total area covered under *Suyog* by Departmental distribution of seed was 63% of the total area in the second year of its working. The Department controlled 33,562 acres of pure *Suyog* of which the certified area was 32,298 acres, including 787 acres grown with Farm Pedigreed *Suyog*. The Agricultural Department handled 10,21,181 lbs. of *Suyog* seed, of which 16,906 lbs. were produced on the Surat Government Farm. The produce of the controlled area was Agmarked under the Grading and Marking Scheme and out of 8309 bales of *Suyog* thus agmarked, 8,020 bales were disposed of at an average premium of Rs. 8/- per candy over local, leaving a balance of 789 bales undisposed of at the close of the year under report. The quality as well as the staple length of *Suyog* was maintained as in the past year.

Under the scheme for cultivation of 1027 A. L. F. cotton in the Nawapur Taluka of West Khandesh District the whole Taluka is now covered with 1027 A.L.F. cotton. A total quantity of 867 lbs. of pedigreed seed from the Surat Farm was supplied in order to maintain the purity of the produce. During the year, 64 acres were grown at Chinchpada from seed of Stage II, while 539 acres from seed of Stage III and 3,921 acres from seed of Stage IV were grown in 12 villages in Nawapur Taluka. The general distribution was done through the Taluka Development Association at Nawapur, the total quantity of seed supplied during the year being 2,21,374 lbs.

Out of 602 Agmarked bales of 1027 A.L.F., 101 bales were sold at a premium of Rs. 10/- per candy leaving a balance of 501 bales (Certified Agmarked) at the end of the year under report still to be disposed of. The question of replacing 1027 A.L.F. by Suyog in this tract was postponed, as the latter is inferior to 1027 A.L.F. in respect of spinning performance. Type 1-4 and other superior varieties will be tried in the Nawapur Taluka during the period of extension of the scheme.

### Kumpta—Dharwar Tract.

The total estimated area under cotton in the three Districts of Dharwar, Belgaum and Bijapur of the Bombay Karnatak, including the Deccan States, for 1946-47 was 8,44,094 acres. At present three improved varieties of cotton have been introduced in this Division by the Department of Agriculture. These are *Jayawant* (Herbaceum type), Gadag No. 1 and Cambodia (Hirsutum types). *Jayawant* and Gadag No. 1 are grown mainly as rainfed crops, whilst Cambodia is exclusively grown under irrigation. The total estimated area under these improved varieties during 1946-47 was, *Jayawant*—6,67,629 acres, and Gadag No. 1 and Cambodia taken together—1,58,477 acres (the area under Cambodia is estimated at not more than 1,800 acres).

*Jayawant*, which at present occupies the whole of the *Kumpta* cotton tract of the Bombay Karnatak, was evolved from the bulk *Kumpta* cotton, previously grown in the tract, with the main object of meeting the then (1930) pressing need of the cotton growers and the textile mills for a variety of cotton, having desirable agricultural and commercial characters such as, long staple, high ginning out-turn, finer spinning capacity and resistance to wilt disease etc. The average staple length of *Jayawant* is  $7/8''$ , its ginning out-turn varies from 26 to 28% and it spins up to 37.6s (H.S.W.C.) The cultivation of this improved cotton is concentrated in the whole of the *Kumpta* Protected area and the major part of the Bijapur District. This cotton is sold at a premium of Rs. 50/- to Rs. 100 per Bombay candy over *Jarila* (Standard cotton) in the Bombay Market.

Gadag No. 1, which is a selection from the acclimatized Dharwar-American cotton, is an improved cotton, and it occupies the whole of the Dharwar-American cotton tract of the Bombay Karnatak (Gadag, Ron and parts of the Haveri and Ranebennur Talukas of Dharwar District). The average staple length

of this cotton is 13/16", its ginning out-turn is 33.8% and it spins up to 33 (H.S.W.C). It is sold at a premium of Rs. 40/- to 90/- per Bombay candy over *Jarila* (Standard cotton) in the Bombay market.

Cambodia is an improved cotton imported from Coimbatore (Madras), and is grown under irrigation on a very limited area in Karnatak.

The total quantity of seed of the three improved varieties of cotton controlled and distributed by the Department is shown below :—

	Quantity of seed stocked.	Quantity of seed distributed.
1. <i>Jayawant</i> ...	...83,615 bags. (each of 140 lbs.)	53,555 bags. (each of 140 lbs.)
2. Gadag No. 1	...20,000 bags. (each of 100 lbs.)	15,862 bags. (each of 100 lbs.)
3. Cambodia ...	...250 bags. (each of 100 lbs.)	180 bags. (each of 100 lbs.)

### SIND.

The total area under cotton in Sind during 1946-47 was 8,57,000 acres as shown below :—

	Acres.
Sind- <i>Sudhar</i> ...	45,000
M-4 ...	6,00,000
Sind N. R. (W. N.-7) ...	5,000
Sind American 289F types other than S.S. & M-4 ...	82,700
Sind American 4F ...	25,000
<i>Desi</i> Mixtures ...	99,300
Total ...	8,57,000

### Sind-Sudhar :—

Botanical species ...	<i>Gossypium hirsutum</i> , Linn.
History ...	A selection from high yielding and long staple Punjab 289F cotton.

Districts of growth	...	Irrigated area commanded by Barrage Canals on Left Bank of Indus river, Middle and East Sind i.e., in Hyderabad Tharparkar and part of Nawabshah Districts.
Growing period	...	Sowing commences from middle of March in East Sind and end of April in Middle Sind and continues up to end of May. The crop is picked from October ; pickings continue up to 1st week of January.
Ginning percentage	...	32%.
Staple length	...	Its staple length varies from 14/16" to 1" and it spins 42's to 50's highest standard warp counts.
Yield	...	Average yield of seed cotton is about 6 to 7 maunds per acre for the whole of Sind.

**M. 4:—**

Botanical species	...	<i>Gossypium hirsutum</i> Linn.
History	...	Selection from N.T. 21 for high yield, high ginning percentage and good opening of bolls.
Districts of growth	...	Irrigated area of Barrage Canals on the Left and Right Banks of river Indus in Middle and East Sind.
Growing period	...	Sowing :—Middle of March to end of May. Picking :—End of September to end of November or beginning of December.
Ginning percentage	...	33%.
Staple length	...	Its staple length is 14/16" and it is capable of spinning 30's to 36's standard warp counts.
Yield	...	Its average yield of seed cotton is about 7 to 8 maunds per acre for whole of Sind.

## Sind N. R. (W. N. -27.):—

Botanical species	...	<i>Gossypium arboreum</i> var <i>neglectum</i> Forma <i>bengalensis</i> (H & G).
History	... ..	A selection from ordinary Desi bulk for high yield and high ginning outturn. It is a variety with narrow-lobed leaves and white flowers.
District of growth	...	Middle Sind on Indus Left Bank comprising Nawabshah District, and Hala and Gunni Talukas of Hyderabad District.
Growing period	...	Sowing commences from mid-May and continues up to end of June. The crop is picked from mid-October to the end of January.
Ginning percentage	...	40%.
Staple length	... ..	Its staple length is 1/2" to 9/16" and it spins 6's to 8's standard warp counts.
Yield	... ..	Its average yield is about 8 maunds per acre for the whole of Sind.

Quantity of seed of each improved variety controlled and distributed by the Agricultural Department.

Sind Sudhar ... .. 570 maunds.

M-4 ... .. 75,000 ..

Sind N. R. ... .. 500 ..

## CENTRAL PROVINCES AND BERAR.

The total area under cotton in the Province during the year 1946-47 was 2,966,719 acres against 2,955,632 acres in the previous year. There has been a slight increase in the area, which can be attributed to the favourable prices received by the cultivators in the previous year.

**Verum 434.**—The area under this variety was 325,775 acres against 316,718 acres in the last year. This strain possesses fine strong staple about 7/8" in



length and is capable of spinning up to 30's H.S.W.C. The area under this variety is distributed all over the Province. The Departmental spread is mostly concentrated in the Pusad, Basim, Murtizapur and Amraoti Taluqs of Berar, and the Khandwa and Harsud Tahsils of Nimar District of the Central Provinces. The total quantity of seed distributed for sowing purposes through the Departmental, Co-operative and other agencies was 8,020 maunds.

**Buri 107** :—The total area under this variety in the different parts of the province was 52,682 acres, against 55,485 acres in the previous year. This strain possesses fine staple, about 1" in length and is capable of spinning up to 40's H.S.W.C. The area under the variety is mostly concentrated in the Nimar District. The quantity of seed distributed for sowing purposes in the Province by the Department was 3,772 maunds.

### MADRAS PROVINCE.

The total area under cotton in the Province during 1946-47, according to the fifth forecast report, was estimated at 15,56,100 acres as against 16,23,000 acres in 1945-46 as per the season and crop report. The present estimate for the Province reveals a decrease by 4.1% as compared to the acreage in the previous year. The fall in general was distributed in all the districts except East Godavari, Bellary, Nellore, South Arcot, Salem, Ramnad and Malabar where there were some increases. The reduction in the area noted was mainly due to (a) diversion of the cotton acreage to cultivation of food crops, and (b) restriction imposed on the cultivation of cotton as a pure crop.

**Cambodia cotton.**—The area under this variety during the year was 3,31,600 acres as against 3,77,338 acres in 1945-46. The improved strains Co.2, Co.3, Co.4, 4463 and 920 continued to be popular and covered an area of 2,86,571 acres, which works out to 87% of the total area under Cambodia as against 75% estimated in 1945-46. Strain Co.2, being very cosmopolitan, continued to occupy the largest individual area and figured in all the districts growing Cambodia. Spread of strain Co.3 increased by 11% in the Salem, South Arcot, Madura and Trichy Districts. Co.4 recorded a total fall in area by 13% for want of organisation for its spread in the Tinnevely and Madura Districts. Strain 920 showed an increase by 11% and 4463 a reduction by 36% mainly in the Coimbatore District, as the multiplication of the latter variety was

confined to a limited area under Departmental seed farms. The extent of the spread of the different varieties is indicated in Table I below :—

TABLE I.

Cambodia cotton

Area as per forecast 3,31,600 acres.

Districts.	Name of Strain.	Quantity of seeds distributed by		Total area under the strain inclusive of natural spread. Acres.
		Madras Agricultural Department. lb.	Co-operative Societies. lb.	
1	2	3	4	5
Madura .. ..	Co. 2	29,852	....	62,500
Ramnad .. ..	"	....	....	3,140
Tinnevelly .. ..	"	....	....	1,650
South Arcot .. ..	"	490	....	2,385
Salem .. ..	"	2,300	....	10,160
Coimbatore .. ..	"	7,03,192	1,05,800	1,33,015
Trichy .. ..	"	4,312	....	6,075
Malabar .. ..	"	7,546	....	1,600
Kurnool .. ..	"	....	....	450
Anantapur .. ..	"	316	....	332
Cuddapah .. ..	"	....	....	95
Bellary .. ..	"	....	....	84
Total .. ..	..	7,48,008	1,05,800	2,21,486
Madura .. ..	Co. 3	....	....	5,600
South Arcot .. ..	"	1,510	....	295
Salem .. ..	"	6,500	3,51,500	18,900
Trichy .. ..	"	813	....	1,125
Total .. ..	..	8,823	3,51,500	25,920
Madura .. ..	Co. 4	928	....	1,250
Ramnad .. ..	"	89,020	....	14,416
Tinnevelly .. ..	"	3,098	....	2,034
South Arcot .. ..	"	2,492	....	920
Total .. ..	..	95,538	....	18,620
Coimbatore.. ..	920	78,302	14,000	15,715
Trichy .. ..	"	2,299	....	680
Total .. ..	..	80,601	14,000	16,395
Coimbatore.. ..	4463	20,580	..	3,570
Trichy .. ..	"	1,888	....	580
Total .. ..	..	22,468	....	4,150
GRAND TOTAL .. ..	..	9,55,438	4,71,300	2,86,571

The agencies which multiplied and organised the sale of pure seed were (1) the Madras Agricultural Department, for Co.2, Co.3, Co.4, 920 and 4463 (2) the Co-operative sale society, Tiruppur for Co.2 (3) by the Indian Central Cotton Committee's scheme by subsidies for Co.3 in the Salem District.

**Tinnevellies:**—The total area under this variety recorded during the year 1946-47 was 5,41,700 acres as against 5,51,295 acres as per season and crop report of 1945-46 indicating a reduction by 1.7%. The estimated acreage of 2,31,908 acres under the improved *Karunganni* strains (vide Table II) works out to 52% of the total Tinnevellies as against 46% last year. The new and improved strain, 4706, which is characterised by lower shedding habit than K1 under unseasonal rains, in addition to better quality, was distributed to a small extent during the year, pending the launching of a separate seed distribution scheme. The older *Karunganni* strains of the Tinnies tract viz., A10 and C7, are no longer under cultivation in a pure form to be reckoned as such. There is no seed distribution for them by any agency. Strain C.11.2, named Co.5, showed a decrease by 39% in acreage for want of organisation for its multiplication and distribution on a large scale over the *Karunganni* and *Uppam* areas as well as in the central districts.

TABLE II.

Tinnevellies.

Area as per forecast 5,41,700 acres.

Districts.	Name of Strain.	Quantity of seeds distributed by		Total area under the strain inclusive of natural spread.
		Madras Agricultural Department.	Co-operative Societies.	
1	2	lb. 3	lb. 4	Acres. 5
Tinnevelly .. .. .	K1	1,26,459	....	82,090
Madura .. .. .	"	1,000	....	4,500
Ramnad .. .. .	"	79,900	....	80,923
Coimbatore.. .. .	"	50,176	16,000	49,044
Trichy .. .. .	"	....	....	1,007
Total .. .. .	....	2,57,535	16,000	2,17,564
Coimbatore.. .. .	C11.2	32,592	8,000	14,124
Tinnevelly .. .. .	4706	900	....	220
GRAND TOTAL .. .. .	....	2,91,027	24,000	2,31,908

**Salems.**—The area under "Salems" decreased to 12,100 acres during 1946-47 from 12,819 acres in 1945-46 as per season and crop report. In Trichinopoly, K1 is reported to have spread over 1,007 acres. In future Co.5, which has fared well in this district, will be distributed to replace the *Uppam* grown.

**White and Red Northern.**—There was a fall under these varieties during the year to 75,000 acres from 66,160 acres recorded last year. N14 was the only strain distributed and was limited to an area of 23,450 acres including Banganapalli (in the tract for which it is suited) for want of organisation for its multiplication.

**Westerns.**—The estimated area of this variety in 1946-47 was 5,15,500 acres as against 5,19,727 acres in 1945-46, according to the season and crop report. The area under the improved strain H1 was estimated at 3,71,376 acres which works out to 72% of the total area under Westerns.

TABLE III.

Westerns.

Area as per forecast 5,15,500 acres.

Districts.	Name of Strain.	Quantity of seeds distributed by		Total area under the strain inclusive of natural spread. Acres.
		Madras Agricultural Department. lb.	Co-operative Societies. lb.	
1	2	3	4	5
Anantapur .. .. .	H1	1,30,520	....	29,340
Cuddapah .. .. .	"	67,860	....	21,286
Bellary .. .. .	"	5,66,069	....	3,00,000
Kurnool .. .. .	"	39,000	....	20,750
<b>GRAND TOTAL ..</b>	..	<b>8,03,449</b>	<b>....</b>	<b>3,71,376</b>

**Warangal and Cocanadas.**—The estimated area under these varieties was 77,200 acres as compared to 81,452 acres during 1945-46. Strain x20 renamed G1 (Guntur 1), a hybrid strain between two Cocanadas cottons, was found to be suitable for the tract. Its spread was confined to 698 acres in the absence of any organisation for its multiplication.

#### UNITED PROVINCES.

Owing to various adverse factors cotton cultivation in the United Provinces has dwindled down considerably. Though the monsoon had started fairly

early and the season on the whole was favourable to cotton, the total area under this crop during the year under report was 170,075 acres only compared with the actual revised area for last year which was 195,329 acres, showing a decrease of 25,254 acres or 12.9 per cent. Compared with the average acreage of the previous five and ten years, the area for the year under report shows decreases of 50.2 and 63.9 per cent. respectively. The outturn is estimated at 44,300 bales (rounded) of 400 lbs. each as against 57,900 bales (rounded and revised) last year, showing a decrease of 13,600 bales, or 23.5 per cent. As compared with the figures of average estimated outturn for the previous five and ten years, the outturn for the year under review shows decreases of 57.2 per cent. and 68.5 per cent. respectively.

The general set-back to cotton in the Province is also reflected in the reduced acreage under the improved varieties. In fact, after the closing down of the Perso-American Scheme, the Department of Agriculture has not undertaken the distribution of any cotton seed, except on a very limited scale. The following table gives the particulars for the year :—

Variety.	Total area. Acres.	Quantities of seed distributed.	Areas where the variety is chiefly concentrated.
All varieties	170,075		
Improved varieties C. 520	4,847	Negligible.	Etah, Mainpuri, Aligarh; Muttra and Bulandshahr.
Perso-American	5,080	Almost the whole area was under Departmental seed.	Meerut (Hapur and Ghaziabad) Bulandshahr, Aligarh, Muttra, Etah (Kasgunj) and Agra.

**Chief Characteristics of the improved varieties.**—C.520 cotton is a pure line selection from the "Roseum" type of U.P. Bengals, originally extracted from the material collected in Saharanpur and Bijnor Districts as early as 1920-21. It yields high both under irrigated and unirrigated conditions. When grown on a large scale at the Government Cotton Research Farm, Raya (Muttra), the yield varied from 9 to 10 mds. of *kapas* per acre. The strain has an average

staple length of 0.72 inch, it gins about 35-37 per cent. and it is capable of spinning up to 10-12½ highest standard warp counts. The variety had spread fairly wide in the cotton areas, but now, owing to the general decline in cotton cultivation due to high prices of food grains, its area has considerably declined. This variety had also taken a good hold in some of the Central Indian States, Baroda, Rajputana and even in some areas in the eastern districts of the Punjab. The kapas of this variety is valued at about eight annas per md. more than that of the ordinary *Desi* under normal trade conditions.

Perso-American is a selection from the American types of cotton imported from Persia (Iran) and acclimatised in the United Provinces. When grown on a commercial scale at Raya and other suitable areas, e.g. Budaun, it has yielded up to 13-14 mds. per acre. The strain has an average staple length of 0.85", it gins 30-32 per cent., and it is capable of spinning up to 28-34s highest standard warp counts. The kapas of this variety ordinarily fetches a premium of Rs. 1/8/- to Rs. 2/- per md. over *Desi* in normal times. During the year, the extension scheme for this variety financed by the Indian Central Cotton Committee terminated after the sowing season.

#### HYDERABAD STATE.

The total area under cotton in 1946-47 in the State, based on the fifth or final forecast of the Statistical Department of the H.E.H. the Nizam's Government, was 22,36,477 acres. Particulars of the improved varieties, the quantities of seed distributed by the Government and the acreage under them are shown below :—

Name of variety.	Description.	1946-47		Remarks.
		Quantity of seed distributed.	Area actually sown.	
		Lbs.	Acres.	
GAORANI 6.	A Selection made in 1929 from Hyderabad Gaorani in Bhainsa in Nanded District. An early maturing, fair yielding type with a staple length of 0.85 inch and ginning percentage of 32, capable of spinning 36's highest standard warp counts. It is under large scale cultivation and is specially suited to the North and North-Eastern parts of the <i>Gaorani</i> Protected area.	53,39,121	2,56,276	Mostly confined to Nanded District.

Name of variety.	Description.	Quantity of seed distributed. lbs.	Area actually sown. Acres.	Remarks.
<i>Gaorani</i> 6-E-3	A substrain of <i>Gaorani</i> 6 with a mean staple length of 0.88 inch, ginning percentage of 32, capable of spinning 35-40's highest standard warp counts.	3,27,760	15,732,	Nanded Taluka (villages found about Wadi Buzurg.)
<i>Gaorani</i> 12.	An earlier maturing reselection from <i>Gaorani</i> 12F and as resistant to wilt in field as the parent. It has a staple length of 0.85 inch, ginning percentage of 32 and can spin 30's to 35's highest standard warp counts.	47,230	2,348	Latur Taluka of Osmanabad district in the south western Gaorani Protected Area.
Raichur <i>Kumpta</i> 19.	A selection from the local <i>Kumpta</i> crop of Raichur District. It is a good yielding drought and wilt resistant variety with a staple of 0.81 inch, ginning percentage of 29-30, capable of spinning up to 24's warp counts.	52,138	2,894	Raichur Taluka of Raichur District.
<i>Jayawant</i>	It is a segregate of a cross between Dharwar I and Dharwar II with a staple of 0.89 inch, ginning outturn of 28 per cent and spinning 32 to 34's warp counts. It appears to be well suited to the western half of Raichur District.	70,713	4,419	Gangawati and Kopbal talukas of Raichur district.

### BARODA STATE.

The total area under cotton in the State during the year 1946-47 was 4,72,591 acres distributed as follows :—

Baroda ... ..	2,49,414 acres.
Navsari ... ..	1,33,631 „
Mehsana ... ..	78,301 „
Amreli ... ..	11,245 „

### BARODA.

**Vijaya cotton.**—This cotton now covers practically the whole of the Broach cotton tract lying in Baroda State between the Sabarmati river in the north and the Narbada in the south, where the all-over average rainfall is 34 inches

per annum. *Vijaya* was first introduced into this belt in the season 1945 to replace B.D. 8 as the latter, though possessing many admirable qualities, had a poor ginning percentage and was, therefore, not popular with the cultivators. *Vijaya* is a very superior Broach cotton with a staple length of 13/16", has a ginning percentage of 39-40 per cent (which is 8 to 9 per cent more than in B.D. 8) and the lint has a very fine feel. At the time that this variety was first introduced into Baroda, another variety B.9 was also being grown on the loamy soils of Savli and Waghodia talukas, for which it was considered particularly suitable, but even in those parts *Vijaya* spread on its own merits and practically ousted B.9 without conscious effort on the part of the Department. On account of the resultant produce now being grown in a high state of purity over an extensive area, *Vijaya* has earned general approval from the ginners, middle men and manufacturers, and it is reported that the lint exported from India is gaining increasing popularity in China.

