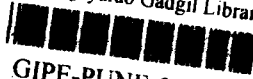


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COTTON INVESTIGATIONS

By

J. C. OVERPECK and W. T. CONWAY

**AGRICULTURAL EXPERIMENT STATION
OF THE
NEW MEXICO COLLEGE OF AGRICULTURE AND MECHANIC ARTS
STATE COLLEGE, N. M.**

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COTTON INVESTIGATIONS

INTRODUCTION.

Cotton became an important commercial crop in the Mesilla Valley of New Mexico about 1920. The New Mexico Experiment Station had experimented with this crop as early as 1891 and at various times since included a few varieties of cotton in regular field experiments. These variety tests have been carried on continuously since about 1916 and are still being continued every year. Results of these experiments have been published in Bulletins Nos. 141 and 181.

Many new problems pertaining to the planting, growing, and cultivation of the crop arose when it became of commercial importance, and the Experiment Station has attempted to conduct experiments as rapidly as possible to determine the best practices as to planting, spacing, fertilizing, topping, and other cultural features. While land and facilities were not available for very extensive investigations, it is believed that the results obtained will be of considerable value to New Mexico cotton farmers, since they are based on carefully conducted experiments and actual field observations over a period of five to ten years.

There is still a great diversity of opinion regarding various practices, such as the time and method of planting, fertilizing, topping, and spacing. At the Experiment Station the planting has been done about May 1. The method of planting which has been found to be most satisfactory is to seed at the rate of about 35 pounds to the acre in rows 40 to 42 inches apart, in dry soil, and then irrigate up. An attachment was devised by the Agronomy Department of this Station for the planter, which makes a small ridge of earth, 3 or 4 inches high, immediately behind the planter wheels, covering the cottonseed to a depth of 3 to 4 inches. After the planting and irrigating, and the soil has become sufficiently dry, the field is harrowed crosswise to remove the small ridges. This breaks up the crusted soil over the seed and, in most instances, a good stand is rather easily obtained. A crusted soil is probably the greatest obstacle in obtaining good stands of cotton in southern New Mexico.

While work has been carried on for several years with various commercial fertilizers, there is no very strong indication at present that fertilizers have been profitable, except in a very few instances. This is especially true with the present low price of cotton.

In ordinary practice, the chopping or spacing is done when the plants are 4 to 6 inches high. The usual spacing is to leave the plants about 12 inches apart; and cultivations and irrigations have generally been given as needed, the number and time of each being determined very largely by actual experience.

DATE OF PLANTING.

There is, apparently, considerable difference of opinion in the cotton growing areas of New Mexico concerning the proper date of planting. In many instances there is a tendency to rush the planting when the weather becomes warm during the first week of April. Many farmers apparently have various signs or indications of their own which determine for them the proper date of planting. Some of these ideas are based on the growth of the native vegetation or other phenomena. Experience appears to show, however, that none of these things is reliable as an indicator of the best time to plant cotton. It would seem that the best indication should be the available weather records averaged for a large number of years. At State College, New Mexico, the average date of the last killing frost in the spring has been April 9, but frost sufficiently severe to kill vegetation has been known to occur as late as May 8. It should be remembered that since the last killing frost averages April 9, by the law of averages in one-half of the years the frost comes at a later date than this. It should be borne in mind further, that cotton is of tropical origin and will not grow during cold weather. If cold weather comes immediately after planting, much of the seed will rot and a good stand cannot be obtained. In general, it would seem that the weather is not sufficiently warm, especially in the Mesilla Valley, to plant before about the last week in April, although it is well known that in many instances farmers have been able to get a good stand at an earlier date. It is believed, however, that the greatest degree of success in obtaining a good stand will be attained by waiting until the last week in April or even May 1. Though earlier seeding sometimes results in a slightly larger yield, it also materially increases the chance that replanting may be necessary.

A date of planting experiment was conducted in 1929, the results of which are shown in Table 1.

TABLE 1.—EFFECT OF DATE OF PLANTING ON YIELD AND EARLINESS OF ACALA COTTON: 1929.

Date of planting	Seed cotton yield, per acre	Per cent lint	Lint yield per acre	Relative lint yield per acre	Percentage of seed cotton harvested	
					First picking	Second picking
	Pounds		Pounds	Per cent		
April 15	1,936	36.8	712	100.0	75.8	24.2
April 30	2,322	37.0	859	120.6	73.4	26.6
May 15	1,674	37.1	621	87.4	55.9	44.1

It will be noted that three dates of planting were used, and that when cotton was planted April 30 it yielded 20.6 per cent more lint than the April 15 plantings and 12.6 per cent more than May 15 plantings. As to the effect on earliness, as indicated by the amount of cotton picked at the first picking, which was on November 10 for all the plots, there was only 2.4 per cent more cotton picked from the April 15 than from the

April 30 plantings. From this one year's work, it would seem that the general idea that earlier planting makes for earlier maturity may not be well founded on facts, except that after May 1 it would be indicated that delaying the planting does delay maturity. It is shown that 17.5 per cent more cotton was picked at the first picking when planted about April 30 than when planted May 15.