The statement below shows the area controlled by the Agricultural Department in the year 1945-46 :—

S. F. seed	...	...	4 acres.
Nucleus seed	...	...	35 „
* Grade A seed	...	...	9,467 „
Grade B seed	...	...	50,834 „

Before the sowing season started, the Department sold 45,45,280 lbs. of seed recovered from the area controlled by it, and it is estimated that practically the whole of the Broach tract in Baroda, amounting to 2,47,160 acres, was sown with this seed. In securing this seed, the Department had the collaboration of 21 out of the 34 gins in the tract all of which made special arrangements for the separate pooling and ginning of departmentally certified cotton. Seed so recovered was sold from thirty depots established throughout the area.

#### NAVSARI.

**Suyog.**—*Suyog* has now practically covered the whole of the Surti tract in Baroda, i.e., the area lying south of the Narbada river where the rainfall varies from 33 inches per annum in Kamraj taluka to 71 inches in Gandevi. The variety was introduced into this tract in the year 1945 in order to replace the well known 1027 A.L.F. as it is a more suitable strain for the tract, combining in itself high ginning percentage, resistance to wilt disease and good spinning qualities. It was also found, in the year 1946-47, when increased rains prevent-

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\* Includes 380 acres rogued to 100 % purity.



ed weeding of the crop and resulted in wide-spread water-logging, that this variety stood up to such adverse conditions much better than the normal cotton crop. This is a very strong point in its favour as the Surti tract is liable to heavy and continuous downpours.

In the year 1945-46, the following acreages were under control in the Surti tract, lying in Baroda State :—

S. F. seed	...	...	4 acres.
Nucleus seed	...	...	130 „
Grade A seed	...	...	2,597 „
Grade B seed	...	...	19,403 „

From the seed recovered from these areas, the Department sold 21,68,030 lbs. of seed before the planting season commenced in 1946, and it is estimated that practically the whole of the 1,60,000 acres of cotton grown in Navsari were sown with such seed.

#### MEHSANA AND AMRELI.

**Wagotar.**—This cotton has been introduced into the *Wagad* or closed bolf tract of Baroda, which extends from the Sabarmati river northwards, but its cultivation is more or less restricted to the Kadi and Kalol talukas where the average rainfall is 25 and 38 inches per annum, respectively. Experiments between *Wagad 8*, an earlier selection, and *Wagotar* showed that the latter, while maintaining the yield level of *Wagad 8*, gins 3 per cent. higher and spins 6 counts more (21's against 15's of *Wagad 8*). It is estimated that *Wagotar* gives the cultivator a return of Rs. 10/- per acre more than *Wagad 8*. In the year 1945-46 the Baroda Cotton Control Act was applied to the Kadi and Kalol talukas of Mehsana district where 75 per cent. of the cotton grown in the *Wagad* tract is located.

Although the *Wagotar* scheme was not sanctioned by the Indian Central Cotton Committee till July 1945 and commenced to function only on the 1st January 1946, the Department had been making arrangements in anticipation of the Committee's approval of a scheme for replacing *Wagad 8* by *Wagotar*, with the result that even in the season 1945-46 the Department had under its control a total of 3,939 acres. As soon as the scheme was formally sanctioned, roguing of the area commenced, and a total of 3,360 acres were retained under the Department's control distributed as follows :—

S. F. seed	...	...	1 acre.
Nucleus seed	...	...	140 acres.
Grade A seed	...	...	699 „
Grade B seed	...	...	2,520 „

From this area 9,67,120 lbs. of seed were secured by the Department and stored in eight depots conveniently situated in the *Wagad* tract and it is estimated that 38,960 acres were sown with the new strain.

#### RAJPIPLA STATE.

The Rajpipla Cotton Improvement Act of 1921 prohibits the import and sowing of *Goghari* or any other short staple cotton. The export likewise of cotton by rail or by boat is entirely prohibited except in the form of fully pressed bales, an exception being made only in favour of *bona fide Kheduts* who are allowed to take their cotton in carts for sale outside the State. Best cotton seed of the 1027 A.L.F. variety is supplied by the State to the *Kheduts* and only the long staple cotton of this strain is grown throughout the State. The cotton grown in the State has attained a high standard of reputation on account of its purity and it finds ready customers in the market. During the year under report, seed of the best quality was supplied as usual by the State to the cultivators. The total area under cotton cultivation throughout the State was about 99,821 acres, while the total output of the season was 17,465 bales pressed within the State and about 3,077 bales pressed outside the State limits from the cotton transported in cartloads by some cultivators of the outlying limits for sale outside the State. The reduction in the outturn of cotton crop as compared with that of the previous year was mainly due to the "Grow More Food" campaign rigorously followed in the State.

#### MYSORE STATE.

The total area under cotton in the State was 59,790 acres, during the season under report. The area under improved varieties was 10,600 acres, concentrated in the talukas of Arasikere, Banavar, Belur, Hassan, Davangere, Shimoga, Mysore, Mandya, and parts of Chitaldrug District. Out of this area, Co.4 occupied about 9,600 acres. Co.4 (Madras) with a lint length of  $7/8$ " to 1" and 35 ginning percentage gave an average yield of 600 to 900 lbs. per acre. Nearly 1,000 acres were occupied by M.A.V. (Mysore-American). This strain possesses a lint length of  $1-1/16$ " to  $1-1/8$ ", gins 35%, matures early, resists drought and gives on an average yield of 600 to 1,000 lbs. per acre. It fetches a higher premium over other American cottons and is in great demand. The rest of the cotton area is occupied by Asiatic cottons. *Jayawant* is grown on a large scale. Recently Sel. 69—a selection from *Kumpta* cotton—was introduced but the area occupied by it is small. Sel. 69 has a lint length of  $7/8$ " and 30 to 32% ginning and it yields 300 to 400 lbs. per acre.

During the season, the total quantity of seed distributed was 2,850 *maunds* of M.A.V. and 300 *maunds* of Co.4, (*Maund*=28 lbs.). Under the Seed Distribution Scheme, nearly 25 *maunds* of selected seeds of M.A.V. and 20 *maunds* of Sel. 69 were distributed to the subvention farms.

### GWALIOR.

The total area under cotton during the year 1946-47 in Gwalior State was 389,284 acres.

(a) Area under Jagirs was	...	...	...	...	83,489 acres.
(b) Area under Khalsa was	...	...	...	...	305,795 „
Total					389,284 „

The improved varieties of cotton recommended so far by the Department of Agriculture and the areas under each are given below :—

1. G 16 (Malvi)	...	...	...	...	10,898 acres.
2. Cambodia	...	...	...	...	2,600 „
3. <i>Jarila</i>	...	...	...	...	2,946 „
4. Upland	...	...	...	...	3,537 „

The Cotton area is mostly restricted to the Malwa Prant. In the Gwalior Prant very little cotton is grown, the total area in this Prant being 1,570 acres only. The main cotton growing districts in the Malwa Prant are Ujjain, Mandsaur, Sardarpur and Shajapur. The rich 'Adan' soils are utilised for this crop.

G 16 being a strain of Malvi cotton is chiefly restricted to the Districts of Shajapur and Mandsaur, and to some extent in the Ujjain District. The area under Upland cotton is mostly confined to the Shajapur District, though a little may be found in Sardarpur also. *Jarila* cotton is mostly grown in Sardarpur while the Cambodia variety is usually cultivated on the rich well manured 'Adan' soils of Ujjain and Sardarpur.

The quantity of seed of each improved variety controlled and distributed by the Department is given below :—

(1) Cambodia	...	...	...	...	174 mds.	34 seers.
(2) Malvi	...	...	...	...	4786 „	22 „
(3) Upland	...	...	...	...	158 „	0 „
(4) <i>Jarila</i>	...	...	...	...	191 „	25 „

## CHAPTER IV.

## EXTENSION WORK IN THE PROVINCES AND STATES

The Seed Distribution and Extension Schemes of the Committee form the real link between the experimental station and the cultivator and in recent years increasing attention has been paid to the development of the extension work with the object of getting the grower to adopt the various improved practices and improved seed evolved as a result of the research schemes of the Committee. The total amount so far spent by the Committee on such schemes amounts to some Rs. 22 lakhs. During the period under review, there were 19 seed distribution and extension schemes in operation in the various cotton growing Provinces and States; a brief report on the working of these schemes is given below :—

## BOMBAY.

(a) **Jarila Seed Distribution and Extension Scheme.**—This scheme was sanctioned in March 1937, for a period of ten months in the first instance. It was extended in January 1938, for a period of one year, in November 1938, for three years and again in July 1941, for a further period of five years. In February 1947 the Committee sanctioned a further extension of two years from the 1st March 1947. Its original object was to replace *Banilla* in the Khandesh tract with *Jarila*, which is wilt-resistant, over an area of some 1,55,000 acres. In view, however, of the general suitability of *Jarila* for the Khandesh area, the expansion now aimed at is 8,00,000 acres, out of a total cotton area of 11,00,000. The scheme is operated in five stages of which the first two are the Government Farms at Jalgaon and Bhadgaon. The seed produced at the Jalgaon Farm is used for further multiplication in the wilt affected regions, and that at Bhadgaon Farm for the wilt free zone of Khandesh. In January 1943, the Committee approved of the proposal to close down the seed farm at Bhadgaon and to transfer the seed multiplication work being done there to the Jalgaon Farm and the Mamurabad village adjoining it.

**Stages I and II.**—The selfed seed from the previous year was sown on an area of 26.15 acres on the farm and 6,261 lbs. of seed obtained for multiplication in Stage II. The seed of Stage II produced from 95 acres and 5 gunthas was 17,364 lbs. The produce of both stages was ginned in the Farm gin and

the lint sold by auction at Jalgaon. It fetched Rs. 237-8-0 per boja i.e., Rs. 535/- per candy, f.o.r. Bombay, against Bombay *Jarila* quotation of Rs. 458-2-0 per candy on that day.

**Stages III and IV.**—Of the 79,00,490 lbs. of *Jarila* seed distributed by the Department and approved stockists, 66,25,710 lbs. of seed were utilised for sowing and the balance, 12,74,780 lbs. handed over to the Revenue Department for feeding purposes. The controlled area during the year was 2,07,660 acres (including a reserved area of 88,647 acres). This acreage, however, falls short of the stipulated area of 5,25,000 acres by 3,17,340 acres; the reduction is attributed to the curtailment of the area under cotton and adverse seasonal factors. The total area under *Jarila* (including natural spread) is estimated at 2,44,297 acres against 2,34,538 acres last year.

It is stated that the growers realised on an average Rs. 19/- per *maund* of *kapas*. The marketing of *Jarila* cotton this year was regarded as satisfactory from the point of view of the premium realised. A total quantity of 1,360 bojas of purified *Jarila* lint was sold at premia varying from Rs. 21/- to Rs. 57/- over the prevailing Bombay *Jarila* quotations. The gross extra income realised by the cultivators of *Jarila* is estimated at Rs. 32,36,935/-, i.e., Rs. 13-4-0 per acre.

For sowing in 1947-48, the Agricultural Department and approved stockists have stocked 1,05,72,870 lbs. of seed. In addition, 6,94,070 lbs. of seed have been reserved for emergent use to cover completely the cotton area in Khandesh.

The Cotton Control Act has been applied to the whole of Khandesh tract, making *Jarila*, the prescribed variety for the tract. The Cotton Transport Act, in so far as it relates to rail transport only, has been applied with effect from the 14th March, 1947, and up to the date of the submission of the report one license only for the import of 100 bales of cotton other than *Jarila* was issued under this Act.

(b) **Deccan Canals (Jarila) Seed Distribution Scheme.**—This scheme was sanctioned in January 1934, for a period of five years and came into operation in April 1934. In August 1939, a further extension for five years was sanctioned. At the same time the venue of seed multiplication was also changed from Kopergaon and organised on new lines in Baramati tract.

The original object of the scheme was to distribute seed of *Banilla* to enhance general cotton yields and to improve the quality of the cotton in the Deccan Canals tract in the Poona, Sholapur and Ahmednagar districts. In view, however, of the susceptibility of *Banilla* to the wilt disease, the Committee at its meeting held in January 1942 approved of the proposal to replace *Banilla* by *Jarila* which gives a bigger return per acre and is, at the same time, capable of resisting wilt to a great extent.

During the year under report, the scheme was kept in abeyance as irrigation under Deccan Canals was being regulated with a view to encouraging the cultivation of food crops and to discourage the growing of cotton.

(e) Revised Jayawant and Gadag No. 1 Seed Distribution Scheme.— This scheme, which was sanctioned in August 1935, for a period of five years replaced five seed schemes in the Southern Division of the Bombay Province, viz., the Hubli, Gadag, Athani, Haveri and Bailhongal schemes. It came into operation on the 1st June 1936; in August 1940, it was extended for a period of one year and again in July 1941, for a further period of four years from 1st June, 1942. In August 1946, it was further extended up to the 31st May 1948.

The original object of the scheme was to eliminate local mixtures and to extend pure *Jayawant* and Gadag No. 1 in the Southern Division of the Bombay Province, over an area of 9½ lakhs acres, within a period of five years. During the extension period of the scheme, it is proposed :—

- (1) to cover an additional area of 425,000 acres with *Jayawant* and 75,000 acres with Gadag No. 1.
- (2) to carry on intensive propaganda for the cultivation of improved cotton and to check the growing of inferior types;
- (3) to have *Jayawant* and Gadag No. 1 pressed under departmental supervision and marketed under 'Agmark';
- (4) to make seed distribution work self-supporting by gradually reducing the subsidy on cotton distributed; and
- (5) to entrust the work of the scheme to efficient co-operative organisation provided the working of the scheme is not adversely affected.

The scheme is operated from eleven centres for *Jayawant*, viz., Dharwar, Hubli, Nargund, Haveri, Bailhongal, Gokak, Athani, Bagalkot, Hungund, Bijapur and Muddebihal, and from two centres for Gadag No. 1, viz., Gadag

and Ron. Decentralisation is the key-note of the scheme, the idea being that no single agency should have too big an area to cover or too great a responsibility to shoulder.

It is stated that during the year under report the Department organised an area of 113,068 acres of *Jayawant* and 20,714 acres of Gadag No. 1, of which 111,091 acres and 20,472 acres respectively, were rogued. Owing to the Grow More Food campaign and the fall in price of cotton, all the seed stocked could not be distributed. In all 56,555 bags of *Jayawant* and 15,862 bags of Gadag No. 1 seed were distributed to cover an area of 613,512 acres and 150,167 acres respectively. The area under natural spread is estimated at 54,117 acres under *Jayawant* and 8,300 acres under Gadag No. 1, thus bringing the total area under *Jayawant* to 667,629 acres and that under Gadag No. 1 to 158,477 acres, the corresponding figures for the previous years being 639,700 acres and 125,920 acres respectively.

The produce of both reserved and general areas amounting to 12,937 docras of *Jayawant* and 5,405 docras of Gadag No. 1 were sold by auction at an average premium of Rs. 15/- for *Jayawant* and Rs. 20/- for Gadag No. 1 per bag of 1,344 lbs. of *kapas* over the *bazar* rates. The total gross extra income to the growers of the two improved varieties is estimated at Rs. 49,30,504.

The original programme was to stock 10,150,000 lbs. of *Jayawant* and 2,000,000 lbs. of Gadag No. 1 seed for sowing in the next season. Owing, however, to the Bombay Growth of Food Crops Act, the cotton area in Karnatak is expected to be lower. Purchases up to the 30th April, 1947, amounted to 1,680,000 lbs. of *Jayawant* and 300,000 lbs. of Gadag No. 1.

It is reported that agmarking was continued on an optional basis and that up to the end of April 1947, 1,704 bales of *Jayawant* and 150 bales of Gadag No. 1 cotton were agmarked. It is considered, however, that unless the mill-owners indicate their appreciation of agmarking by paying adequate prices for agmarked bales, agmarking of cotton will not become popular.

(d) Scheme for cultivation of 1027 A.L.F. Cotton in Nawapur Taluka.— This scheme was sanctioned by the Committee in January 1942, for a period of three years and it came into operation on the 4th May 1942. In January 1945, it was extended for a period of one year. The Committee was informed at that meeting that the total area under cotton in the taluka had decreased from 25,000 acres in 1942-43 to 18,300 acres in 1943-44 and to 16,000 acres in

1944-45 and that, of this, the area covered with pure seed of 1027 A.L.F. distributed by the Department was 10,000 acres. In February, 1946 the scheme was further extended from 4th July 1946 to 31st March 1947 and in February 1947 for a further period of 3 years from the 1st April 1947.

The original object of the scheme was to cover an area of 25,000 acres in Nawapur taluka with 1027 A.L.F. cotton. During the 1st extension period, it was proposed to multiply 1027 A.L.F. cotton in the controlled area so as eventually to cover the whole area with it. During the present extension it is proposed to study the results of the comparative trials with *Suyog* and 1027 A.L.F. with a view to evaluating the suitability of the strains for cultivation in Nawapur taluka.

A total quantity of 2,21,364 lbs. of seed was distributed during the year by the Taluka Development Association at Nawapur to cover an area of 4,524 acres (against 3,320 acres programmed for) including a certified area of 4,159 acres. The seed obtained from this area is stated to be more than sufficient to cover the whole area of Nawapur taluka.

The results of the spinning tests on samples of *Suyog* and 1027 A.L.F. conducted at the Technological Laboratory, Matunga, with a view to deciding as to whether 1027 A.L.F. should be replaced by *Suyog* in Nawapur taluka indicated that *Suyog* is better in yield and ginning percentage, but inferior in spinning value. The question of replacing 1027 A.L.F. by *Suyog* has, therefore, been postponed till a final decision regarding the replacement of *Suyog* in the Surat cotton tract is arrived at.

The produce of the current year was pooled and marketed by public auction at a premium of Rs. 5/- per bhar (924 lbs.) over local.

(e) **Scheme for multiplication and distribution of "Vijaya" cotton in Middle Gujerat.**—This scheme was sanctioned by the Committee in July 1943, for a period of five years and it came into operation on the 1st December, 1943.

The object of the scheme is to completely replace local Broach and B.D.8 cottons by *Vijaya* cotton over an area of 5 lakhs acres in the Nerbudda-Mahi and the Mahi-Sabarmati zones of middle Gujerat.

During the year under review, the Agricultural Department controlled a seed multiplication area of 20,009 acres (including 2,074 acres grown with



farm pedigree seed) against an area of 15,569 acres (including 1,536 acres grown with farm pedigree seed) in the previous year. The total estimated area under *Vijaya* during the year was 1,84,750 acres against 1,19,927 acres in 1945-46. The total quantity of seed distributed by the Agricultural Department during the year was 11,44,527 lbs. against 6,22,181 lbs. in the previous year. In addition the Co-operative Cotton Sale and Seed Supply Societies distributed 3,48,980 lbs. of seed to cotton growers in parts of Broach and Kaira districts. The usual rate of multiplication of the area under *Vijaya* in the tract is said to be 15 times. In all, 6,637 full pressed bales of pure *Vijaya* were obtained from the controlled area of which 5,410 were sold at a premium varying from Rs. 110/- to Rs. 70/- per candy F.O.R. Bombay over the March and May Indian Cotton Contract quotations. At the end of the season some 1227 full pressed bales remained on hand. The reason for such a large number of bales remaining undisposed is stated to be the deterioration in the quality of cotton as a result of the heavy and continuous rains in the middle of the cotton season and the consequent lack of demand at an adequate premium. Another result of these unseasonal rains was that the quality of the cotton seed deteriorated and difficulty was experienced in getting good seed for sowing purposes. It is reported that the premium obtained by 1027 A.L.F. cotton was not sufficient to compensate for the loss in ginning outturn and that consequently *Vijaya* seed cotton from the general area was readily purchased by gin-owners at a premium of Rs. 15/- to Rs. 20/- per bhar of 1020 lbs. of seed cotton, over that of 1027 A.L.F. cotton grown in the tract.

(f) Scheme for multiplication and distribution of "Wagotar" cotton in Ahmedabad district.—This scheme was sanctioned by the Committee in July 1943, for a period of three years and 4 months. It came into operation on the 1st December, 1943. The scheme terminated on the 31st March 1947. This scheme has been replaced by a scheme for multiplication and distribution of K.72-2 sanctioned by the Committee in February 1947.

The object of the scheme is to organise the multiplication of *Wagotar* cotton seed so as to extend this cotton over an area of 2 lakhs acres in the *Wagad* tract of the Ahmedabad district comprising the talukas of Viramgam, Sanand, Dholka and Dhandhuka, where at present local *Wagad* mixture and *Wagad* 8 are grown.

It is stated that originally the *Wagad* cotton tract of Ahmedabad district extended over an area of 3,30,000 acres but owing to the application of the

Bombay Growth of Food Crops Act and unfavourable season the area under cotton decreased to 80,940 acres in 1946-47.

During the year the total quantity of *Wagotar* seed available for distribution was 3,95,463 lbs. against 1,00,535 lbs. in the previous year. Of this, 3,70,463 lbs. were distributed under Departmental supervision and the remainder (25,000 lbs.) was sold by the merchants to the farmers. The seed handled by the Department was sufficient to cover 20,137 acres. Owing, however, to unfavourable seasonal conditions the area sown with the improved strain was only 13,652 acres. The growers of *Wagotar* cotton are stated to have realised a profit of Re. 1-6-0 per acre.

It is stated that owing to adverse seasonal conditions in 1944-45 there was an unexpected reduction in area whilst the yield of the crop was also poor. The table below shows the area programmed to be covered under the scheme and the area actually covered :—

Year.	Area proposed to be covered according to scheme.	Actual area covered by <i>Wagotar</i> cotton.
	(Acres).	(Acres).
1943-44	760	773
1944-45	6,030	561
1945-46	47,530	2,800
1946-47	197,530	13,652

(g) Scheme for multiplication and distribution of *Suyog* cotton in Surat tract (South of river Nerbudda).—This scheme was sanctioned by the Committee in July, 1944, for a period of five years and it came into operation on the 1st April, 1945.

The object of the scheme is to replace 1027 A.L.F. and 1A cottons by *Suyog* within the next five years, over an area of 2 lakhs acres in British territory in the Surat tract lying South of the river Nerbudda, excluding Nawapur taluka of West Khandesh district.

During the year under report, the Agricultural Department controlled an area of 33,562 acres (against 30,440 acres in the previous year); of this an area of 32,298 acres including 878 acres grown with farm pedigreed *Suyog* seed was certified. A total quantity of 10,21,181 lbs. of *Suyog* seed was handled

and distributed by the Department (against 8,97,200 lbs. in 1945-46) including 16,906 lbs. from the Government farm at Surat. The number of pressed bales of certified *Suyog* cotton was 8,809 (against 8,225 in the previous year) of which 182 were agmarked with red labels and 8,627 with black labels. 53% of the certified bales have been disposed of at a premium ranging from Rs. 5/- to Rs. 12/- per candy over the local.

#### SIND.

**Seed Distribution and Extension scheme and scheme for financing seed distribution on Left Bank.**—The Sind Seed Distribution and Extension Scheme was sanctioned in December 1930 for a period of three years and came into operation in April 1931. It was extended in August 1933, for five years from the 1st April, 1934 and in November 1938, a further extension for two years was sanctioned. In August 1940, it was extended for a further period of five years from the 1st April 1941. In January 1946, it was further extended for a period of five years from the 1st April, 1946, and at the same time was merged with the scheme for financing seed distribution in Sind.

The main object of the scheme is to distribute pure seed of M.4 and Sind *Sudhar* varieties of cotton on the Left Bank and to extend the area under them to 7,30,000 acres.

During the year under review, 570 maunds of Sind *Sudhar*, 75,000 *maunds* of M.4 and 500 *maund* of N.R. seed were distributed by the Department against 9,500 *maunds* of Sind *Sudhar*, 58,500 maunds of M.4 and 2,000 *maunds* of N.R. in the previous year. The total area under cotton on the Left Bank is estimated at 8,56,500 acres against 8,50,000 acres in the previous year, the area under improved varieties being 6,50,000 acres (45,000 acres under Sind *Sudhar*, 6,00,000 acres under M.4 and 5000 acres under N.R.). The percentage of the area under improved strains on the Left Bank was 75.9% of the total cotton area against 64.3% in 1945-46.

It is reported that the factories at Hyderabad and Tando Jam generally paid a premium of Re. 0-6-0 per *maund* for certified *kapas* of M.4 variety, and Re. 0-8-0 to 0-10-0 per *maund* for Sind *Sudhar* variety. Elsewhere in the Province factories paid Re. 0-3-0 to 0-4-0 premium for M.4 variety. The buyers of F.P. bales paid about Re. 1/- premium per *maund* for certified lint of M.4 variety and about Re. 1-8-0 to 1-12-0 for Sind *Sudhar* variety. The gross extra income to the growers of M.4 and Sind *Sudhar* on an area of 6,45,000 acres is estimated at Rs. 1,34,02,000/-.

### CENTRAL PROVINCES AND BERAR.

**Scheme for distribution and marketing of Jarila Cotton in Central Provinces and Berar.**—A small scheme for the distribution of *Jarila* seed, sufficient for 1,000 acres each in 17 tahsils and for roguing the area thoroughly, was sanctioned by the Committee in January 1943, for a period of one year. It came into operation in September 1943. The present scheme was sanctioned in January 1944, for a period of three years from the 1st March, 1944. Its object is to arrange for the distribution of pure seed of *Jarila* in Berar, excluding the Pusad taluq, covering an area of two lakhs acres.

The following table gives the details regarding the area covered and seed distributed during the 3 year period of the scheme :—

Year.	Area in acres under <i>Jarila</i> .			% of area under <i>Jarila</i> to total area under cotton	Seed distributed in Mds.
	Departmental spread.	Natural spread.	Total.		
1944-45	74,674	11,65,139	12,39,813	59	15,250
1945-46	105,792	13,35,942	14,41,734	63	19,310
1946-47	91,728	12,95,956	13,87,684	60	22,082

It is stated that the cultivators found it more convenient to dispose of their produce independently than through the pool organisation. The number of bales produced in pools in various centres and the premia which they fetched are shown in the statement below :—

Year.	Total bales pooled.	Average <i>Jarila</i> price F.O.R. Bombay basis.	Average I.C.C. price.	Premium over I.C.C. price.
1944-45	3515	470/1/-	443/9/-	26/8/-
1945-46	3937	494/-	446/14/-	47/2/-
1946-47	2817	508/9/-	444/14/-	63/11/-
Total bales.	10269			

The gross extra income to growers of *Jarila* is estimated at Rs. 97,02,802/- for 1944-45, Rs. 22,90,633/- for 1945-46 and Rs. 62,65,576/- for 1946-47.

## MADRAS.

(a) **Co. 3 seed distribution scheme.**—This scheme, which replaced the Madras Co.2 seed distribution scheme, was sanctioned in January 1942, for a period of four years and five months. This scheme came into operation on the 20th July, 1942, and terminated on the 30th September, 1946. Its object was to improve the standard of Cambodia cotton in Salem district by replacing the existing Co.1 and Co.2 cotton strains with Co.3.

The following table shows the progress as regards the area covered by the improved strain and the estimated monetary gain based on actual premia and increased yield realised by the growers during the operation of the scheme :—

Year.	Area covered acres.	Estimated additional profit.
		Rs.
1942-43	2,440	55,310
1943-44	9,280	2,50,000
1944-45	13,570	4,64,250
1945-46	31,000	8,37,000

It is stated that during the first three years of the scheme, the yields were below normal on account of unfavourable seasonal conditions, but in the final year of the scheme the seed farm area exceeded the target of 6,250 acres by 814 acres. The range of premia obtained by seed-cotton and lint of the improved variety over the market rate for local Cambodia during each year is given below :—

Year.	Premium for <i>kapas</i> per 305 lbs.	Premium for lint per 784 lbs.
	Rs.	Rs.
1942-43	15/- to 27/8	200
1943-44	5 to 10	150
1944-45	3 to 5	120
1945-46	3 to 15	120

(b) **Scheme for multiplication and distribution of Karunganni cotton in Ramnad and Tinnevely districts.**—This scheme was sanctioned by the Committee in July 1944, for a period of 3 years and 4 months. The scheme came into operation on the 15th October, 1945. The Madras Government terminated the scheme on the 18th July, 1947 owing to the progressive deterioration of K.1. The object of the scheme is to distribute K.1 seed over an area of abo 3.5

lakhs of acres or roughly 70% of the total area under cotton in the districts of Madura, Ramnad and Tinnevely, south of the river Vaigai.

During the year under review, out of the total quantity of 2,65,136 lbs. of seed produced in 1945-46 on the seed farms and purchased by the Loan and Sale Societies at Koilpatti and Aruppukkottai, 262,000 lbs. were distributed to the five centres, viz., Koilpatti, Pudur, Tuticorin, Aruppukkottai and Sattur, covering an area of 15,200 acres. It is stated that the growth of the crop was thwarted at every stage by the unfavourable seasonal conditions. As a result, the available seed supply from the seed farms for distribution during 1947-48 is estimated at 545 bags (61,200 lbs.) which will be sufficient for only 5,400 acres.

It is reported that the scheme terminated on the 18th July, 1947. In a letter subsequently received, the reason for the closure of the scheme 1 year and 3 months before its sanctioned period, is stated to be the progressive deterioration of K.1, and the desirability of replacing it with the better strain, 4706.

(c) **Scheme for maintenance of nucleus of pure seed of improved varieties of cotton in Madras Province.**—The scheme was sanctioned by the Committee in January, 1938, for a period of five years and came into operation on the 12th September, 1938. In July, 1943, it was extended for a further period of five years for the maintenance of nucleus of the four strains, Co.2, Co.4, K.1 and N.14.

The area selfed and the quantity of selfed seed produced of each variety during the year are given below :—

Name of variety.	Area selfed.	Quantity of selfed seed produced.	How disposed of.
Co.2 ..	Acres. 1	lbs. 424	For Central Farm sowings in 1946-47 and for inner seed farm at Tiruppur.
Co.4 ..	0.70	158	For sowing the bulk areas on the Farm during 1946 summer.
K.1 ..	2	682	For sowing Farm bulk area in 1946-47.
N.14 ..	2	170	For sowing on the Farm and for raising pure seed blocks under non-official management.

(d) **Scheme for multiplication and distribution of C.11.2 cotton in Coimbatore district of Madras Province.**—This scheme was sanctioned in August 1946, for a period of three years. It came into operation on the 1st July, 1946. The object of the scheme is to extend the cultivation of the improved strain C-11.2, over an area of one lakh acres in the rainfed regions of Coimbatore district.

It is stated that no data are as yet available in regard to the quantity of improved cotton marketed or the premia secured since the ginning of the produce is still in progress.

### UNITED PROVINCES.

**Scheme for distribution, extension and marketing of Perso-American Cotton in Western United Provinces.**—This scheme was sanctioned in January, 1942, for a period of four years. The agricultural and marketing part of the scheme came into operation on the 6th May, 1942. In January, 1946, it was further extended up to the 31st August, 1946. The scheme terminated on the 31st August, 1946.

The objects of the scheme were (i) to multiply pure seed of Perso-American cotton for large-scale distribution and to extend its cultivation over suitable areas in the districts of Aligarh, Bulandshahr and parts of Meerut, Muttra and Etah and (ii) to organise the marketing and grading of Perso-American produce through co-operative sale societies and other agencies.

It is reported that beginning with 140 acres in the year prior to the commencement of the scheme, the area covered with improved seed of Perso-American increased to only 21,710 acres in 1946 against the target of 60,000 acres aimed at ; the factors responsible for failure to cover the whole programmed area are stated to be, (1) comparatively reduced rate of extension in the later stages of seed distribution scheme, (2) unfavourable seasonal conditions, (3) general reduction of area under cotton (both irrigated and unirrigated) from about 5 lakhs of acres before the war to about 2 lakhs at present due to "Grow More Food" campaign and (4) low price fixed by Government of India for cotton in comparison to abnormally high prices of food grains. The maximum yield of the type per acre never exceeded 3 to 4 mds. during the period of the scheme.

The details of *kapas* purchased and bales prepared during the period are given in the following statement :—

Year.	Amount of <i>kapas</i> purchased.		Bales prepared.		Total.
	By Agriculture Department.	By Co-op. Organisations.	By Agriculture Department.	By Co-op. Organisations.	
1942-43 ..	4814 mds.	..	241	..	340
1943-44 ..	4384 ,,	12,426 mds.	272	750	1,052
1944-45 ..	3552 ,,	12,120 ,,	220	737	957
1945-46 ..	2754 plus 5665 of V stage	3,476 ,,	496	196	692

It is reported that the bales were sold at premiums varying from Rs. 50/- to Rs. 100/- over *Jarila*. During the first two years, 1942 and 1943, the bales were sold in small lots to a number of mills while in 1945 and 1946 all the bales were sold to one spinning and weaving mill at Hathras. The *kapas* fetched in general about Rs. 4/- to Rs. 8/- per maund over the prevailing market rates for desi cotton. The estimated gross extra income to the growers of this variety in the different years is estimated as follows :—

Year.	Area.	Gross extra income.
1942-43	1,211 acres (survived out of 1404 acres)	Rs. 28,059/-
1943-44	11,886 acres	2,77,165/-
1944-45	22,591 ,,	6,00,101/-
1945-46	21,710 ,,	3,09,392/-

#### BARODA STATE.

(a) **B. 9 Seed distribution scheme.**—This scheme was sanctioned in July, 1941, for a period of five years. It came into operation on the 1st September, 1942, and terminated on the 31st August, 1947. The object of the scheme is to introduce in the areas of Baroda district, not suited to B.D.8, a cotton superior both in staple and spinning value to the average Broach grown locally.

It is stated that since the entire Baroda district has been put under *Vijaya*, during the year under review, the work on B.9 scheme had been stopped.



(b) **Scheme for creation of a pure Wagotar cotton zone in Mehsana district in Baroda State.**—This scheme which was sanctioned by the Committee in July 1945, for a period of 2 years and 7 months, replaced the *Wagad* scheme and came into operation on the 1st January, 1946.

The object of the scheme is to cover the whole of the closed-boll tract of Mehsana district, at present extending over 54,000 acres, with Wagotar, a strain of *herbaceum* cotton developed by the Department of Agriculture, Bombay, at its research station at Viramgam.

During the year under report, 8,30,860 lbs. of *Wagotar* seed were distributed by the Department for sowing over an area of 38,960 acres. Of this area, 4,014 acres, (100 acres of nucleus seed, 546 acres of A grade and 3,368 acres of B grade) were controlled by the Department. The certified produce from the controlled area was offered a premium of annas 12 to Re. 1/- per standard maund of kapas over the local. The total gross extra income to the growers of *Wagotar* cotton on an area of 38,960 acres is estimated at Rs. 2,72,720/-.

(c) **Scheme for distribution and multiplication of Vijaya cotton in Baroda State.**—This scheme was sanctioned by the Committee in January, 1944, for a period of five years and it came into operation on the 1st April, 1944. It aims at the replacement of B.D.8 cotton by *Vijaya* over approximately 3,00,000 acres in the black soil areas of Baroda State.

During the year under report, the Department sold 4,545,280 lbs. of seed to cover some 2,47,160 acres representing the total area under cotton in the tract. Of this, 49,145 acres (3,922 acres of A grade and the balance of B grade) exclusive of nucleus plot, were under departmental control. It is stated that the total quantity of seed cotton pooled by the department amounted to 1,43,484 maunds. The ginning of the crop is said to be still in progress and so far 4,497 bales have been given Agmark labels. The premium obtained for certified kapas was Rs. 3/- per bhar of 924 lbs. and that for certified lint Rs. 8/- per candy of 784 lbs. over non-certified *Vijaya*. The total gross extra income to the growers of *Vijaya* cotton on an area of 2,47,060 acres is estimated at Rs. 36,90,459/-.

(d) **Scheme for distribution of Suyog cotton seed in Navsari district of Baroda State.**—This scheme was sanctioned by the Committee in January, 1945, for a period of five years. It came into operation on the 1st April, 1945.

The scheme aims at the replacement of 1027 A.L.F. cotton over an area of 210,000 acres in Navsari district by the improved new strain '*Suyog*.'

During the year under report, the Department sold, through some twenty depots established throughout the district, 2,168,030 lbs. of controlled seed covering a total estimated area of 160,000 acres against 22,134 acres covered by 353,430 lbs. of seed in 1945-46. Of the total area sown, 22,637 acres (2609 acres of A grade and the remainder of B grade) were under departmental control. It is stated that arrangements were made with ten gins in Navsari for pooling and ginning all departmentally certified seed cotton separately. Ginning and baling of the season's crop are reported to be still in progress. So far 589 bales were agmarked and sold at a premium of Rs. 5/- over the average prevailing price of Rs. 540/- per candy. The estimated gross extra income to the cultivators of *Suyog* from an area of 160,000 acres is stated to be Rs. 5,20,000/-.

#### MYSORE STATE.

**Scheme for multiplication and distribution of Sel. 69 and M.A.V. in Mysore.—** This scheme was sanctioned by the Committee in January, 1945, for a period of 5 years. The scheme came into operation on the 1st June, 1946. The object of the scheme is to extend the cultivation of (i) Sel. 69, an improved Asiatic cotton, in the black soil tract of the State covering an area of about 64,000 acres, and (ii) Mysore-American, M.A.V. in the red soil tract extending from 16,000 to 20,000 acres, under rainfed and irrigated conditions.

It is stated that due to abnormally heavy rainfall the yield of the cotton crop was lower by about 30% than expected.

**Sel. 69.**—Ten pounds of selfed seed obtained from an area of 1 acre were utilised to raise a pure nucleus crop at the Babbur Farm. In all 15 maunds of seed were obtained for the second stage of multiplication. It is anticipated that about 50 acres will be sown with Sel. 69 during the coming season.

**M. A. V.** It is stated that, in collaboration with the Co-operative Marketing Society, Arasikere, bulk seed was distributed to cover an area of 1,200 acres in the different cotton zones of the State. The produce from this area was pooled and ginned separately under departmental supervision, and 200 *maunds* of pure seed have been stocked for distribution in the coming season. M.A.V. fetched a price of Rs. 10-5-9 per *maund* of 28 lbs. kapas against Rs. 8-8-0 per *maund* obtained by the local.

## CHAPTER V.

### COTTON STATISTICS.

The total area under cotton in India during the year under review was 14,860,000 acres, showing an increase of 192,000 acres or one per cent. as compared with the previous year. In this connection it may be mentioned that in view of the gravity of the food situation in the country, the Indian Central Cotton Committee at its meeting in February 1946, made a recommendation to the Provincial and State Governments to take whatever steps were considered necessary to restrict the cotton acreage for the season 1946-47, so that it might not exceed the acreage sown in 1945-46. The increase was mainly in Bombay Province, Sind, Hyderabad, Baroda, Gwalior, Central India and Rajputana States. The total estimated outturn for 1946-47 was 3,566,000 bales of 400 lbs. net showing an increase of one per cent. as compared with the previous year. On the basis of the figures of cotton pressed plus unpressed cotton consumed in mills plus extra-factory consumption, the actual crop, however, may be placed at 42.03 lakhs bales.

### INDIAN COTTON SITUATION 1946-47.

The depressing trend of prices during the close of the previous season continued through the first half of September, 1946. After some recovery the September contract of the 1945-46 season closed at around the opening level at the beginning of the 1946-47 season. The Indian Cotton Contract January 1947 delivery was quoted around Rs. 450/- per candy on the 25th September, 1946. After a slight downward reaction, prices recovered by the last day of that month. The Government of India's Press Note of the same date outlining their export policy and imposing restrictions on exports of cotton from the 1st September to the 31st December, 1946, to the extent of 2 lakhs bales of certain specific types of staple 11/16" and below, resulted in a sharp set-back to prices on the 1st October. After a slight further depression, expectations of a more favourable raw cotton policy influenced prices in an upward direction during the third week of that month. In a Press Note, dated the 26th October, 1946, the Government of India announced their revised cotton policy for 1946-47. In this announcement an increase by Rs. 80/- per candy in the floor price of Fine Jarila 3/4" was allowed as well as *pro rata* increases in the floors of other

varieties. The quota of exports for the period January-April 1947 was fixed by Government at 5 lakhs bales. At the same time the imposition of an export duty of Rs. 20/- per bale on exports of raw cotton was announced. The publication of the revised cotton policy had a bullish effect on the market and prices at the end of October advanced by some Rs. 20/- per candy higher than they were at the beginning of the month. The average price during the month for the nearest delivery period was Rs. 444/- per candy against Rs. 427/- in the previous month. Throughout November, prices on the whole remained steady, the average price for the month for the nearest delivery being around Rs. 460/- per candy. In expectation of a more liberal export policy, prices continued to be steady during the greater part of December but as these expectations did not materialise, the end of the month witnessed a slight recession in the price level. The average price for the month of December was, however, about Rs. 5/- higher than that for November.

The recession in prices noticed at the end of December continued during the month of January, owing to delay in the expected announcement regarding the revision of the export policy. On the 30th January, 1947, the Government of India announced appreciable relaxation of the restriction on the export of cotton stapling more than 11/16". Out of the permissible over-all quota of 500,000 bales for the January-April period, it was laid down that 250,000 bales should be of cotton stapling 11/16" or less. Against the balance of 250,000 bales, two specified varieties of medium staples, viz., Jarila and 4F, could be exported up to a limit of one lakh bales and two long staple styles viz., LSS and NT up to a limit of 150,000 bales. For various reasons, the announcement did not produce enthusiasm marketwise. In the first place, it was feared that certain varieties excluded from the list of exportable styles would be liable to adverse price reactions. Secondly, in view of the heavy accumulation of LSS and NT cottons at the ports, the export quota of 150,000 bales for these styles was considered too little to bring much relief. Further, the continuance of the export duty on raw cotton, despite the recommendation of the Indian Central Cotton Committee for its removal, was construed as a bearish factor. The declining trend of domestic mill consumption was another depressing feature. Before this accumulating pessimism, the forward market began to give way and by the third week of February the March Contract fell down to the floor level (Rs. 430/-). It should be mentioned that this downward movement had taken place despite the encouraging news of the halving of the export subsidy for U.S. cotton. In the following fortnight, the market reacted

favourably to the news to the effect that the newly created Commodities Prices Board was directed by the Government of India to examine the question of cotton prices with special reference to the issue of fair prices for *deshi* cottons and the adequacy of the existing classification of staples, especially in respect of C.P. 1 and C.P. 2. Further, the Government of India announced the abolition of the destination quotas and at the same time extended the list of exportable styles by including in it Broach, Westerns and Surat varieties. Before the market could be pulled up by these favourable factors, rumours of an immediate decontrol of the textile industry as well as of raw cotton, though such possibility was discounted in official quarters, caused a wave of selling which resulted in a sensational collapse of the market when the May Contract crashed to the floor on the 14th March, while the March Contract was simply ignored.

The fortnight which followed witnessed a halting recovery in prices. The most important stimulus was the announcement by the Government of India of the allotment of a quota of 8 lakhs bales for export during May-August, 1947, while the concession that short staples of all descriptions up to a limit of 3 lakhs bales during the period would be eligible for export for the first time was considered very significant. The remaining 5 lakhs bales were split up equally between medium staples and long staples and seven broad descriptions of these two categories, comprising 4F, Jarila, Broach, Westerns, N.T., L.S.S. and Surat styles were allowed to be exported. A further favourable factor was the strength of the spot market due mainly to buying interest on the part of exporters. The free and ready purchase by the Central Government of spot cotton offered at floor prices also imparted steadiness to the market. March contract after improving by a few points over the floor price, terminated at Rs. 432/- on the 25th March. Despite the favourable factors mentioned above, the undertone continued to be weak owing to the continuing downward trend in domestic mill consumption with the result that the revival of decontrol rumours again pushed down the May Contract to the floor level of Rs. 430/- on the 8th April, from which it never recovered. The situation was further aggravated by the heavy accumulation of stocks at Karachi owing to panicky despatches of cotton from the disturbed areas in the Punjab. As a result, the July Contract remained at the same level as the May Contract at its closure, viz., the floor price of Rs. 430/-, while the September Contract was only a few points above the floor.

The announcement by the Government of India at the end of May permitting the export of 289F gave rise to an expectation by the trade regarding

the withdrawal of all export restrictions. This was, however, offset by developments in the political sphere, arising out of the Plan of June 3. Trading, consequently, was restricted. The only factor which lent support to the market at the time was the purchase by Government at the floor levels. At this juncture the Government of India announced the removal of all restrictions on export of cotton. It was made clear that this would be operative only for the rest of the cotton year, at the end of which the position would be reviewed. Following this announcement, buying interest in the spot market quickened and by the middle of June the July Contract staged a sizeable recovery above the floor. Nevertheless, a section of the trade began to be affected by certain bearish factors in the cotton situation. The domestic mill consumption was continuing its downward trend, total shipments of cotton up to the middle of June were lower than in the corresponding period of the previous year and it was feared that the export quota of 1.5 million bales for the whole season was hardly likely to be reached. Apart from the freight scarcity, importing countries were not actually very keen on rushing to make purchases of Indian cotton in view of the removal of all restrictions on the export of cotton. For the time being, however, certain technical factors helped to sustain the upward trend in the latter half of June.

In the month of July, the uncertainty surrounding trading in the new crop began to have considerable influence on prices. The Government of India had announced earlier that the question of raw cotton prices had been referred to the Commodities Prices Board and that a decision on prices as well as on the opening of trading in the new crop would be taken after the Board had made its recommendations. As some time was expected to elapse before Government's intentions would be made known, it was feared that it might not be possible to start trading in the new crop before the expiry of the September Contract of the 1946-47 season. In that event there would be no switching over facilities for the operators. As a result, there was considerable bull liquidation in the September position, which was further aggravated by heavy short sales by bears. From the middle of July onwards the market took a downward course, except for mild and short-lived reactions. The main interest having been transferred to the distant position, the July Contract ran out on the 25th July at around Rs. 433/-.

With the termination of the July Contract, the bear attack began to be concentrated on the September position. The statistics of domestic mill consumption for the 10 months ending June 1947 which showed a decline of some

20% as compared with the corresponding period of the previous year, further depressed sentiment. As a result, the September Contract crashed to the floor on August 14. Nobody wanted to weigh cotton over against his purchases since it would be old crop and not tenderable in the next season. In the third week of August, the Government of India gave their consent to trading in hedge and delivery contracts of the 1947-48 crop, subject to the East India Cotton Association obtaining the consent of the Bombay Government and also subject to the then existing floors and ceilings and other terms and conditions. In the last week of August both the Governments of India and Pakistan announced that exports would continue to be unrestricted until the 30th November, 1947. The Government of India further declared that free export of cotton would be allowed even after November, provided that the total exports from the two Dominions did not proceed at a rate which would be in excess of the annual limit of 1.5 million bales for the 1947-48 season and provided further that there were no excessive exports of styles required by the mills in India. Simultaneously the Government of India announced the floors and ceilings for different varieties of cotton for the 1947-48 season. As compared with the previous year, higher ceilings were granted for Bengal *Deshi* and Oomra *Deshi* while the ceiling price for Sind *Deshi* was abolished. Further a new class was introduced for C.P.1, C.P.2 and Central India Oomras, with 'on' allowances for staple as well as class differences. The season ended on the 31st August, with the Indian Cotton Contract-September lying on the floor, but the undertone was optimistic.

The season 1946-47 commenced with a carryover of 39.46 lakhs bales (400 lbs. net) of Indian cotton in the country, of which 21.39 lakhs held by the trade and 18.07 lakhs by the mills. Out of the total stocks, 23.47 lakh<sup>s</sup> bales were of 'long and medium staples' (7/8" and above) and the balance of 'short staple' (below 7/8"). On the basis of the available data, the crop during 1946-47 may be estimated at 42.03 lakhs bales of 400 lbs. net (35.29 lakhs cotton pressed, 2.24 lakhs loose cotton consumed in mills and 4.5 lakhs extra-factory consumption). Assuming the proportion of 'long and medium staple' to the total production to be about the same as in the previous year, viz., 65%, the outturn under this staple length group may be roughly estimated at 27.32 lakhs bales. The total supply for the season thus amounted to 81.49 lakhs bales, consisting of 50.79 lakhs bales 'long and medium staples' and 30.70 lakhs bales 'short staple.' Mill consumption of Indian cotton in India during the 1946-47 season amounted to 31.64 lakhs bales (21.41 lakhs being of

'long and medium staple' and the rest of 'short staple'). Apart from consumption by mills, Indian cotton is used for extra-factory purposes, such as, hand-spinning, making quilts and padded apparel and stuffing pillows, beds etc. On the basis of enquiries conducted by the Indian Central Cotton Committee in selected areas some years ago, such consumption, mainly in the form of *kapas*, is estimated at 450,000 bales per annum for all-India. Exports of Indian cotton from the 1st September, 1946, to the 16th August, 1947, amounted to 9.76 lakhs bales, against 9.49 lakhs bales during the corresponding period of the previous year (complete official figures for the year ending 31st August, 1947, are not yet available). Accordingly, the total exports for the season 1946-47 may be placed at about 11.0 lakhs bales against 10.38 lakhs in 1945-46. Of the total exports in 1946-47, some five lakhs bales may be taken as 'long and medium staples' and the rest as 'short staple.'

On the basis of the data given above, the carryover of Indian cotton with the mills and the trade on the 31st August, 1947, may be estimated at 34.35 lakhs bales arrived at as under :—

	In lakhs of bales of 400 lbs. net.		
	Long and medium staples.	Short staple.	Total all staples.
Stocks of Indian cotton held by the mills and the trade on the 31st August 1946.	23.47	15.99	39.46
Estimated production during 1946-47 ...	27.32	14.71	42.03
<b>Total supply during 1946-47 ...</b>	<b>50.79</b>	<b>30.70</b>	<b>81.49</b>
Mill consumption of Indian cotton during 1946-47 ...	21.41	10.23	31.64
Estimated exports of Indian cotton in 1946-47. ...	5.00	6.00	11.00
Estimated extra-factory consumption ...	0.20	4.30	4.50
<b>Total distribution during 1946-47 ...</b>	<b>26.61</b>	<b>20.53</b>	<b>47.14</b>
Estimated stocks held by the mills and the trade on 31st August, 1947. ...	24.18	10.17	34.35



Stocks of Indian cotton held by the mills on the 31st August, 1947, amounted to 14.99 lakhs bales against 18.07 lakhs bales on the corresponding date of the previous year. The stocks with the trade on the same date may thus be estimated at 19.36 lakhs bales. It is, however, feared that this estimate may be rather on the low side, owing to incompleteness either in the figure of opening stock or of actual crop taken into account in the above table or of both. According to a prominent cotton firm, the stocks held by the trade on the 31st August 1947 are estimated to be of the order of 26 lakhs bales. The actual trade stocks were probably somewhere between this figure and the estimate arrived at above.

### **STAPLE LENGTH OF INDIAN COTTON CROP.**

Owing to delay in the receipt of information from certain Provinces and States, the report on the estimated production of cotton according to staple length (Statistical Leaflet No. 1) for the 1945-46 season was issued during the season under review, instead of in the previous year. The report for 1946-47 has not yet been published for the same reason.

### **STATISTICS OF STOCKS OF COTTON HELD IN THE COUNTRY.**

The statistics of stocks of cotton held by the mills on the 31st August each year are collected by the Committee from mills by direct enquiries on a voluntary basis. The figures of stocks held by the trade on the same date are obtained through the co-operation of Provincial and State Governments and trade bodies. To make the statistics of trade stocks as complete as possible, the Committee recommended to the Provincial Governments and States the introduction of legislation for the purpose. So far, the Government of Bombay have passed the Bombay Cotton Statistics Act, 1946, and have also framed the necessary rules for its enforcement commencing with the census of stocks of cotton as on the 31st August, 1947. Similar legislation has also been passed by the Governments of the United Provinces and the Central Provinces and Berar and the Baroda State. Pending the introduction of legislation, concerted attempts were continued to be made to collect, on a voluntary basis, information in respect of stocks of cotton held in the country on the last day of the cotton season by agencies other than mills. The results of the census of trade and mill stocks on the 31st August 1946, have been published in the Committee's Statistical Leaflet No. 2, 1945-46. The figures of trade stocks as collected by the Committee were some 3.1 lakhs bales less than the estimate of a prominent cotton firm. The relevant figures for the 31st August, 1947,

are not yet complete. In accordance with the decision of the Committee, an attempt is being made to collect the information for trade stocks under the heads 'old' and 'new,' by 'old crop' being meant cotton that is not of the current season. The Committee is indebted to the trade associations, Market Committees and other authorities for their valuable assistance in this matter.

As the season adopted for the cotton crop of the Madras Province is the year ending 31st January, figures of stocks of cotton held in the province on this date are collected annually in addition to the figures relating to the 31st August. The relevant figures for the 31st January, 1947, together with comparative details for previous years, are given in Appendix IV.

### **DEMAND FOR VARIOUS TYPES OF INDIAN COTTON.**

Statistics relating to internal and export demand for various types of Indian cotton are compiled from the information collected on a voluntary basis and are published in Statistical Leaflets Nos. 3 and 4. The importance of such statistics to the trade and industry and to those entrusted with the responsibility of shaping and directing the cotton policy of the country has been stressed in previous reports. The statistics relating to mill receipts and exports of cotton classified by varieties for the 1945-46 season were published during the year under review. The leaflets for 1946-47 are not yet ready owing to delay in the receipt of the returns from some mills and exporters.

### **INDIAN MILL CONSUMPTION.**

Figures of consumption of Indian cotton in mills in British India and Indian States for the years 1932-33 to 1946-47 based on the monthly statements issued by the Committee, are given in Appendix V. From the 15th August 1947, owing to the constitutional changes, the figures of consumption of cotton by mills in Pakistan are excluded and the consumption figures from that date refer only to the Dominion of India, including Indian States. The total consumption of Indian cotton in mills in India during the season under report, viz., 3,150,852 bales, showed a decrease of 720,170 bales as compared with the previous season. The reduction is mainly attributed to the introduction of the 48-hour week, frequent closure of mills due to strike and other causes and a shortage of coal in certain areas. Consumption of foreign cotton by mills in India during the year ending 31st August, 1947, amounted to 694,000 bales of 400 lbs. net against 593,000 bales during the previous season. The increase in the consumption of foreign cotton indicates that the reduction in the consumption of

Indian cotton was also to some extent due to the switch-over to the spinning of finer counts by mills using foreign cotton owing to the greater profit margin in the production of finer counts.

### EXPORTS.

Exports of Indian cotton from British India during the season are estimated at 1,100,000 bales (exact official figures not yet available) against 1,035,000 bales in 1945-46. Exports to the United Kingdom, the Continent, U.S.A. and other countries formed 20, 38, 9 and 33 per cent. of the total exports during 1946-47, the corresponding percentages for 1945-46 being 13, 21, 21 and 45, respectively.

### STATISTICS OF COTTON PRESSED.

During the season under review 2,493,000 bales of cotton were pressed in British India and 1,100,000 bales in Indian States, making a total of 3,593,000 bales for all India; the corresponding figures for 1945-46 were 2,559,000, 1,022,000 and 3,581,000 bales, respectively. These figures should be regarded as provisional as complete revised figures are not yet available.

### UNPRESSED (LOOSE) COTTON STATISTICS.

The statistics of cotton pressed do not account for the whole of the Indian cotton crop as, apart from the quantity utilised for extra-factory consumption, chiefly in the form of *kapas*, mills situated near cotton growing areas often use considerable quantities of ginned unpressed cotton. During the year, 223,649 bales of unpressed cotton were consumed in mills in India against 282,589 bales in the preceding year. The relevant figures for the years 1932-33 to 1946-47 are given in Appendix V to this report.

### STATISTICS OF COTTON GINNED.

The figures of cotton pressed do not cover the entire crop as, apart from ginned unpressed cotton consumed in spinning mills, for which figures are available, both ginned unpressed cotton and *kapas* are also utilised for domestic purposes, such as hand-spinning, making of quilts, mattresses, etc., for which there are no reliable data. If ginning returns were instituted, all that would be required for arriving at the actual crop is a reliable estimate of the quantity of *kapas* used for domestic purposes. The ginning and pressing returns would, at the same time, serve as a check on each other. The submission of ginning returns is now in force in the Central Provinces and Berar, Bombay Province, West Bengal, Sind, the United Provinces, Madras Province and Ajmer-Merwara and certain Indian States.

### **IMPROVEMENT OF COTTON FORECASTS.**

The all-India cotton forecasts of the 1945-46 season were, as usual, subjected to a post-mortem examination by the Cotton Forecast Sub-Committee of the Indian Central Cotton Committee, after the close of the season, with a view to detecting sources of errors and suggesting remedial measures. The actual crop for all-India during 1945-46 was estimated at 41.44 lakhs bales against 34.4 lakhs bales forecasted in the Final Cotton Forecast for 1945-46, the latter being short of the actual by 17%. The discrepancy lay mainly in the forecast estimates of the United Provinces, the Punjab, Bombay Province, Madras Province, Central India, Rajputana and Mysore State. The attention of the forecasting authorities in the Provinces and States was drawn, where necessary, to the discrepancies between the forecasts and the estimated actual crop with a view to their locating the sources giving rise to the errors.

The Committee considered the proposed plan for a survey of village or extra-factory consumption of cotton, received from Dr. V. G. Panse, in accordance with the decision of the Committee mentioned in the previous report. After considerable discussion on the desirability or otherwise of undertaking the survey, it was decided, having regard to the prevailing abnormal conditions, that consideration of the proposal should be postponed for a period of two years.

As in the past, the estimates of the cotton crop were received by wire from the Department of Commercial Intelligence and Statistics and released in Bombay at a time previously fixed to synchronise with the time of their release in Calcutta.

### **PUBLICATION OF MANUAL ON PREPARATION OF ALL-INDIA COTTON FORECASTS IN INDIAN LANGUAGES.**

It was reported last year that the Committee decided that the publication entitled "A Manual on the preparation of All-India Cotton Crop Forecasts" issued by it in 1944, should be translated into Marathi and five other main Indian languages, viz., Gujerati, Hindi, Urdu, Tamil and Telugu, current in the major cotton growing provinces and that 500 copies in each of the languages mentioned should be printed at the cost of the Committee and passed on to Directors of Agriculture concerned for dissemination. The Marathi, Gujerati, Tamil and Telugu editions of the Manual were accordingly published during the year under report.

### **QUESTION OF ADVANCEMENT OF DATES OF PUBLICATION OF THIRD AND FOURTH COTTON FORECASTS.**

Reference was made in the last report to the suggestion of the Registrar of Co-operative Societies, Bombay Province, for the advancement in the interest of the growers of *Jarila* cotton, of the dates of publication of the Third and Fourth Cotton Forecasts to the 1st December and 1st January from the 15th December and 15th February, respectively, as at present. The Committee held the view that the object could be achieved by amplifying the existing Second and Third Intermediate Reports on the cotton crop of the Bombay Province so as to include therein the desired information on the outturn of the *Jarila* crop in the Province, which at present, was not available until the issue of the Third Forecast in December. The Director of Agriculture, Bombay Province was accordingly addressed and he has agreed to give effect to the proposal.

### **REVISION OF CLASSIFICATION OF INDIAN COTTON ADOPTED IN ALL-INDIA COTTON FORECASTS.**

The revised classification as approved by the Committee has been generally accepted by most of the Provinces and Indian States concerned. A few suggestions received for modifying the classification are under consideration. However, in view of the partition of the country, the classification agreed upon will need further revision so as to include cottons in the Dominion of India only and this matter is receiving attention.

### **ACCURACY OF THE ALL-INDIA COTTON FORECASTS.**

The publication of Statistical Leaflet No. 5 relating to the above was suspended during the war, commencing with the issue for the 1941-42 season. It has now been decided to resume publication of this Leaflet and a report covering the five seasons ending 1945-46 will be out shortly.

### **SCHEME FOR CROP ESTIMATING SURVEY ON COTTON IN THE CENTRAL PROVINCES & BERAR.**

The object of the scheme is to provide a suitable technique for conducting yield surveys on cotton which are considered to constitute the most reliable direct basis for estimation of the outturn of the crop. The scheme was originally sanctioned in July 1942 for a period of one year. It came into operation on the 15th October, 1942, the venue of the experiment being the Akola district.

At its meeting in July 1943, the Committee agreed to extend the scheme to Buldana district for a period of one year. In July 1944, the scheme was extended to the whole cotton tract of the Province for a period of one year in the first instance, the object being to determine accurately the average yield of *kapas* per acre and the total production for the whole of the cotton area in the Province by the method of harvesting random plots. At the same time, it was intended to train the staff of the Land Records and Revenue Departments in the practical working of the method so that the work could ultimately be taken over by these Departments as a routine procedure for carrying out yield surveys.

In July 1945, the Committee approved of a further extension of the scheme for a period of one year. The practicability of the random sampling technique and the trustworthiness of the results obtained having been fully demonstrated by the first three years' work, it was considered necessary to take the experiment to the final stage in which the field work would be organised in such a manner that it could be entrusted completely to the staff of the Revenue and Land Records Departments primarily responsible for the yield survey work in the Province. In August 1946, the scheme was extended for a further period of two years, viz., 1946-47 and 1947-48 (up to 31st March, 1948), the expenditure to be shared between the Committee and the Provincial Government on a 50 : 50 basis, subject to the condition that at the end of that period the Provincial Government would take up crop estimating survey as an annual routine at their own cost.

The survey in 1946-47 was the third provincial survey carried out for estimating the average yield per acre and the total production for the Province by the random sampling technique. The survey was conducted on the lines of the previous year with such changes as were found necessary from the experience gained.

According to the survey, the total production of lint calculated on the basis of the actual acreage and the actual ginning outturn based on reports from principal cotton ginning factories was estimated at 4,78,816 bales for the whole Province, with a standard error of 12,123 bales. As in the previous year, the survey was utilised to supply timely estimates for the third, fourth and final forecasts of 1946-47 also. As compared with the actual yields obtained under the survey, the yield was under-estimated in Berar and overestimated in the Central Provinces in the third forecast based on anna valuation of survey plots

in November, though for the whole Province the over-estimation was only 5%. The fourth forecast which was made when the crop was harvested agreed very closely with the actual yield, while the final forecast was identical with the latter. The survey, it is claimed, thus satisfies an important need by placing on a scientific footing the procedure of making the various yield forecasts.

As regards the problem of forecasting yield from the standing crop by quantitative observations, the provisional conclusion arrived at on the results obtained up to 1944-45 was that careful eye judgement of the sample plots is sufficient for obtaining yield forecast from the standing crop (third forecast) and the labour of making quantitative observations and their analysis might not be justified as a normal routine.

### PUBLICATIONS.

The following statistical publications were issued during the year under review :—

- (1) Statistical Leaflet No. 1—Thirteenth Issue (1945-46), "Report on the staple length of the Indian cotton crop of 1945-46 season."
  - (2) Statistical Leaflet No. 2—Thirteenth Issue (1945-46), "Stocks of Indian raw cotton held in India by the mills and the trade on 31st August, 1946."
  - (3) Statistical Leaflet No. 3—Thirteenth Issue (1945-46), "Receipts at mills in India of raw cotton classified by varieties—1945-46 season."
  - (4) Statistical Leaflet No. 4—Thirteenth Issue (1945-46), "Exports by sea of Indian raw cotton classified by varieties—1945-46 season."
  - (5) Statistical Bulletin No. 15—"Supply and distribution of the various types of Indian cotton during the season of 1944-45."
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## CHAPTER VI.

### COTTON MARKETING, LEGISLATION AND OTHER PROTECTIVE MEASURES.

#### (1) Cotton export policy.

In March 1947, a representation was received from the Punjab Chamber of Agriculture and the Punjab Cotton Ginners' Federation drawing attention to the large accumulation of stocks of cotton at the various centres in the Punjab for want of buyers and urging the need for Government to buy cotton at floor prices in the up-country markets in the Punjab. It was decided that the Delegation appointed by the Committee at its meeting in January 1947 to meet the Hon'ble Member for Food and Agriculture should also wait on the Hon'ble Member for Commerce and discuss with him this subject. Arrangements were made accordingly and the Delegation waited on the Hon'ble Member for Commerce on the 2nd April, 1947.

(ii) **Purchase for India of East African and Sudan cottons from the 1946-47 crops.**—In November 1946, the Committee communicated its views to the Government of India on the question of the proposed negotiations for the purchase for India of East African and Sudan cottons from the 1946-47 crops. Subsequently, at the request of the Government of India, the Committee appointed Mr. Chimanlal B. Parikh to represent the Committee at the conference convened by the Government of India, Commerce Department, in January 1947, to settle prices and the terms of purchase for India of East African and Sudan cottons out of the 1946-47 crops.

(iii) **Proposed decimalisation of weights and measures.**—A reference was received from the Government of India inviting the views of the Committee on the suggestion that simultaneously with the decimalisation of the coinage, an endeavour should be made to decimalise weights and measures also. The Committee expressed the opinion that consideration of the question of decimalisation of weights and measures, because of its extreme complexity, should be held over until the proposed decimalisation of the coinage system of the country had been brought into operation and had worked satisfactorily in practice.





regards the use of the machine tests by the Appeal and Super-Appeal Committees, assuming that such tests were intended to ascertain merely the fibre length of cotton and not its other characteristics, such as, strength, maturity, feel, etc., which are also of importance in the evaluation of samples. Nowhere else in the world is the machine test used for judging cotton for trading purposes and the Sub-Committee felt that the adoption of machine tests would not be a practical measure at this stage. It is the considered opinion of the Sub-Committee that the only effective and efficient system in the field of survey and arbitration is the appointment of sworn full-time surveyors—say 5 or 6 in number—of proved honesty and integrity, who should be paid salaries commensurate with their status and the responsibilities to be discharged by them. The Sub-Committee further strongly recommended the introduction of this system at the earliest possible moment.

The Sub-Committee noted with satisfaction the recommendations of the Cabinet Committee regarding the establishment of licensed warehouses. In its opinion, when the system of surveys by sworn surveyors functions jointly with the system of licensed warehouses, it should be unnecessary for the same lot of cotton to be surveyed over and over again during the season, as is the case at present, since such cotton could be dealt with on the basis of survey certificates and warehouse receipts. This would result not only in a saving of a good deal of handling charges and waste of cotton in the process of such handling but would also bring in a greater amount of investment interest in cotton tendered under the rules of the Association.”

The decision of the Provincial Government on the question is as follows :—

“In paragraph 15 of its Report, the Committee has expressed the opinion that, while licensed warehouses are the ultimate means of eliminating the abuses to which the present system of survey and arbitration is liable, short term measures of improvement are meanwhile necessary and these should comprise ‘an enlargement of the personnel of the Survey and Appeal Committees, an insistence of the possession of a high standard of technical knowledge or experience for membership of these Committees and the introduction of machine tests at the stage of appeal.’ The short-term recommendations have been criticised, particularly on the ground that the machine test is unsuited for the purpose in view and, indeed, is nowhere utilised in the testing of cotton for commercial buying in the forward markets.

In respect of survey and arbitration the Government wishes to announce the following decision : while the Government accepts the relevant recommendations of the Cabinet Committee as a provisional solution for a very difficult problem, it would be prepared to waive it in favour of any other solution, such as that of employing full-time paid surveyors, agreed upon, in mutual consultation, by representatives of the East India Cotton Association and of the Indian Central Cotton Committee, provided such agreement is reached as early as practicable and in any case not later than January 1, 1948."

(vi) **Cotton classification and prices for 1947-48.**—The views of the Local Sub-Committee on the various items of the questionnaire issued by the Commodities Prices Board in connection with cotton classification and prices for 1947-48, were communicated to the Board. A copy of the replies sent is reproduced in Appendix VI.

(vii) **Deterioration in the quality of certain cottons grown in Bombay Province.**—It was represented to the Committee that the quality and staple of certain types of cotton in the Bombay Province, particularly Jarila and Jayawant, had deteriorated in recent months and that vigorous remedial steps should be taken to ensure that all the good work done in producing quality cottons was not wasted. The seriousness of the position was brought to the notice of the Government of Bombay who were requested to examine the causes of the deterioration and to take such steps as may be deemed necessary to remedy them.

(viii) **Cotton baling hoops.**—The arrangements for the distribution of cotton baling hoops were continued along the lines of the past year. During the year under report, some 11,267 tons of hoops were distributed to pressing factories in the country through the agency of this office working in conjunction with the Iron and Steel Controller. On the recommendation of the Baling Hoops Advisory Committee, the Government of India fixed the maximum rate which a factory can charge for pressing cotton during the 1946-47 season at Rs. 9/- per bale, to take effect from the 21st January, 1947. Except in the case of one factory at Bezwada, Madras Province, no application for permission to charge a higher pressing rate was granted.

(ix) **Fuel requirements of ginning and pressing factories.**—The arrangements for the supply of coal, under priority, to cotton ginning and pressing factories on the recommendation of this office working in conjunction with the

Textile Commissioner, Bombay, were continued during the season under report. The total quantity of coal recommended by this office for supply to ginning and pressing factories during the year amounted to about 1,60,000 tons. Recommendations were also made for the supply of diesel oil to cotton ginning and pressing factories until the control on this article was lifted in March 1947. In addition, assistance was given to the factories in the matter of obtaining iron and steel required for maintenance and repairs.

(x) **Dismantling of cotton ginning and pressing factories.**—Applications for the grant of permission for the dismantling of cotton ginning and pressing factories are referred to this office for opinion by the Textile Commissioner, Bombay. Several such applications were dealt with during the year under review.

(xi) **Regulated Cotton Markets.**—As a result of investigations carried out into the financing and marketing of cultivators' cotton which established beyond doubt that cultivators obtain better prices for their cotton in tracts where regulated markets exist, Provincial Governments were requested by the Committee to establish such markets in all the more important cotton growing centres. Accordingly, legislation for the establishment of regulated markets has been enacted in the Provinces of Bombay, Madras, the Punjab and the Central Provinces, and the Hyderabad, Baroda, Indore, Chota Udepur and Sangli States. In the Province of Bombay, 13 markets were functioning at the beginning of the year under report under the Agricultural Produce Markets Act, and 5 more markets for cotton were established during the year under report, viz., at Kapadwanj, Pandharpur, Barsi, Nargund and Athani. Except at Kapadwanj, Market Committees have not yet been constituted. In the Punjab, under the Agricultural Produce Markets Act, 1939, there were 135 market committees working in 1946-47 against 137 in the previous year. In Madras, 3 regulated markets continued to function at Tirupur, Adoni and Nandyal. In the Hyderabad State, the Hyderabad Agricultural Produce Markets Act was enforced in 34 markets during the year under report against 28 in the previous year. The markets continued to make satisfactory progress.

(xii) **Agmarking.**—During the year, Agmarking of cotton bales continued at Hubli, Gadag, Bailhongal and Savanur as a guarantee of purity of cotton by affixing Agmark labels to bales after supervision of ginning and pressing by the special staff.

(xlii) **Legislation to maintain the purity of cotton and other protective measures.**—Several legislative measures have been passed by the Central and Provincial Governments on the recommendation of the Indian Central Cotton Committee with a view to checking the spread of undesirable or inferior types of cotton, insect pests and diseases and other malpractices. A brief account of the working of these measures during the year under review is given below. For more details, previous reports may be referred to.

(a) **Cotton Transport Act.**—The Cotton Transport Act, in so far as it relates to rail transport only, was applied to the East Khandesh district, West Khandesh district excluding Nandurbar, Taloda and Nawapur talukas and to the talukas of Boglan, Malegaon and Nandgaon of Nasik district of Bombay Province with effect from the 14th March, 1946. The question of extending the restriction to transport by road as well is under the consideration of the Bombay Government. The Act continued to be in operation in the Kumpta, Dharwar, Bagalkot and Bijapur Protected Areas. Licences were issued at Dharwar and Bagalkot to the mills situated in the Protected Areas for the import of cotton from outside. Five cases of illicit import of cotton from the Hyderabad State into the protected areas of Dharwar and Bijapur districts were detected and necessary action was taken against the offenders.

(b) **Cotton Ginning and Pressing Factories Act.**—It was reported last year that the Government of India were requested to enact the necessary legislation against the mixing of cotton in so far as the chief Commissioners' Provinces were concerned and thereby to give the lead in the matter to the Provinces and States concerned. In May, 1947, the Government of India intimated that, in view of the then uncertain constitutional position, they did not consider the time to be opportune for such legislation. The matter is proposed to be taken up with the Government of India when conditions are more settled.

Arising out of a reference from the Director of Industries, Central Provinces and Berar, suggesting the amendment of the Cotton Ginning and Pressing Factories Act to provide for penalties against watering of cotton by ginning factories in certain cases not covered by the then existing legislation in the Province, the Committee in January, 1943, recommended to the Central Provinces Government that the old Section 3A of the Central Provinces and Berar Cotton Ginning and Pressing Factories Act, 1936, should be suitably amended with a view to remedying certain loopholes observed in the Act. The Committee has been pressing the Provincial Government to give effect to this recommendation and as a result the Central Provinces and Berar Cotton Ginning and Pressing Factories (Amendment) Act, 1947, was passed.

During the year under report, the Patiala Durbar passed the Patiala Cotton Ginning and Pressing Factories (Amendment) Act, 2003. The Amendment

Act gave effect to the recommendations made by the Committee in the past for penalising mixing, watering and adulteration of cotton and for the institution of ginning returns. Certain minor modifications required in the Amendment Act and the rules framed thereunder, with a view to bringing them in line with the corresponding legislation in the Bombay Province, were brought to the notice of the Patiala Durbar.

Out of 70 Indian States which have enforced in their respective territories the main provisions of the Cotton Ginning and Pressing Factories Act as applied to British India, by legislation or executive orders, weekly returns of cotton pressed were received from 49 States; in the remaining States, pressing factories did not work during the year.

(c) **Prevention of Introduction of Foreign Cotton Pests.**—In order to prevent the introduction into India of the Mexican Boll Weevil (*Anthonomus grandis*) with imported American cotton, at the instance of the Committee, regulations have been imposed by the Government of India under which the import of American cotton into India is prohibited except through the port of Bombay where it must be fumigated with hydrocyanic acid gas before entry into the country. The work of fumigation is carried out under the technical supervision of the Secretary, and the cost involved is met by the levy of a small fee from importers on each bale of American cotton fumigated. During the year under review 50,411 bales of American cotton were imported and fumigated.

(d) **The Red (Sudan) Bollworm (*Diperopsis castanea*) and other Pests.**—The restrictions on the import of foreign *kapas* (unginned cotton) and of foreign cotton seed remained in force throughout the year.

(e) **Cotton Control Act.**—Cotton Control Acts are in operation in the Provinces of Madras, Bombay and the Central Provinces, and in the Baroda and Bhopal States. The aims and objects of the Acts in the areas where they are in force are stated in previous reports.

A complaint regarding the mixing of cotton in Karnatak was forwarded to the Government of Bombay, who intimated that they were considering the question of inserting a new clause under Section 3 of the Bombay Cotton Control Act, prohibiting in areas where more than one standard cotton is grown and traded in the mixing of any standard cotton with another standard cotton permitted to be grown under Sub-section (1) of that Section.

C. J. BOCARRO,  
*Offg. Secretary.*

## APPENDIX I.

## MEMBERS OF THE INDIAN CENTRAL COTTON COMMITTEE.

- (1) PRESIDENT—Sardar Bahadur Sir Datar Singh, Vice-Chairman, Indian Council of Agricultural Research, *ex-officio*.

The Agricultural Commissioner with the Government of India, *ex-officio*.

- (2) REPRESENTATIVES OF AGRICULTURAL DEPARTMENTS—

*Madras* .. .. . Mr. M. S. Sivaraman, I.C.S.  
*Bombay* .. .. . Mr. V. Isvaran I.C.S., Director of Agriculture,  
 (Extension and Rural Development).  
*United Provinces* .. .. . Mr. C. Maya Das, I.A.S., Director of Agriculture.  
*Central Provinces and Berar* .. Mr. H. B. Shahi, Director of Agriculture.

- (3) THE DIRECTOR OF COMMERCIAL INTELLIGENCE, *ex-officio*.

- (4) REPRESENTATIVES OF CHAMBERS OF COMMERCE AND ASSOCIATIONS—

The East India Cotton Association Sir Purshotamdas Thakurdas, K.B.E.,  
 C.I.E.

The Bombay Millowners' Association Sir Sorab Saklatvala, M.L.A.

The Bombay Chamber of Commerce Mr. L. F. H. Goodwin.

The Indian Merchants' Chamber .. Mr. Chimanlal B. Parikh.

The Ahmedabad Millowners' Association. Mr. Nanddas Haridas.

The Tuticorin Chamber of Commerce Mr. S. D. Chard.

The Upper India Chamber of Commerce .. .. . Major S. R. Pocock, M.C., M.B.E., M.L.A.

The Empire Cotton Growing Corporation .. .. . Sir William Roberts, C.I.E.

- (5) COMMERCIAL REPRESENTATIVES NOMINATED BY CENTRAL GOVERNMENT—

*Central Provinces and Berar* .. { Dewan Bahadur Seth Gopaldas Mehta,  
 Mr. Pukharaj Kochar.  
*Madras* .. .. . Mr. G. V. Doraiswamy Naidu.

- (6) BENGAL REPRESENTATIVE .. .. . Dr. N. Dutt.

- (7) CO-OPERATIVE BANKING REPRESENTATIVE—Sir Chunilal V. Mehta, K.C.S.I.

- (8) REPRESENTATIVE OF COTTON GROWING INDUSTRY—

*Madras* .. .. . { Mr. D. Gnanasiromani.  
 The Hon'ble Mr. H. Sitarama Reddi.

*Bombay* .. .. . { Rao Bahadur F. B. Loxmeshwar.  
 Raje J. R. Deshmukh.

*United Provinces* .. .. . { Major Nawab Sir Mohd. Jamshed Ali Khan,  
 M.B.E., M.L.A.  
 Lala Basant Lal Agarwala.

*Central Provinces and Berar* .. .. { Rao Bahadur Sir Madhaorao G. Deshpande, K. B. E.  
Mir Riyat Ali.

(9) AND (10) REPRESENTATIVES OF INDIAN STATES.—

*Hyderabad State* .. .. Rai Bahadur Kalidas Sawhney, Director of Agriculture.  
*Baroda State* .. .. Mr. C.A. MacLean, C.B.E., M.C., Commissioner of Agriculture.  
*Gwalior State* .. .. Mr. N. M. Deshmukh, Director of Agriculture.  
*Rajputana and Central India States* Rao Bahadur Dr. D. V. Bal.

(10) ADDITIONAL MEMBERS NOMINATED BY THE GOVERNOR-GENERAL IN COUNCIL :—

1. Sir Chunilal B. Mehta.
  2. Dewan Bahadur Sir T. Vijayaraghavacharya, K.B.E.,
  3. Sir Shankar Lal, Representative of the Cotton Millowners of Delhi.
  4. Mr. R. G. Saraiya, O.B.E., Messrs. Narandas Rajaram & Co., Bombay.
  5. Sir Padampat Singhania, Senior Proprietor, Messrs. Juggilal Kamlapat, Cawnpore.
  6. Dr. V. K. R. V. Rao.
  7. Musahib-i-Khas Bahadur Capt. H. C. Dhanda, Commerce Minister, Holkar State.
  8. Mr. P. H. Rama Reddy, C.I.E., Director of Agricultural Research Institute and Principal, Agricultural College, Hebbal.
  9. Sardar Bahadur Sardar Beant Singh.
  10. Mr. Camar Tyabjee, O. B.E., Managing Agent, Osman Shahi and Azam-Jahi Mills, Hyderabad (Deccan).
  11. Dr. M. M. Junaid, Director of Statistics, Government of India, Ministry of Food.
  12. Mr. M. A. A. Ansari, Assistant Economic Botanist (Oil Seeds) to Government U.P., Cawnpore.
  13. Mr. G. V. Deshmukh, M. L. A.
  14. Mr. R. Balasubramania Ayyar, Cotton Specialist, Coimbatore.
  15. Mr. K. K. Chettur.
  16. Mr. D. N. Mahta, O.B.E., F.R.S.A.
  17. Dr. B. N. Uppal, M.B.E.
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## APPENDIX II.

## SUB-COMMITTEES.

*Standing Finance Sub-Committee.*—Mr. R. G. Saraiya (Vice-President) Chairman; Sardar Bahadur Sir Datar Singh (President) (*ex-officio*); Sir Chunilal B. Mehta; Sir Purshotamdas Thakurdas; Sir Sorab Saklatvala; Sir Chunilal V. Mehta; Rao Bahadur Sir Madhaorao Deshpande; Mr. Chimanlal B. Parikh & Mr. D. N. Mahta.

*Local Sub-Committee.*—President (Sardar Bahadur Sir Datar Singh); the Vice-President, Mr. R. G. Saraiya; Sir Chunilal B. Mehta; Sir Purshotamdas Thakurdas; Sir Sorab Saklatvala; Sir Chunilal V. Mehta; Mr. S. D. Chard; Mr. L.F.H. Goodwin; Rao Bahadur Sir Madhaorao Deshpande and Rao Bahadur F. B. Loxmeshwar; Mr. Chimanlal B. Parikh and Mr. D. N. Mahta.

*Agricultural Research Sub-Committee.*

- I. *The President.*—Sardar Bahadur Sir Datar Singh (*ex-officio*).
- II. *The Vice-President.*—Mr. R. G. Saraiya (*ex-officio*).
- III. *The Co-operative Banking Representative.*—Sir Chunilal V. Mehta (*ex-officio*).
- IV. *Cotton Growers' Representatives.*—Sir William Roberts, Rao Bahadur Sir Madhaorao Deshpande and Mir Riyat Ali.
- V. *Cotton Trade Representatives.*—Sir Purshotamdas Thakurdas, Sir Chunilal B. Mehta, Mr. S. D. Chard, Mr. L. F. H. Goodwin and Dewan Bahadur Seth Gopaldas Mohta.
- VI. *Agricultural Officers.*—The Agricultural Commissioner with the Government of India (*ex-officio*), Mr. V. Isvaran, Mr. C. Maya Das, Mr. M. S. Sivaraman, Mr. C. A. MacLean, Rai Bahadur Kalidas Sawhney, Mr. N. M. Deshmukh, Mr. H. B. Shahi, Rao Bahadur Dr. D. V. Bal, Mr. P. H. Rama Reddy, Mr. R. Balasubramania Ayyar and Mr. D. V. Narayanayya.
- VII. *Additional Members.*—Dewan Bahadur Sir T. Vijayaraghavacharya, Prof. R. H. Dastur, Mr. M. A. A. Ansari, Mr. S. S. Pande, Dr. V. G. Panse, Dr. B. N. Uppal, Dr. S. D. Choudhary, Mr. D. L. Sen, Mr. P. D. Gadkari, Mr. G. B. Patel, Rao Bahadur F. B. Loxmeshwar and Mr. G. V. Deshmukh.
- VIII. The Secretary, Indian Central Cotton Committee (*ex-officio*).

*Technological Research Sub-Committee.*—The President—Sardar Bahadur Sir Datar Singh (*ex-officio*), The Vice-President—Mr. R. G. Saraiya, (*ex-officio*), The Agricultural Commissioner with the Government of India, (*ex-officio*), Sir Purshotamdas Thakurdas, Dewan Bahadur Sir T. Vijayaraghavacharya, Sir Sorab Saklatvala, Sir Chunilal V. Mehta, Sir Chunilal B. Mehta, Sir William Roberts, Sir Shanker Lal, Sir Padampat Singhania, Mr. V. Isvaran, Mr. H. B. Shahi, Mr. L. F. H. Goodwin, Major S. R. Pocock, Mr. S. D. Chard, Mr. M. S. Sivaraman, Mr. D. L. Sen, Mr. R. Balasubramaniya Ayyar, Rai Bahadur Kalidas Sawhney, Dewan Bahadur Seth Gopaldas Mohta, Mr. M. A. A. Ansari, Dr. K. Venkataraman, Mr. P. D. Gadkari, Mir Riyat Ali, the Director of Industries, Bombay, the Principal, Victoria Jubilee Technical Institute, Bombay, Mr. Bhagwandas C. Mehta and Mr. A. D. Walwyn, (Representing the Bombay Millowners' Association, Mr. Arvindbhai Narottambhai and Mr. Chandrakant Motilal, (Representing the Ahmedabad Millowners' Association), Mr. Jehangir Pestonji Patel, Mr. Jamnadas Ramdas (Representing the East India Cotton Association, Ltd.).

*Cotton Forecast Sub-Committee.*—The President—Sardar Bahadur Sir Datar Singh, (*ex-officio*), The Vice-President, Mr. R. G. Saraiya, the Agricultural Commissioner with the Government of India, (*ex-officio*), The Director of Commercial Intelligence, the Director of Agriculture, Bombay Province, the Director of Agriculture, Madras, The Director of Agriculture, United Provinces, the Director of Agriculture, Central Provinces and Berar, the Director of Agriculture, H. E. H. the Nizam's Government, the Commissioner of Agriculture, Baroda, the Director of Statistics, H. E. H. Nizam's Government, the Director of Land Records, Central Provinces and Berar, the Director of Statistics, Calcutta, the Statistical Officer, Department of Industries and Commerce, Madras, Dr. V. K. R. V. Rao, Mr. S. D. Chard, Mr. L. F. H. Goodwin, Sir William Roberts, Sir Chunilal V. Mehta, Dr. V. G. Panse and Dr. R. J. Kalamkar.

*Cotton Ginning and Pressing Factories Sub-Committee.*—The President—Sardar Bahadur Sir Datar Singh, The Vice-President, Mr. R. G. Saraiya, (*ex-officio*), Sir Chunilal B. Mehta, the Co-operative Banking Representative, (Sir Chunilal V. Mehta) (*ex-officio*), Sir Purshotamdas Thakurdas, Sir Sorab Saklatvala, Mr. S. D. Chard, Sir William Roberts, Mr. V. Isvaran, Major S. R. Pocock, Mr. L. F. H. Goodwin, Mr. Pukharaj Kochar, Mr. G. V. Doraiswami Naidu, Mr. H. B. Shahi and Mr. D. L. Sen.

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### APPENDIX III.

#### INDIAN CENTRAL COTTON COMMITTEE.

*Statement of Receipts and Payments for the year ended 31st March, 1947.*

RECEIPTS.	Rs.	a.	p.	Rs.	a.	p.	EXPENDITURE.	Rs.	a.	p.	Rs.	a.	p.
Opening Balance as on 1st April, 1946 ..	16,17,987	8	11				<i>Administration of the Committee:—</i> (Including Improvement of Cotton Marketing, Printing, Publicity and Distribution and Travelling Allowance of non-official members) .. .. .				2,20,596	5	0
Sinking Fund ..	22,659	4	0	16,40,646	12	11	<i>Agricultural Research Grants-in-Aid :—</i> (Including Research, Seed, Marketing and Miscellaneous Schemes) .. .. .				6,48,875	8	10
<i>Less:—</i> Adjustment of Suspense Receipts during 1945-46 ..	1,221	11	0				<i>Technological Research</i> ..				2,38,529	12	4
				16,39,425	1	11	<i>Closing Balance.</i>						
<i>Receipts under Section 12 of the Indian Cotton Cess Act, 1923</i>				4,53,208	1	0	(Government Paper at cost.)						
<i>Other Receipts :—</i>							2½% Government of India Loan 1948-52 of the face value of Rs. 3,70,000 .. .. .	3,67,890	10	0			
Sale of Publications, Sale of cotton, Miscellaneous Receipts, Test Fees, Etc., ..	15,911	14	4				3% Government of India Conversion Loan 1946 of the face value of Rs. 1,00,000 .. .. .	1,00,000	0	0			
Suspense Receipts ..	1,651	12	3				2½% Government of India Loan 1950 of the face value of Rs. 8,00,000 .. .. .	8,11,500	0	0			
Sinking Fund provision 1946-47 ..	1,923	9	0	19,487	3	7	*3½% Government of India Loan 1947-50 of the face value of Rs. 4,75,000 .. .. .	4,18,923	7	0			
Interest on Investments .. .. .				60,914	4	0	4½% Government of India Loan 1955-60 of the face value of Rs. 26,600 .. .. .	25,004	0	0			
				80,401	7	7							
Amount received from the Cotton Fund at the disposal of the Government of India				10,82,207	0	0							
Carried over ..				32,55,241	10	6	Carried over ..				11,08,001	10	2

*Statement of Receipts and Payments for the year ended 31st March, 1947.*

RECEIPTS.	Rs. a. p.	EXPENDITURE.	Rs. a. p.	Rs. a. p.
Brought Forward.	32,55,241 10 6	Brought Forward.		11,08,001 10 2
Net profit realised on sale of securities ..	4,640 10 0	6% Bombay Municipal Debentures 1954 of the face value of Rs. 10,000 .. ..	3,950 0 0	
		6% Rangoon Municipal Debentures 1955 of the face value of Rs. 3,83,500 .. ..	4,15,328 2 0	
			21,42,596 3 0	
		(Market value on 31st March, 1947, Rs. 22,20,527-10-0 inclusive of Rangoon Municipal Debentures taken at cost) .. ..		
		<i>Imprests :—</i>		
		(1) Secretary's Office .. ..	1,500 0 0	
		(2) Director, Technological Laboratory, Matunga ..	500 0 0	
		(3) Director of Agriculture, Bombay ..	1,795 0 0	
		(4) Director of Agriculture, Sind ..	660 0 0	
		(5) Cotton Research Botanist, Lyallpur ..	150 0 0	
		(6) Plant Physiologist, Indore ..	400 0 0	
			5,005 0 0	
		<i>Suspense : (Recoverable) .. ..</i>		
		(1) Committee's Accounts ..	13,328 2 11	

	(2) Hoops & Fuel Account :		
	Expenditure incurred ..	47,105 8 0	
	Less:—Receipts	27,975 6 0	32,458 4 11
		<hr/>	
		19,130 2 0	<hr/>
			21,80,059 7 11
	Less:—Overdraft Account with the Imperial Bank of India, Bombay, (against hypothecation of 3½% Government Loan 1947-50 of the face value of Rs. 1,50,000) .. .. .		28,178 13 7
	† Total Closing Balance ..		<hr/> 21,51,880 10 4
	*3½% Government of India Loan 1947-50 of the face value of Rs. 1,50,000/-have been deposited with the Imperial Bank of India, Bombay, as security against any overdraft that may be required by the Committee.		
	† Includes Rs. 24,582-13-0 on account of Sinking Fund.		
Total ..		<hr/> 32,59,882 4 6	Total .. <hr/> 32,59,882 4 6

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We have examined the above statement of Receipts and Payments of Indian Central Cotton Committee with the Books, Vouchers and Certified Returns of the Committee, have obtained all the information and explanations we have required and certify that to the best of our information and explanations received, the above Statement is a correct abstract of the figures appearing in the books and is drawn up in conformity with the Rules under the Indian Cotton Cess Act, 1923.

Bombay. 2nd July, 1947.

(Sd.) S. B. BILLIMORIA & Co.,  
Registered Accountants, Auditors.



Less:—Interest paid during the year to Subscribers who have resigned :—

On their own contributions .. ..	720	6	6				
On Committee's contributions .. ..	710	3	10				
Withdrawal Charges for Securities sold .. ..	37	8	0				
Stationery .. ..	32	5	0				
Income-tax deducted from Interest on Securities sold .. ..	606	4	0				
Bank's Commission for collection of interest and stamp charges .. ..	14	15	6	2,121	10	10	12,716 5 6
Lapses and Forfeitures Account (including profit on Securities sold) .. ..				18,514	9	1	
Suspense Receipts .. ..				1,943	7	9	
<b>Total ..</b>				<b>6,97,453</b>	<b>15</b>	<b>8</b>	

6,97,453 15 8

Examined and found correct.

(Sd.) S. B. BILLIMORIA & CO.,  
Registered Accountants, Auditors.

*Balance Sheet as on 31st March, 1947.*

RECEIPTS.	Rs.	a.	p.	Rs.	a.	p.	EXPENDITURE.	Rs.	a.	p.	Rs.	a.	p.
Cotton cess receipts .. ..	1,69,43,727	8	8				I. A. Administration .. ..				29,27,524	8	5
<i>Less</i> :—Refunds of cess to Burma.	42,369	10	9				B. <i>Improvement of Cotton Marketing</i> :—						
	<u>1,69,01,357</u>	<u>13</u>	<u>11</u>				1. Cost of exhibits, travelling allowance of representatives on the Board of East India Cotton Association and members of Standards Sub-Committee and cost of Standards.	2,27,980	3	6			
<i>Interest account</i> :—							2. Enquiry into cost of cotton production in India .. ..	2,71,963	8	9	4,99,943	12	3
Amount received on investments .. ..	24,44,306	10	2				C. Travelling allowance of non-official members ..				3,22,966	4	9
<i>Add</i> :—Refund of income-tax from interest .. ..	29,920	5	6				D. <i>Printing and Propaganda</i> :—						
	<u>24,74,226</u>	<u>15</u>	<u>8</u>				1. Publicity & Propaganda	1,56,555	15	0			
<i>Less</i> :—							2. Printing and Distribution .. ..	1,57,544	9	6	3,14,100	8	6
1. Interest paid in advance at the time of purchasing Government Paper. (Since recovered) interest on temporary overdraft and bank's commission for collection of interest .. ..	77,200	8	2				E. <i>Statistical Research</i> :—						
2. Interest credited to Provident Fund .. ..	4,886	6	2				1. Studies of village consumption of Indian cotton .. ..	23,913	5	8			
3. Bank's withdrawal charges ..	6,076	11	0				2. Improvement of cotton forecast .. ..	30,772	9	0			
4. Income-tax on interest on Government paper .. ..	31,577	0	1				3. Crop estimating survey on cotton in Central Provinces .. ..	99,348	5	9			
5. Brokerage for securities sold .. ..	828	10	0				4. Statistical analysis of experimental data ..	330	7	0	1,54,364	11	5
6. Provision for Sinking Fund	24,582	13	0										
	<u>1,45,152</u>	<u>0</u>	<u>5</u>										
				23,29,074	15	3							



Profit on conversion and sale of securities .. ..	3,64,687	2	2
Sinking Fund Account .. ..	24,582	13	0
Miscellaneous receipts .. ..	2,02,439	9	8
Refund from Provident Fund for contributions disallowed ..	3,391	1	11
Receipts from the Cotton Fund ..	27,89,782	0	0
Less :—Amount refunded ..	36,366	0	0
	<u>27,53,416</u>	0	0
Suspense receipts .. ..	1,651	12	3

Carried over .. 2,25,80,601 4 2

## II. AGRICULTURAL RE-SEARCH GRANTS-IN-AID

### (1) Research Schemes.

#### (i) Bombay :—

(1) A. Surat Physiological	2,45,139	11	3
B. Surat Physiologi- cal-Writing-up ..	5,814	7	8
(2) A. Surat Bollworm ..	1,14,509	9	7
B. Surat Bollworm Propaganda ..	91,468	9	2
C. Surat Bollworm Writing-up ..	2,315	3	0
(3) A. Dharwar Wilt ..	1,82,836	4	11
B. Dharwar Wilt Writing-up ..	10,902	10	3
(4) Khandesh .. ..	26,573	5	0
(5) Co-ordination of Cot- ton Research ..	1,749	7	6
(6) Jalgaon Cotton Breeding .. ..	87,013	10	2
(7) Broach Cotton Breeding .. ..	1,24,966	2	2
(8) Small Leaf Disease Survey .. ..	3,938	9	6
(9) Survey of Goghari cotton .. ..	4,199	5	0
(10) Defibration of cotton seeds .. ..	4,878	5	9
(11) Plant Puller Propa- ganda .. ..	21,940	1	3
(12) Breeding of Wilt Re- sistant Cotton for Surat Area ..	33,364	0	0
(13) Village projects for improvement of cultivation of crops	2,894	11	4
(14) Inclusion of Northern & Westerns in Dry Farming Research at Bijapur ..	6,953	12	7
(15) Poona Wilt Breeding	90,792	14	6

Carried over .. 10,62,250 12 7 42,18,899 13 4

*Balance Sheet as on 31st March, 1947 (contd).*

RECEIPTS.

	Rs.	a.	p.
Brought forward ..	2,25,80,601	4	2

EXPENDITURE.

	Rs.	a.	p.	Rs.	a.	p.
Brought forward ..	10,62,250	12	7	42,18,899	13	4
(16) Improvement of cotton crop in Kaira District ..	14,655	13	6			
(17) Interspecific hybridisation at Surat ..	76,934	11	3			
(18) Dholleras Wagad cotton at Viramgam and Bavla ..	62,965	1	2			
(19) Improvement of Dharwar-American cotton ..	14,304	3	3			
<b>Total ..</b>	<b>12,31,110</b>	<b>9</b>	<b>9</b>			

(ii) *Madras* :—

(1) Herbaceum ..	1,42,466	13	1
(2) Pempheres and Physiological ..	2,01,034	15	9
(3) Fodder Cholam ..	19,517	9	4
(4) Breeding of Nadam cotton ..	17,727	2	0
(5) Improvement of Mungari cotton ..	69,601	2	1
(6) Investigation of the possibilities for control of cotton stem weevil ..	6,165	7	6
(7) Improvement of Canadas cotton ..	72,879	14	4
(8) Scheme for production of long staple cotton ..	4,032	8	0

(9) Breeding of Cambodia cotton in Ceded districts .. ..	20,152	11	6
<b>Total ..</b>	<b>5,62,578</b>	<b>4</b>	<b>1</b>

(iii) Punjab :-

(1) Botanical .. ..	6,82,137	13	9
(2) Entomological .. ..	2,25,908	7	11
(3) White Fly .. ..	48,721	4	1
(4) Root Rot .. ..	71,048	10	10
(5) Spraying trials .. ..	9,977	0	6
(6) Defibrating and De-linting .. ..	6,112	8	9
(7) Survey of Disease of Malformation .. ..	1,730	10	6
(8) Physiological .. ..	4,09,492	0	4
(9) Clean-up Campaign of Spotted Bollworm .. ..	60,025	9	3
(10) Jassid investigation .. ..	21,868	12	3
(11) Improvement of Punjab-American 289F .. ..	20,508	10	3
(12) Improvement of cotton in Jhang District .. ..	10,406	0	0
(13) Improvement of cotton in the South-eastern districts .. ..	16,597	10	0
(14) Improvement of cotton in Lower-Bari Doab Canal Colony .. ..	10,903	12	0
(15) Improvement of cotton in South-western districts .. ..	8,534	5	0
<b>Total ..</b>	<b>16,03,973</b>	<b>3</b>	<b>5</b>

Carried over .. 2,25,80,601 4 2

Carried over .. 33,97,662 1 3 42,18,899 13 '4

*Balance Sheet as on 31st March, 1947 (contd).*

RECEIPTS.	Rs.	a. p.	EXPENDITURE.	Rs.	a. p.	Rs.	a. p.
Brought forward ..	2,25,80,601	4 2	Brought forward ..	33,97,662	1 3	42,16,899	13 4
			<i>(iv) Central Provinces :—</i>				
			(1) Botanical .. ..	4,93,449	9 4		
			(2) Entomological .. ..	12,344	13 6		
			(3) Investigation of He- liothis Obsoleta .. ..	1,672	9 9		
			(4) Central Provinces and Berar Cotton Breeding Scheme..	84,263	12 6		
			(5) Village projects for extension of im- provement in cul- tivation of crops ..	3,295	7 0		
			Total ..	5,95,026	4 1		
			<i>(v) United Provinces :—</i>				
			(1) Pink Bollworm .. ..	1,46,616	2 10		
			(2) Rohilkhand & Bun- delkhand Survey .. ..	18,061	14 4		
			(3) Botanical .. ..	93,988	15 0		
			(4) Village projects for extension of im- provement in cul- tivation of crops ..	3,125	5 3		
			(5) Scheme for hybridisa- tion of arboreum cotton .. ..	9,746	15 0		
			Total ..	2,71,539	4 5		
			<i>(vi) Indore :—</i>				
			(1) Institute of Plant In- dustry .. ..	21,46,943	12 0		

(2) Cotton Genetics Research Scheme ..	2,48,568	4	11
(3) Scheme for Cotton Physiological Research .. ..	1,54,261	2	6
<b>Total ..</b>	<b>25,49,773</b>	<b>3</b>	<b>5</b>

(vi) *Sind* :—

(1) Physiological ..	2,63,945	12	10
(2) Jassid Investigation	15,471	15	1
(3) Black-headed Cricket	9,245	1	3
(4) Scheme for investigation for production of long staple cotton .. ..	2,07,527	14	9
(5) Bollworm investigation and clean-up campaign .. ..	1,07,239	15	9
(6) Manurial trials in Sind .. ..	7,811	7	0
<b>Total ..</b>	<b>6,11,242</b>	<b>2</b>	<b>8</b>

(vii) *Burma* :—

(1) Capital Expenditure.	2,906	15	5
(2) Cotton Improvement.	47,790	3	9
<b>Total ..</b>	<b>50,697</b>	<b>3</b>	<b>2</b>

(ix) *Hyderabad* :—

(1) Botanical .. ..	4,26,286	11	5
(2) Cotton Survey .. ..	36,578	3	6
(3) Pink and Spotted Bollworm .. ..	83,976	10	4
(4) Improvement of Kumpta cotton .. ..	76,187	1	10

Carried over .. 2,25,80,601 4 2

Carried over .. 80,98,968 14 1 42,18,899 13 4

Balance Sheet as on 31st March, 1947 (contd).

RECEIPTS.

	Rs.	a.	p.
Brought forward ..	2,25,80,601	4	2

EXPENDITURE.

	Rs.	a.	p.	Rs.	a.	p.
Brought forward..	80,98,968	14	1	42,18,899	13	4
(5) Inclusion of Northern & Westerns in Dry Farming Scheme at Raichur .. ..	2,000	4	0			
(6) Pink and Spotted.. Bollworm Clean-up campaign .. ..	53,929	2	0			
(7) Improvement of cot- tons of the Oomras tract .. ..	78,191	7	1			
(8) Gaorani Improve- ment Scheme .. ..	49,774	13	3			
Total ..	7,96,924	5	5			
(x) Bikaner :—						
Bengals Cotton Im- provement .. ..	70,377	10	11			
(xi) Baroda :—						
(1) Root Rot .. ..	92,335	12	9			
(2) Comparative tests .. ..	4,251	5	3			
(3) Survey of Goghari cotton .. ..	3,891	14	7			
(4) Plant Puller Pro- paganda .. ..	32,533	15	10			
(5) Mathio cotton at Am- reli & Jagudan .. ..	51,628	0	2			
Total ..	1,84,641	0	7			
(xii) Bengal :—						
(1) Comilla Scheme .. ..	43,923	14	9			
(2) Cultivation of long staple cotton .. ..	13,712	11	3			
Total ..	57,636	10	0			

(xiii) Mysore—Doddahathi cotton .. ..	40,322 8 9		
(xiv) Collection of Iran cotton	3,121 12 0		
(xv) Baluchistan—Co-ordina- tion of research on Black-headed Cricket in Sind and Baluchis- tan .. ..	39,781 6 5		
(xvi) Preliminary Scheme at Nawanagar .. ..	323 12 4		
(xvii) Estimation of effects on cotton crop of the use of Plant Puller ..	4,143 12 5		
		86,73,213	1 10
(z) Seed Distribution & Ex- tension Schemes.			
(i) Bombay :—			
(1) Hubli.. ..	44,048 8 3		
(2) Gadag .. ..	41,700 15 1		
(3) Gadag (Supplemen- tary) .. ..	20,167 11 4		
(4) Surat .. ..	93,634 1 4		
(5) Athani .. ..	18,086 1 7		
(6) Khandesh (Banilla)..	1,65,580 4 0		
(7) Khandesh (Jarila) ..	2,43,621 1 3		
(8) Deccan Canals (Ba- nilla) .. ..	3,333 3 4		
(9) B. D. 8 .. ..	40,662 2 6		
(10) Revised Jayawant & Gadag No. 1 ..	2,35,959 14 7		
(11) Maintenance of nucleus of pure seed of im- proved varieties of cotton .. ..	9,664 6 3		
(12) Scheme for control of Selection 1A ..	4,965 10 0		
Carried over ..	2,25,80,601 4 2	Carried over ..	9,21,423 15 6 1,28,92,112 15 2

Balance Sheet as on 31st March, 1947 (contd).

RECEIPTS.

	Rs.	a.	p.
Brought forward ..	2,25,80,601	4	2

EXPENDITURE.

	Rs.	a.	p.	Rs.	a.	p.
Brought forward ..	9,21,423	15	6	1,28,92,112	15	2
(13) 1027 A. L. F. cotton in Nawapur Taluka	7,020	6	0			
(14) Scheme for multiplication of Vijaya cotton .. ..	26,470	15	0			
(15) Wagotar cotton in Ahmedabad district .. ..	28,874	10	0			
(16) Suyog cotton multiplication and distribution .. ..	11,308	9	0			
Total .. ..	9,95,098	7	6			

(ii) Madras :—

(1) Pay and allowance of Business Manager, Tirupur .. ..	24,079	13	0
(2) Co.2 .. ..	41,286	2	9
(3) H.1. .. ..	41,070	3	9
(4) Maintenance of nucleus of pure seed of improved varieties of cotton ..	7,540	10	2
(5) Co.3 in Salem district	55,902	6	0
(6) Improvement of Karunganni cotton ..	7,485	15	0
Total .. ..	1,77,365	2	8

(iii) Sind :—

(1) Seed distribution ..	4,28,812	12	10
(2) Maintenance of nucleus of pure seed of improved varieties of cotton ..	9,862	13	5



(3) Financing of seed distribution .. .. 1,38,370 9 0

Total .. .. 5,77,046 3 3

(iv) Hyderabad :— .. .. 51,307 13 3

(v) Central Provinces :—

(1) Maintenance of nucleus of pure seed of improved varieties of cotton .. .. 3,260 7 6

(2) Jarila seed distribution scheme .. .. 5,611 5 0

Total .. .. 8,871 12 6

(vi) Baroda :—

(1) Navsari Seed Storage .. .. 38,497 9 4

(2) B. D. 8 .. .. 17,642 5 9

(3) B. 9 .. .. 17,788 0 2

(4) Scheme for creation of pure Wagad cotton zone in Mehsana district .. .. 10,393 12 0

(5) Vijaya scheme .. .. 77,463 8 0

(6) Suyog cotton .. .. 31,816 14 0

(7) Wagotar cotton .. .. 6,835 0 0

Total .. .. 2,00,437 1 3

(vii) Lyallpur Ginnery .. .. 16,038 3 3

(viii) United Provinces :—

(1) C. 402 .. .. 18,616 11 6

(2) Perso-American cotton in Western districts .. .. 59,147 10 0

Total .. .. 77,764 5 6

Carried over.. 2,25,80,601 4 2

Carried over .. 21,03,929 1 2 1,28,92,112 15 2

Balance Sheet as on 31st March, 1947 (contd).

RECEIPTS.	Rs.	a.	p.
Brought forward ..	2,25,80,601	4	2

EXPENDITURE.	Rs.	a.	p.	Rs.	a.	p.
Brought forward ..	21,03,929	1	2	1,28,92,112	15	2
(ix) Mysore scheme for multiplication and distribution of Sel. 69. M.A.V. ..	525	0	0			
				21,04,454	1	2

(3) **MARKETING SCHEMES.**

(1) Grading and marking of 1027 A. L. F. in Surat area ..	13,446	12	9			
(2) Punjab Cotton Marketing Survey ..	7,214	1	6			
(3) Baroda better marketing of 1027 A.L.F.	17,773	6	3			
(4) Extension and marketing of V. 434 in C. P.	3,64,979	5	4			
(5) Distribution and marketing of Buri 107 cotton in Burhanpur Tahsil ..	24,429	0	0			
(6) Distribution and marketing of Jarila cotton ..	21,714	0	6			
				4,49,556	10	4

(4) **MISCELLANEOUS SCHEMES.**

(1) Compilation of Manual Trials ..	719	15	0			
(2) Compilation of handbook dealing with pests and diseases of cotton in the Empire	2,975	5	0			

(3) Survey of nutritional values in relation to milch buffaloes of fuzzy cotton seed and cotton seed cakes manufactured from such seeds ..	7,345	5	11	
	<hr/>			11,040 9 11

### III. TECHNOLOGICAL RESEARCH.

#### 1. Technological Laboratory :—

##### A. Capital Expenditure :—

(1) Land & Buildings .. ..	4,07,988	14	6
(2) Machinery .. ..	1,23,212	1	2
(3) Freight .. ..	7,502	2	8
(4) Apparatus and equipment .. ..	41,668	5	7
(5) Machinery and workshop .. ..	5,789	8	3
B. Working Expenses	36,23,497	6	8
2. Provincial .. ..	3,16,096	11	11

#### 3. Development of alternative uses of Indian cotton :—

Working Expenses .. ..	58,056	12	11
------------------------	--------	----	----

#### 4. Investigation for improvement in the ginning of Indian cotton :—

(i) Capital Expenditure .. ..	34,072	13	9
(ii) Working Expenses .. ..	34,442	6	3

Carried over 2,25,80,601 4 2

Carried over .. 46,52,327 3 8 1,54,57,164 4 7

*Balance Sheet as on 31st March, 1947. (concl'd.)*

RECEIPTS.	Rs.	a. p.	EXPENDITURE.	Rs.	a. p.	Rs.	a. p.
Brought forward ..	2,25,80,601	4 2	Brought forward ..	46,52,327	3 8	1,54,57,164	4 7
			5. Scheme for research on chemical finishes on short staple cotton and fabrics ..	9,360	0 0		
			6. Scheme for conducting of experiments on storage of cotton lint .. .. .	31,146	10 3	46,92,833	13 11
			<b>IV. RESEARCH STUDENT- SHIPS.</b>	2,82,566	1 4		
			<i>Less</i> :—Refund from Dr. Taskhir Ahmad ..	3,843	10 0	2,78,722	7 4
			By Suspense account ..			32,458	4 11
			By Balance .. .. .			21,19,422	5 5
<b>GRAND TOTAL ..</b>	<b>2,25,80,601</b>	<b>4 2</b>	<b>GRAND TOTAL ..</b>			<b>2,25,80,601</b>	<b>4 2</b>

**INDIAN CENTRAL COTTON COMMITTEE**

*Balance Sheet as on 31st March, 1947.*

*Provident Fund Account.*

RECEIPTS.	Rs.	a. p.	Rs.	a. p.	EXPENDITURE.	Rs.	a. p.	Rs.	a. p.
Subscribers' contributions account	6,10,491	3 9			By advance to subscribers ..	1,59,405	1 0		
<i>Less:—</i> Payments made to subscribers resigned .. ..	2,85,874	12 0			<i>Less:—</i> Recoveries made .. ..	1,31,562	1 0		
			3,24,616	7 9				27,843	0 0
Committee's contributions account	5,96,008	5 10			Interest accrued on Govt. paper and National Savings Certificates up to 31st March, 1947 credited for distribution ..				17,998 14 0
<i>Less:—</i> Payments made to subscribers resigned and forfeitures for Committee's contributions disallowed .. ..	2,77,852	0 0			By Balance .. ..				6,97,341 1 8
			3,18,156	5 10					
Lapse and forfeiture account including profit on securities sold	69,182	4 2							
Investment fluctuation account	3,490	7 0							
			72,672	11 2					
Interest account net .. ..			24,339	4 2					
Suspense receipts .. ..			3,398	2 9					
			7,43,182	15 8					
Total ..					Total ..	7,43,182	15 8		

APPENDIX IV.

STOCKS OF INDIAN COTTON ON 31st JANUARY, 1947, HELD BY THE MILLS AND THE TRADE IN MADRAS PROVINCE.

(In thousand bales of 400 lbs. each).

Trade descriptions of cotton.	MILL STOCKS ON 31st JANUARY					• TRADE STOCKS ON 31st JANUARY					TOTAL STOCKS ON 31st JANUARY				
	1943.	1944.	1945.	1946.	1947.	1943.	1944.	1945.	1946.	1947.	1943.	1944.	1945.	1946.	1947.
Tinnevellies .. ..	31	17	37	32	47	15	18	23	8	31	46	35	60	40	78
Salems .. ..	20	19	..	..	..	5	4	6	5	..	25	23	6	5	..
Cambodias .. ..	99	83	83	58	126	39	49	70	15	31	138	132	153	73	157
Northerns & Westerns..	27	15	19	25	18	32	26	13	94	77	59	41	32	119	95
Cocanadas .. ..	3	3	1	5	1	5	19	19	20	2	8	22	20	25	3
Outside Cottons.. ..	55	84	66	84	80	1	5	2	1	3	56	89	68	85	83
Total ...	235	221	206	204	272	97	121	133	143	144	332	342	339	347	416

## APPENDIX V.

### INDIAN RAW COTTON CONSUMED IN INDIAN MILLS.

(Based on returns made under the Indian Cotton Cess Act, 1923, by mills in British India,\* and on voluntary returns from mills in Indian States).

*Cotton Year : 1st September to 31st August.*

(In bales of 400 lbs. nett.)

	1932-33.	1933-34.	1934-35.	1935-36.	†1936-37.	1937-38.	1938-39.	1939-40.	1940-41.	1941-42.	1942-43.	1943-44.	1944-45.	1945-46.	1946-47.
Bombay Island .. .. .	565,084	491,709	687,287	664,199	636,720	782,815	750,317	634,149	982,084	1,057,745	1,270,766	1,199,172	1,223,679	1,124,072	842,024
Ahmedabad .. .. .	348,009	373,345	326,558	320,982	304,898	346,269	346,375	305,459	341,800	414,870	364,999	428,677	401,544	383,274	296,330
Bombay Province .. .. .	1,116,297	1,063,549	1,230,616	1,189,310	1,128,744	1,353,998	1,316,313	1,172,285	1,580,079	1,764,339	1,939,423	1,906,606	1,910,619	1,769,283	1,365,750
Madras Province .. .. .	292,013	278,060	312,164	365,423	412,268	422,573	480,839	507,391	525,611	594,054	647,407	596,585	603,796	566,173	455,330
United Provinces .. .. .	273,573	277,230	292,424	317,011	299,073	288,320	356,331	349,340	381,025	427,305	437,441	414,210	410,596	369,018	299,566
Central Provinces and Berar.	111,208	112,660	125,014	130,298	122,987	146,587	164,616	142,868	153,825	178,791	174,385	148,020	169,727	156,116	142,573
Bengal.. .. .	103,784	107,633	101,101	98,892	79,944	92,546	90,611	111,383	135,227	125,740	136,098	138,203	135,697	123,731	100,795
The Punjab and Delhi .. .. .	80,854	71,939	83,897	89,430	93,886	94,742	133,347	165,274	171,652	179,987	182,104	184,950	181,384	167,948	143,936
Rest of British India*	31,935	35,139	38,575	38,010	35,823	46,840	49,806	44,867	47,316	64,804	59,003	52,242	52,291	53,894	49,809
Total—British India*	2,009,664	1,946,210	2,133,791	2,228,374	2,172,725	2,445,606	2,591,863	2,493,408	2,994,735	3,335,020	3,575,861	3,440,816	3,464,110	3,211,163	2,557,759
Total—Indian States .. .. .	351,260	390,116	428,341	449,314	460,060	554,003	559,202	556,698	622,412	690,375	730,970	678,645	694,554	659,859	593,093
<b>TOTAL-INDIA .. .. .</b>	<b>2,360,924</b>	<b>2,336,326</b>	<b>2,612,132</b>	<b>2,677,688</b>	<b>2,632,785</b>	<b>2,999,609</b>	<b>3,151,065</b>	<b>3,050,106</b>	<b>3,617,147</b>	<b>4,025,395</b>	<b>4,306,831</b>	<b>4,119,461</b>	<b>4,158,664</b>	<b>3,871,022</b>	<b>3,150,852</b>

† From April 1937, figures for Burma have been excluded.

N. B.—From 15th August 1947, figures for Pakistan have been excluded.

\* Relates only to Governor's and Chief Commissioner's Provinces of the Dominion of India from the 15th August, 1947.

## INDIAN RAW COTTON CONSUMED IN MILLS IN INDIAN STATES.

(Based on voluntary returns from mills in Indian States).

*Cotton Year: 1st September to 31st August.*

(In bales of 400 lbs. nett.)

	1932-33.	1933-34.	1934-35.	1935-36.	1936-37.	1937-38.	1938-39.	1939-40.	1940-41.	1941-42.	1942-43.	1943-44.	1944-45.	1945-46.	1946-47.
Hyderabad .. .. .	33,488	33,231	45,588	51,771	49,981	63,093	68,156	67,995	72,860	83,725	83,689	78,204	71,640	67,458	52,040
Mysore .. .. .	50,596	47,168	51,196	50,824	53,236	55,244	53,858	67,851	65,062	74,966	77,734	57,718	73,683	79,073	71,801
Baroda .. .. .	50,587	53,612	57,146	51,963	51,761	70,686	73,278	65,573	91,519	90,642	87,542	88,628	81,964	81,845	54,249
Gwalior .. .. .	43,306	49,362	56,318	72,163	79,079	89,243	94,090	98,688	95,517	94,300	90,025	93,152	87,485	78,709	70,276
Indore .. .. .	91,036	111,430	114,229	113,379	106,454	147,766	140,792	120,186	138,795	148,867	149,914	144,147	154,429	141,953	137,308
Kathiawar States .. .. .	18,868	26,506	35,438	37,397	42,717	48,545	44,109	43,703	50,479	60,628	72,857	70,577	71,184	69,292	61,128
Other Indian States .. .. .	40,209	45,197	45,735	51,462	57,767	57,119	58,444	} 102,702		108,180	137,247	169,209	146,219	154,164	141,529
Pondicherry .. .. .	23,170	23,610	22,691	20,355	19,065	22,307	26,475	} 108,180		137,247	169,209	146,219	154,164	141,529	146,293
<b>Total—Indian States</b> .. .. .	<b>351,260</b>	<b>390,116</b>	<b>428,341</b>	<b>449,314</b>	<b>460,060</b>	<b>554,003</b>	<b>559,202</b>	<b>556,698</b>	<b>622,412</b>	<b>690,375</b>	<b>730,970</b>	<b>678,645</b>	<b>694,554</b>	<b>659,859</b>	<b>593,093</b>

## LOOSE (UNPRESSED) INDIAN RAW COTTON RECEIVED† IN MILLS IN BRITISH INDIA.††

(Based on voluntary returns furnished by mills).

*Cotton Year: 1st September to 31st August.*

(In bales of 400 lbs. nett.)

	1932-33.	1933-34.	1934-35.	1935-36.	†1936-37	1937-38.	1938-39.	1939-40.	1940-41.	1941-42.	1942-43.	1943-44.	1944-45.	1945-46.	1946-47.
Bombay Province .. .. .	80,092	74,868	58,855	75,617	67,219	74,750	80,164	86,687	96,215	102,965	81,643	54,415	33,072	25,012	19,743
Madras Province .. .. .	96,340	110,875	123,260	147,044	173,102	156,875	162,489	175,540	189,257	230,691	241,751	202,405	208,300	180,379	139,710
United Provinces .. .. .	19,236	17,871	10,090	10,405	10,659	15,719	17,532	20,279	29,127	26,293	5,024	4,087	793	1,125	560
Central Provinces and Berar.	17,462	18,382	20,544	27,502	26,321	32,860	26,980	29,052	32,589	31,178	19,153	7,366	3,893	6,539	3,177
Bengal * .. .. .	..	..	..	90	..	..	..	3	..	..	483	5,000	6,017	4,337	1,855
The Punjab and Delhi † .. .. .	2,149	..	5,535	3,110	28,385	23,873	25,960	33,079	28,627	30,986	22,638	15,319	16,908	13,054	7,359
Rest of British India * .. .. .	..	..	..	19,282	17,160	22,916	12,734	15,529	21,280	6,804	4,942	7,441	4,839	9,601	..
<b>Total—British India .. .. .</b>	<b>215,279</b>	<b>221,996</b>	<b>217,784</b>	<b>263,678</b>	<b>325,058</b>	<b>321,037</b>	<b>336,041</b>	<b>357,374</b>	<b>391,344</b>	<b>443,393</b>	<b>377,496</b>	<b>293,534</b>	<b>276,424</b>	<b>235,385</b>	<b>182,005</b>
Indian States * .. .. .	..	..	..	..	131,149	109,003	122,078	116,962	131,657	118,660	83,372	78,832	59,809	47,204	41,644
<b>Total—INDIA * .. .. .</b>	<b>..</b>	<b>..</b>	<b>..</b>	<b>..</b>	<b>456,207</b>	<b>430,040</b>	<b>458,119</b>	<b>474,336</b>	<b>523,001</b>	<b>562,053</b>	<b>460,868</b>	<b>372,416</b>	<b>336,233</b>	<b>282,589</b>	<b>223,649</b>

\* Figures up to 1935-36 not compiled.

† Figures up to 1935-36 exclude Delhi.

‡ From 1936-37 the figures refer to consumption and not receipts and are based on returns furnished under the Indian Cotton Cess Act, 1923, by mills in British India and on voluntary returns from mills in Indian States. From April 1937, figures for Burma have been excluded.

N. B.— Excludes Pakistan from the 15th August, 1947.

†† Relates only to Governor's and Chief Commissioner's Provinces of the Dominion of India from the 15th August, 1947.



## APPENDIX VI.

Replies to the questionnaire issued by the Commodities Prices Board Government of India, regarding cotton classification and prices, etc., for the year 1947-48.

## I. PRODUCTION.

Question.	Answer.
1. The acreage under cotton classified according to trade or standard varieties in each district between the years 1935-36 and 1946-47.	Statements showing the acreage and production of cotton in India, classified according to varieties, for the years 1935-36 to 1946-47, are enclosed (Enclosure I). Figures for 1935-36 to 1937-38 are according to the old classification, while those for the following years are on the basis of the existing classification. Figures for 1946-47 are based on the Third All-India Cotton Forecast 1946-47; the Fourth and Final (fifth) forecasts for 1946-47 have not yet been issued. In this connection, it may be mentioned that the official forecasts of production are usually underestimates. The Indian Central Cotton Committee conducts annually a post-mortem examination of the all-India cotton forecasts of each season, in the light of the available data regarding cotton pressed and unpressed cotton consumed in mills, etc. The actual crop figures arrived at on this basis are also given in Enclosure I. Details of the actual crop figures by varieties are, however, not available.
2. Estimates of yields of cotton classified according to trade or standard varieties either by districts or for the Province as a whole annually between 1935-36 and 1946-47.	
3. In case no data of annual estimates of yields are available any statistics relating to the estimates of per acre average yields of different varieties of cotton grown in the Province.	
4. Details of the programme of the 'grow more food' campaign especially in so far as it affected acreage under cotton and the estimated results of this programme.	As a result of the Grow-More-Food campaign, the area under cotton was reduced from 21,086,000 acres in 1943-44 to 14,478,000 acres in 1945-46, a reduction of 31% on the acreage in 1943-44. On the basis of the Third Cotton Forecast 1946-47, the final cotton acreage during the current season may be expected to be more or less the same as in the 1945-46 season.

**Question.**

5. Details of the programme pursued during the last ten years for either the spread of particular varieties of cotton or the discouragement of particular varieties—the actual or estimated results of this programme.

**Answer.**

The spread of improved varieties of cotton is effected by means of seed distribution and extension and, in some cases, marketing schemes (including grading and marking of specified varieties of cotton) financed by the Committee in co-operation with the Provincial and State Departments of Agriculture. Details of the schemes financed during the last ten years, showing the names of the improved varieties and the area covered by each are attached (Enclosure II).

Steps have also been taken by the Committee to discourage the cultivation of certain inferior short staple varieties by suggesting to Provincial and State Governments the introduction of the necessary legislation. Accordingly, the cultivation of *Pulichai* in the Southern area of the Madras Province, *Goghari* in the Broach district of the Bombay Province, and Garrow Hill in certain areas of the Central Provinces and Berar, has been prohibited under the Madras Cotton Control Act, 1932, the Bombay Cotton Control Acts 1935, and 1942, and the Central Provinces and Berar Cotton Control Act, 1937, respectively.

Further, under the Bombay Cotton Control Act, 1942, the Provincial Government is authorised to prescribe the specific varieties of cotton which can be cultivated in certain areas, as well as to prohibit the possession or trade in other varieties of cotton in those areas. As an instance, under this Act Jarila is the only cotton prescribed to be grown in the East and West Khandesh districts excluding certain talukas.

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**Question.**

6. Outlines of programme of work relating to the establishment or spread of new varieties or the diminution in the acreage of older varieties which has been projected or taken in hand for the immediate future.

**Answer.**

Apart from the existing improved varieties the extension of which in most cases will be continued by the Provincial and State Departments of Agriculture, either on their own account or with the aid of funds provided by the Committee, steps will be taken by the Committee to extend the spread of approved new varieties of cotton. Recently, schemes for the extension of the following improved varieties have been sanctioned :—

(i) *Pratap* cotton in certain areas of the Dholleras tract.

(ii) *K. 72-2* for the replacement of Wagotar in the Ahmedabad district.

(iii) *Gaorani 12* for distribution in southern and western portions of the Gaorani protected area of the Hyderabad State.

(iv) <i>L.S.S.</i>	} for covering areas in Lyallpur, Sheikhupura, Shahpur, Gujerat, Jhang, Montgomery and Multan districts of the Punjab.
(v) <i>4-F</i>	
(vi) <i>289F/43</i> and	
(vii) <i>124-F.</i>	

Details regarding these schemes are attached (Enclosure III.)

7. Reports of any surveys of the cost of production of cotton undertaken during the last ten years within the Province by official or non-official agency.

Enquiries into the cost of production of cotton, sugarcane and their rotation crops were undertaken jointly by the Imperial Council of Agricultural Research (now Indian Council of Agricultural Research) and the Indian Central Cotton Committee in 1933-36. The reports on these enquiries have been published by the Council and may be obtained from them.

**Question.****Answer.**

8. Reports of any survey of the marketing of cotton within the Province undertaken during the last ten years by any official or non-official agency.

A copy of the Summary Report on the Marketing Survey on cotton in the Punjab conducted from September 1938 to February 1940, with the aid of funds provided by the Committee is enclosed (Enclosure IV).\* The Committee has recently sanctioned a scheme for cotton marketing survey in Madras Province. No report on this is available at present.

9. The seasons and times of sowing, picking and marketing of each of the varieties of cotton grown within the Province.

The required details are attached (Enclosure V.)

## II. CLASSIFICATION OF COTTONS AND THEIR PRICE RELATIONSHIPS

1. How far is the classification adopted in the Government of India, Department of Industries and Supplies Notification No. 33 (2) TB/46, dated 12th April 1946, appropriate and adequate from the point of view of the interests of the grower of cotton, of the cotton mill owner, of internal trading in cotton and of cotton export? Do you suggest any modifications in this classification? Please give specific details of modifications suggested showing the reasons in support of the suggestions.

1. Subject to the following modifications, which are suggested in the interests of the cotton growers, the classifications adopted in the Notification in question are on the whole adequate:—

(a) Provision should be made for desi cotton, of staple length over  $\frac{1}{2}$ " and up to 22/32", as, for example, C.P.I., C.P. II, and Malvi, from the districts included under 'Oomra desi,' to be sold at suitable premiums on 'Oomra desi.'

(b) Part of Cambodia Co.3 and Co.4 crops grown in Ramnad, Madura, Tinnevely, Salem, Trichinopoly and South Arcot districts, is of staple length over 1" and even reaches 1-1/16". In order to ensure that the grower of these cottons realises adequate prices for them, they should be classified separately and be given higher floors than Cambodia but no ceilings.

\* Not Attached.

**Question.****Answer.**

2. Are the price levels—floors and ceilings—announced for 1946-47 appropriate from the point of view of all interests indicated above and is it advisable to continue them during the year 1947-48? Please give reasons for any modifications suggested.

If, in the opinion of Government, conditions necessitating the control of prices of cloth and yarn still persist and if, in consequence, control of cotton prices is considered necessary, it is suggested that the ceiling prices of desi cotton, viz., Bengal desi, Oomra desi (including C.P. I, C.P. II and Malvi) should be suitably raised. As Sind desi is an export type which is rarely used in Indian mills, there should be no ceiling for it.

The Indian Central Cotton Committee at its last meeting expressed the opinion that the fixation of the ceiling price of desi cotton at a low level was encouraging the malpractice of mixing of short with medium and long staple cottons, and thereby nullifying the good work that the Committee has been doing during the last 20 years in the matter of improvement of the staple and quality of Indian cotton. It was the considered view of the Committee that unless immediate steps were taken to remedy this position, irretrievable damage might result to the purity of the new and improved types of cotton and all the skill, money and labour spent on their improvement and extension over a number of years be wasted.

3. Are the price differentials between various classes of cotton in the Control Order for 1946-47 appropriate and should they be continued during 1947-48.

Subject to the above observations and the modifications suggested, the price differentials between various classes of cotton in the Control Order for 1946-47 are considered generally appropriate.

Please give reasons for any modifications suggested.

As regards the advisability of continuing the control of cotton prices referred to in items

**Question.****Answer.**

2 and 3 of the questionnaire, it is the view of the Committee that all controls which are detrimental to the interests of the grower, should be withdrawn. The control of cotton prices is considered to adversely affect the interests of the cotton grower and the Committee is, therefore, opposed to its continuance. The Committee further urges the removal of all controls on the export of cotton and reiterates its recommendation for the abolition of the export duty on cotton.

4. Do you advocate the establishment of floors for varieties of cotton for which they are not provided to-day? If so, why?

Yes. No floor prices have been fixed at present for Dholleras, Kalagin, Punjab desi, Oomra desi and Sind Desi though they are subject to ceiling prices. It is the accepted view of the Committee that where ceiling prices are fixed there should also be corresponding floors.

**III. IMPORTS.**

1. Is it (a) desirable (b) possible to replace or reduce the imports of cotton at present taking place into India? If so, what are the methods of achieving this?

1. The Committee considers it desirable that the imports into India of cotton of those types which compete with Indian cotton in mill consumption should be restricted. For this purpose, it suggests that the price of fine cloth should be so regulated that it is not more remunerative to the manufacturer to use foreign cotton than Indian cotton for the production of cloth. The existing price differential in favour of cloth manufactured from foreign cotton is believed to have contributed to the increased consumption of foreign cotton. This is borne out by the fact that whilst consumption of Indian cotton in mills in India during the seven months ending March 1947, decreased by 23% as com-

**Question.****Answer.**

pared with the corresponding period of the previous year, consumption of foreign cotton during the same period increased by 17% over the previous year. It is further suggested that steps should be taken to ensure adequate supplies of suitable types of combers to mills in India for combing Indian cotton. Experiments carried out at the Committee's Technological Laboratory have indicated that cloth manufactured from combed good quality Indian cottons compares favourably with cloth manufactured from foreign cottons.

2. Is it necessary in any way to alter the classification, the floor and ceiling prices or the relative structure of Indian cotton prices existing to-day in order to affect in the direction desired by you imports of cotton into India ?

The answer to this question is covered by the reply to item 1.

**IV. EXPORTS.**

1. Is it (a) desirable (b) possible to reduce generally exports of Indian cotton or to reduce exports of particular varieties ? What would be the methods of achieving this and are any changes in present classification, price levels or price differentials of Indian cotton necessary for the purpose.

1. In the interests of the grower and of the national economy of the country as a whole, it is not desirable to reduce generally the exports of Indian cotton. It is accordingly suggested that the present control on cotton exports should be removed along with the general control on cotton prices. It is the considered view of the Committee that the export duty on cotton recently imposed is retarding the export of Indian cotton and that it should be abolished as early as possible. In this connection, the resolution passed by the Com-

**Question****Answer.**

mittee at its meeting in January last and communicated to the Government of India, is given below :—

“The Indian Central Cotton Committee has given careful consideration to the recent imposition of an export duty on cotton. The Committee assumes that this duty was imposed only as a temporary measure and it accordingly recommends that it should be abolished forthwith as it has already begun to act as a handicap to the export of Indian cotton. The export duty on cotton of which there is a surplus in the country and of which there are alternative supplies in other parts of the world can only act as a handicap to the prospect of selling Indian cotton in the world's markets and lead to a permanent reduction in the monetary return to the cotton growers of the country. In this connection, the Committee desires to draw the attention of the Government of India to the tendency for the narrowing of the disparity between Indian and world cotton prices, to the large discounts in the quotations for distant months in the New York cotton Futures Market, and to the fact that a subsidy of 4 cents per lb. is granted on exports of American cotton—and urges, in the interests of the Indian cotton grower, that the duty should be abolished forthwith. The Committee further recommends that the proceeds of the duty collected should be placed at the disposal of the Indian Central Cotton Committee for undertaking measures for the benefit of the Indian cotton grower.’

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## ENCLOSURE I.

## Acreage under cotton in India classified by varieties.

(Thousands).

Descriptions of cotton.	1935-36.	1936-37.	1937-38.
<b>OOMRAS :—</b>			
Khandesh .. .. .	1,285	1,304	1,328
Central India .. .. .	1,803	2,128	1,991
Barsi and Nagar .. .. .	2,451	1,948	2,338
Hyderabad-Gaorani .. .. .	978	841	959
Berar .. .. .	2,848	2,713	2,865
Central Provinces .. .. .	1,220	1,239	1,182
<b>Total ..</b>	<b>10,585</b>	<b>10,173</b>	<b>10,663</b>
Dholleras .. .. .	2,733	2,686	2,506
<b>BENGAL-SIND :—</b>			
United Provinces .. .. .	596	700	595
Rajputana .. .. .	521	568	564
Sind-Punjab .. .. .	2,439	2,516	2,629
Others .. .. .	47	45	57
<b>Total ..</b>	<b>3,603</b>	<b>3,829</b>	<b>3,845</b>
<b>AMERICAN :—</b>			
Punjab .. .. .	1,529	1,626	1,777
Sind .. .. .	384	561	653
Broach .. .. .	1,367	1,493	1,488
Coompta-Dharwars .. .. .	1,479	1,184	1,331
Westerns and Northern	2,163	1,603	1,814
Cocanadas .. .. .	170	165	148
Tinnevellies .. .. .	623	597	622
Salems .. .. .	164	190	196
Cambodias .. .. .	525	516	567
Comillas, and other sorts .. .. .	119	136	136
<b>GRAND TOTAL ..</b>	<b>25,444</b>	<b>24,759</b>	<b>25,746</b>

## Production of cotton in India classified by varieties.

(In bales of 400 lbs. each.)

(Thousands)

Descriptions of cotton.	1935-36.	1936-37.	1937-38.
<b>OOMRAS :—</b>			
Khandesh ... ..	307	273	323
Central India ... ..	304	309	220
Barsi and Nagar ... ..	427	344	399
Hyderabad-Gaorani ... ..	112	141	142
Berar ... ..	446	568	505
Central Provinces ... ..	195	221	208
<b>Total ... ..</b>	<b>1,791</b>	<b>1,856</b>	<b>1,797</b>
Dholleras ... ..	642	457	508
<b>BENGAL-SIND :—</b>			
United Provinces ... ..	195	175	200
Rajputana ... ..	92	85	114
Sind-Punjab ... ..	1,025	1,251	980
Others ... ..	10	9	11
<b>Total ... ..</b>	<b>1,322</b>	<b>1,520</b>	<b>1,305</b>
<b>AMERICAN :—</b>			
Punjab ... ..	737	900	692
Sind ... ..	155	296	240
Broach ... ..	344	394	381
Coompta-Dharwars ... ..	190	147	159
Westerns and Northern	288	165	176
Cocanadas ... ..	25	25	24
Tinnevellies ... ..	137	138	151
Salems ... ..	30	35	37
Cambodias ... ..	192	198	216
Comillas, and other sorts ... ..	39	41	51
<b>GRAND TOTAL ... ..</b>	<b>5,892</b>	<b>6,172</b>	<b>5,737</b>

## Acreage under cotton in India, Classified by Varieties.

Thousands.

Descriptions of cotton.	1938-39.	1939-40.	1940-41.	1941-42.	1942-43.	1943-44.	1944-45.	1945-46.	1946-47 3rd Cotton forecast.
<i>Bengals :—</i>									
United Provinces Deshi .. ..	735	565	465	498	370	440	263	252	228
Punjab Deshi .. ..	1,814	1,580	1,651	1,672	994	1,060	1,013	936	885
Sind Deshi .. ..	307	223	313	179	68	45	61	117	112
Rajputana Deshi .. ..	434	319	403	394	248	347	292	178	186
Total .. ..	3,290	2,687	2,832	2,743	1,680	1,892	1,629	1,483	1,411
<i>Americans :—</i>									
Sind-American .. ..	595	680	686	820	661	906	835	750	762
Punjab-American .. ..	1,867	1,730	1,757	1,955	1,959	2,279	2,038	2,028	2,032
Buri .. ..	18	15	46	101	498	406	297	243	182
Total .. ..	2,480	2,425	2,489	2,876	3,118	3,591	3,170	3,021	2,976
<i>Oomras :—</i>									
C. P. Oomras .. ..	1,353	1,175	1,189	1,262	528	669	537	571	630
Berar Oomras .. ..	1,893	1,636	1,842	1,773	160	153	96	166	345
Nimar Oomras .. ..	279	231	161	177	7	34	25	20	17
C. P. & Berar Verum .. ..	110	213	334	492	2,080	1,941	1,848	1,865	1,751
Khandesh Oomras .. ..	1,125	983	972	973	835	761	271	197	219
Khandesh Banilla .. ..	118	111	111	112	96	91	30	23	30
Barsi-Nagar Oomras .. ..	251	184	258	187	100	129	15	8	15
Hyderabad-Oomras .. ..	1,806	1,709	1,813	1,720	1,439	1,922	691	1,011	1,173
Total .. ..	6,935	6,242	6,680	6,696	5,245	5,700	3,513	3,861	4,180
Hyderabad-Gaorani .. ..	907	801	934	837	892	1,059	555	601	551
<i>Central India :—</i>									
Malvi .. ..	988	902	1,004	974	766	782	624	512	493
Central India—Others .. ..	755	689	745	792	638	655	332	375	411
Total .. ..	1,743	1,591	1,747	1,766	1,404	1,437	956	887	904

**Acreage under cotton in India Classified by Varieties—concl'd.**

Thousands.

Description of cotton.	1938-39.	1939-40.	1940-41.	1941-42.	1942-43.	1943-44.	1944-45.	1945-46.	1946-47 3rd Cotton forecast.
<i>Broach</i> .. .. .	850	853	906	891	716	689	513	476	464
<i>Surti</i> .. .. .	648	652	675	760	557	524	314	329	315
<i>Dholleras</i> :—									
Gujerat Dholleras .. .. .	642	531	686	752	529	544	286	296	302
Gujerat-Short staple .. .. .	26	17	17	25	18	1	..	..	..
Kathiawar-Dholleras .. .. .	1,028	456	769	856	521	593	294	358	368
Kathiawar-Short Staple .. .. .	491	548	586	567	269	220	192	155	127
Cutch Dholleras .. .. .	30	..	16	30	18	21	20	19	22
Total .. .. .	2,217	1,552	2,074	2,230	1,355	1,379	792	828	819
<i>Southern</i> s :—									
Kumpta and Upland .. .. .	1,389	1,348	1,336	1,479	1,070	1,448	966	794	604
Bijapur and Bagalkot Jowari .. .. .	432	589	623	677	358	354	238	152	137
Westerns .. .. .	1,154	1,124	1,172	1,229	1,046	1,302	902	766	471
White and Red Northern	173	196	193	164	184	161	109	84	71
Warangal and Cocanadas .. .. .	211	245	207	231	206	233	153	118	93
Chinnapathi (Short staple) .. .. .	9	11	11	8	10	8	7	6	6
Total .. .. .	3,368	3,513	3,542	3,788	2,874	3,506	2,375	1,920	1,382
<i>Tinnevellies</i> (including Karungannies).	651	718	710	724	624	622	552	550	268
<i>Cambodias</i> .. .. .	320	366	518	636	562	527	316	346	211
<i>Salems</i> .. .. .	51	55	57	61	38	45	21	25	14
<i>Comillas</i> .. .. .	130	125	147	143	138	115	137	151	137
Grand Total .. .. .	23,490	21,580	23,311	24,151	19,203	21,086	14,843	14,478	13,632

(B) Production of Cotton in India Classified by Varieties.

(Bales of 400 lbs. each).

(Thousands)

Descriptions of cotton.	1938-39.	1939-40.	1940-41.	1941-42.	1942-43.	1943-44.	1944-45.	1945-46.	1946-47 3rd Cotton Forecast.
<i>Bengals :—</i>									
United Provinces Deshi .. ..	191	161	159	117	103	125	73	68	56
Punjab Deshi .. ..	601	639	804	601	371	392	397	342	359
Sind Deshi .. ..	128	83	188	92	43	25	28	53	45
Rajputana Deshi .. ..	92	55	107	110	70	79	70	45	46
<b>Total</b> .. ..	<b>1,012</b>	<b>938</b>	<b>1,258</b>	<b>920</b>	<b>587</b>	<b>621</b>	<b>568</b>	<b>508</b>	<b>506</b>
<i>Americans :—</i>									
Sind-American .. ..	255	251	350	438	413	501	450	318	327
Punjab-American .. ..	808	655	820	1,029	991	967	759	870	897
Buri .. ..	4	3	13	18	84	79	47	44	30
<b>Total</b> .. ..	<b>1,067</b>	<b>909</b>	<b>1,183</b>	<b>1,485</b>	<b>1,488</b>	<b>1,547</b>	<b>1,256</b>	<b>1,232</b>	<b>1,254</b>
<i>Oomras :—</i>									
C. P. Oomras .. ..	150	253	247	324	79	117	74	84	96
Berar Oomras .. ..	308	368	500	471	27	31	15	30	61
Nimar Oomras .. ..	56	51	49	41	1	7	4	4	3
C. P. & Berar Verum .. ..	18	46	92	134	348	390	326	356	299
Khandesh Oomras .. ..	209	228	265	241	184	169	54	41	51
Khandesh Banilla .. ..	27	27	30	26	22	21	6	5	7
Barsi-Nagar Oomras .. ..	47	39	51	32	17	21	2	1	2
Hyderabad Oomras .. ..	271	280	296	295	261	277	78	130	163
<b>Total</b> .. ..	<b>1,086</b>	<b>1,292</b>	<b>1,530</b>	<b>1,564</b>	<b>939</b>	<b>1,035</b>	<b>559</b>	<b>651</b>	<b>682</b>
<i>Hyderabad Gaorani</i> .. ..	127	143	143	142	146	156	81	84	75
<i>Central India :—</i>									
Malvi .. ..	147	90	180	142	109	155	103	81	73
Central India—Others .. ..	113	85	166	149	120	136	51	69	70
<b>Total</b> .. ..	<b>260</b>	<b>175</b>	<b>346</b>	<b>291</b>	<b>229</b>	<b>291</b>	<b>154</b>	<b>150</b>	<b>143</b>

## (B) Production of Cotton in India Classified Varieties—concl'd.

(Bales of 400 lbs. each).

Thousands.

Descriptions of cotton.	1938-39.	1939-40.	1940-41.	1941-42.	1942-43.	1943-44.	1944-45.	1945-46.	1946-47 3rd Cotton Forecast.
<i>Broach</i> .. .. .	243	247	227	290	183	266	123	109	107
<i>Surti</i> .. .. .	175	158	149	151	117	165	58	60	67
<i>Dholleras</i> :—									
Gujerat Dholleras .. .. .	99	68	158	212	135	164	71	62	65
Gujerat-Short staple .. .. .	6	3	3	7	5	..	..	..	..
Kathiawar-Dholleras .. .. .	146	38	82	121	84	111	40	70	57
Kathiawar-Short staple .. .. .	73	84	88	75	41	28	33	27	22
Cutch Dholleras .. .. .	4	..	2	6	4	3	3	3	4
Total .. .. .	328	193	333	421	269	306	147	162	148
<i>Southerns</i> :—									
Kumpta and Upland .. .. .	217	227	210	221	147	231	139	66	92
Bijapur and Bagalkot Jowari .. .. .	51	69	52	57	15	43	24	9	17
Westerns .. .. .	172	148	153	153	92	147	104	58	57
White and Red Northern .. .. .	22	24	24	17	17	17	13	9	9
Warangal and Cocanadas .. .. .	26	35	33	34	30	31	23	17	14
Chinnapathi (short staple) .. .. .	1	1	1	1	1	1	1	1	1
Total .. .. .	489	504	473	483	302	470	304	160	190
<i>Tinnevellies</i> (including Karungannies).	123	158	163	170	142	129	131	113	68
<i>Cambodias</i> .. .. .	99	143	220	256	250	233	150	159	110
<i>Salems</i> .. .. .	4	5	6	8	8	8	4	4	3
<i>Comillas</i> .. .. .	38	44	49	42	42	33	45	41	35
GRAND TOTAL .. .. .	5,051	4,909	6,080	6,223	4,702	5,258	3,580	3,438	3,388

## ENCLOSURE I—(contd.)

Estimates of actual crop of cotton as arrived by the Indian Central Cotton Committee in connection with the *post-mortem* examination of all India cotton forecasts.

(In thousand bales of 400 lbs. each).

Year 1st September to 31st August.	Actual crop as worked out by the Committee.	Government estimate (Revised).
1935-36	6,970	5,892
1936-37	7,184	6,234
1937-38	6,370	5,722
1938-39	6,051	5,051
1939-40	5,884	4,909
1940-41	7,032	6,080
1941-42	6,949	6,223
1942-43	4,961	4,702
1943-44	5,723	5,258
1944-45	4,534	3,580
1945-46	4,200*	3,438

\* Provisional.

**ENCLOSURE II.**

No.	Name of scheme.	Date of sanction.	Improved variety distributed.	Area covered by the improved type 31st August, 1946.			% of the total area.	Date of termination.	Re-placed by.	Remarks.
				Acres.	Natural spread.	Total.				
1	2	3	4	5	6	7	8	9	10	11
<b>I. BOMBAY.</b>										
1	Khandesh Banilla.. ..	December, 1930..	Banilla ..	66,000	..	66,000	66%	30- 4-1937	Jarila ..	The spread of Banilla was given up as it was susceptible to wilt. The scheme kept in abeyance during period of war to encourage the cultivation of food crops.
2	Khandesh Jarila .. ..	March, 1937 ..	Jarila ..	2,34,538	..	2,34,538	39%	28- 2-1949	....	
3	Deccan Canals Banilla .. ..	January, 1934 ..	Banilla ..	6,000	..	6,000	9.16%	31- 3-1939	Jarila ..	
4	B. D. 8 .. ..	August, 1935 ..	B. D. 8 ..	27,339	..	27,339	10.93%	30-11-1943	Vijaya ..	
5	Revised Jayawant and Gadag No. 1	August, 1935 ..	Jayawant and Gadag No. 1	5,79,700 1,05,920	60,000 20,000	6,39,700 1,25,920	52.5% 99.4%	31- 5-1948 ..	.... ....	
6	1027 A.L.F. cotton in Nawapur taluka.	January, 1942	1027 A.L.F. ..	10,000	..	10,000	62.5%	31- 3-1947	....	
7	Vijaya cotton scheme .. ..	July, 1943 ..	Vijaya ..	1,19,927	..	1,19,927	27.56%	30-11-1948	....	
8	Wagotar cotton in Ahmedabad district.	July, 1943 ..	Wagotar ..	3,800	..	3,800	3.50%	31- 3-1943	To be replaced by strain 72.2.	
9	Suyog cotton scheme .. ..	July, 1944 ..	Suyog.. ..	30,440	..	30,440	15.22%	31- 5-1950	Replaced 1027 A.L.F. & IA.	
10	Surat seed distribution .. ..	November, 1929 ..	1027 A.L.F. ..	1,93,498 (In 1934-35).	..	..	68.9%	31- 3-1945	Suyog ..	
11	Scheme for selection of 1A cotton.	November, 1938 ..	1A. ..	Not available	..	..	..	31- 3-1945	....	
<b>II. SIND.</b>										
1	Sind seed distribution and extension scheme.	December, 1930 { *LB.  @ RB	Sind-Sudhar ..	67,000	..	5,47,000	64.3%	31- 3-1946	*LB=Left Bank.	....
			M4 ..	4,80,000						
			M4 ..	13,000	..	14,000	42.85%		@ RB=Right Bank.	....
			4F/98 ..	1,000						
2	Financing of seed distribution ..	January, 1938 ..	Sind-Sudhar ..	57,482	..	57,482	..	31- 3-1946	....	....



**ENCLOSURE II—(contd.)**

No.	Name of scheme.	Date of sanction.	Improved variety distributed.	Area covered by the improved type 31st August, 1946.			% of the total area.	Date of termination.	Re-placed by.	Remarks.
				Acres.	Natural spread.	Total.				
1	2	3	4	5	6	7	8	9	10	11
<b>III. CENTRAL PROVINCES.</b>										
1	Verum seed distribution and marketing scheme.	November, 1929	Verum 434 ..	53,500	1,03,400	1,56,900	31.38%	28- 2-1945	....	....
2	Distribution and marketing of Jarila.	March, 1944	Jarila .. ..	15,58,606	..	15,58,606	Cent per- cent.	28- 2-1947	....	....
3	Distribution and marketing of Buri 107 cotton.	July, 1938	Buri 107 .. ..	26,409	23,000	49,409	36.7%	29- 2-1944	....	....
<b>IV. MADRAS.</b>										
1	Madras Co.2 .. ..	August, 1932	Co.2 .. ..	35,000	..	35,000	35%	17- 8-1937	....	.....
2	Madras Co.3 .. ..	January, 1942	Co.3 .. ..	31,000	..	31,000	..	30- 9-1946	....	....
3	H1 strain .. ..	July, 1941	H1 .. ..	58,344	..	58,344	29.17%	22- 7-1946	....	....
4	K1 .. ..	July, 1944	K1 .. ..	4,300	..	4,300	69.8%	..	....	....
<b>V. UNITED PROVINCES.</b>										
1	C.402 Scheme .. ..	January, 1934	C.402 & C.520 .. ..	1,898 } 362 }	..	2,260	..	15- 2-1938	....	....
2	Perso-American .. ..	January, 1942	....	21,710	..	21,710	36.17%	5- 5-1947	....	....
<b>VI. HYDERABAD STATE.</b>										
1	Hyderabad seed distribution scheme.	November, 1929	Jayawant ..	45,386	86,329	1,31,715	73%	30-12-1940	....	....

**ENCLOSURE II—(concl'd.)**

No.	Name of scheme.	Date of sanction.	Improved variety distributed.	Area covered by the improved type 31st August, 1946.			% of the total area.	Date of termination.	Re-placed by.	Remarks.
				Acres.	Natural spread.	Total.				
1	2	3	4	5	6	7	8	9	10	11
<b>VII. BARODA STATE.</b>										
1	(Navsari) seed distribution scheme	February, 1933 ..	1027 A.L.F. ..	1,60,000	..	1,60,000	82%	31- 3-1945	Suyog .. .. (Seg. 8-1)	..
2	B9 .. .. .	July, 1941 ..	B9 .. ..	19,096	..	19,096	35%	31- 9-1947	Vijaya .. ..	....
3	Creation of pure Wagad zone in Mehsana.	January, 1943	Wagad ..	18,011	28,600	46,611	16.6%	13-12-1945	Wagotar. ..	....
4	Vijaya .. .. .	January, 1944 ..	Vijaya ..	60,340	..	60,340	20.11%	31- 3-1949	Replaced B.D. 8.	....
5	Suyog in Navsari .. ..	January, 1945 ..	Suyog .. ..	44,264	..	44,264	21.07%	31- 3-1949	Replaced 1027 A.L.F. (expected to cover 2,10,000 acres)	....
6	B.D.8 .. .. .	July, 1938 ..	B.D.8 .. ..	8,000	..	8,000	2.6%	31- 3-1944	....	....
<b>VIII. MYSORE.</b>										
1	Mysore .. .. .	January, 1945 ..	Sel. 69 & MA.V.	1,200	..	1,200	1.5%	31- 5-1951	Area to be covered is 80,000.	....

**ENCLOSURE III.**

Details of schemes sanctioned by the Indian Central Cotton Committee recently for the spread of new varieties of cotton.

**(i) Pratap Cotton :**

Committee's share  
of expenditure. Rs. 98,243/-.

The scheme aims to replace totally Mathio cotton with the newly developed strain "Pratap" (S. 31) in Kathiawar over an area of approximately 3.5 to 4 lakhs of acres during the five year period for which it has been sanctioned.

**(ii) K-72-2:**

Committee's share  
of expenditure. Rs. 83,817/-.

The scheme aims at the complete replacement of Wagotar cotton over an area of 330,000 acres in the Wagad tract of Ahmedabad district, comprising the talukas of Viramgam and parts of Sanand, Dholka, Dhanduka and Dakroi within a period of 5 years by the new strain K-72-2.

**(iii) Gaorani 12:**

Committee's share  
of expenditure. Rs. 80,788/-.

The object of the scheme is to organise the production and distribution of pure pedigree seed in the southern and western portions of the Gaorani protected area of the Hyderabad state which has an annual area of 453,164 acres under cotton, distributed in Bidar district, Mominabad taluka of Bhir district, Palem taluka of Parbhani district and part of Oosmanabad district which lies to the east of Sholapur-Parli Road. In addition, the marketing of the produce will also be organised.

- |  |   |   |
|--|---|---|
| <ul style="list-style-type: none"> <li>(iv) L.S.S.</li> <li>(v) 4-F.</li> <li>(vi) 289F/43.</li> <li style="padding-left: 2em;">and</li> <li>(vii) 124-F.</li> </ul> | } | <p>Committee's share of expenditure Rs. 65,018/-.</p> <p>The scheme aims at the distribution of pure seed of American varieties of cotton over an area of 1,490,000 acres in the districts of Lyallpur, Sheikhpura, Shahpur, Gujarat, Jhang, Montgomery and Multan.</p> |
|--|---|---|

## ENCLOSURE V.

## Season and time of Sowing, Picking and Marketing of Cotton.

Name of Variety.	Normal sowing period.	Normal picking period.	Normal marketing season.
Bengals .. ..	April to June ..	September to January ..	October to July.
Americans Sind & Punjab.	April to June ..	October to January ..	October to July.
Buri .. ..	June .. ..	November to January ..	December to June.
Oomras .. ..	June to July ..	September to January ..	October to August.
Hyderabad Gaorani.	June .. ..	October to December ..	November to August.
Central India ..	June to July ..	October to January ..	November to August.
Broach .. ..	June to July ..	January to March ..	February to July.
Surti .. ..	June to July ..	December to March ..	March to July.
Dholleras ..	June to July ..	December to March ..	January to August.
Kumptas ..	August to Sept. ..	February to May ..	April to August
Westerns.. ..	August to Sept. ..	January to May ..	January to August.
White and Red Northern.	June to October ..	February to April ..	January to August.
Warangal and Cocanadas.	July to Sept. ..	January to April ..	February to August.
Tinnevellies (including Karungannies).	October to Nov.	March to August ..	April to December.
Cambodias ..	Sept. to Oct. ..	April to July .. ..	May to January.
Salems .. ..	Sept. to Oct. ..	April to July .. ..	April to November.
Comillas .. ..	May .. ..	October to December ..	November to August.

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