FERTILIZER EXPERIMENTS.

It is quite natural that with the beginning of the commercial production of cotton in the Mesilla Valley, the tendency would be toward one-crop farming and that very soon inquiries would be made as to the best fertilizer treatments to increase cotton yields. Some preliminary work was done in cooperation with a few farmers in 1926, in which ammonium sulfate and one or two complete fertilizers were applied. These investigations indicated that on the heavier types of soil the use of commercial fertilizers would not give very largely increased returns; but on lighter soils, where cotton had been grown for several years, and where no special soil building program was in effect, the fertilizers paid for the cost of treatment and probably made a small profit.

In 1928 a regular field plot experiment on a comparatively sandy soil was conducted in which various amounts of superphosphate fertilizer and cottonseed meal were compared with no treatment. The results of this experiment are shown in Table 2.

TABLE 2.—FERTILIZER EXPERIMENTS WITH COTTON; 1928.

Fertilizer treatment	Seed cotton yield, per acre	Relative yield of seed cotton	Percentage of seed cotton harvested		
			First picking	Second picking	Third picking
No treatment	Pounds 2,641	Per cent 100.0	33.9	35.5	30.6
300 pounds 20% superphosphate per acre	2,815	106.6	36.0	33.3	30.7
400 pounds 20% superphosphate per acre	2,849	107.9	43.2	32.6	24.2
300 pounds superphosphate + 300 pounds cottonseed meal	3,168	120.0	38.1	34.0	27.9

The difference in yield obtained between 300 and 400 pounds of superphosphate was not nearly sufficient to pay for the extra amount of fertilizer; the yield being only 1.4 per cent greater where the extra 100 pounds of superphosphate were applied. Neither of these superphosphate treatments proved especially profitable as compared with no-fertilizer treatment, but when combined with cottonseed meal it will be noted that there was an increased yield of 20 per cent. However, it is doubtful in ordinary years whether it would be economical to use cottonseed meal as a fertilizer, because of its feed value.

It is possible that the applications of superphosphate fertilizer hastened the maturity of the crop to a certain extent, as indicated by the amount of cotton that was obtained at the first picking.

In 1930, an experiment was begun in which it is planned to grow cotton continuously on the same field for an indefinite period, with the idea of determining whether or not it may be possible to maintain yields by growing continuous cotton and applying commercial fertilizers. In this experiment applications of ammonium sulfate, superphosphate, a combination of the two, and manure are being compared with no treatment. In 1930, 150 pounds to the acre of ammonium sulfate were applied; 300 pounds of 18 per cent superphosphate were used, and on the plots where both of these were applied the same amount of each was used as on the single fertilizer treatments. Manure was applied at the rate of $6\frac{1}{4}$ tons to the acre. The results for 1930 are shown in the following table:

TABLE 3.—FERTILIZER EXPERIMENTS WITH COTTON; 1930.

Fertilizer treatment	Lint yield per acre	Relative lint yield per acre	Percentage of seed cotton harvested		
			First picking	Second picking	Third picking
No treatment	Pounds 759	Per cent 100.0	38.8	36.0	25.2
150 pounds ammonium sulfate per acre	732	96.4	37.5	36.4	26.1
300 pounds 20% superphosphate	757	99.7	29.5	37.0	33.5
150 pounds ammonium sulfate + 300 pounds superphosphate	757	99.7	38.4	31.9	29.7
Manure, $6\frac{1}{4}$ tons per acre	961	126.6	26.4	36.7	36.9

This field had been planted to cotton one year previous to the beginning of this experiment. It will be noted that no increased yield was obtained from the applications of commercial fertilizers, but that the application of manure increased the yield by 26.6 per cent. This field is of a rather heavy type of soil.

When the effect of early maturity, as indicated by the amount of cotton picked at the first picking, is considered, it will be noted that the adding of manure had a tendency to delay maturity. This might also be said of the application of superphosphate, but there seems to be no consistent reason as to why superphosphate might delay maturity. Heavy applications of manure might be expected to delay maturity, because of the increased vegetative growth which usually results therefrom. While manure might possibly have been a factor in delaying early opening of the cotton, the increased yield obtained considerably more than made up for any disadvantage that might have occurred because of later maturity.

The same experiment in the same field was continued in 1931, except that in 1931 applications of 135 pounds of 45 per cent superphosphate were used, instead of 300 pounds of 18 per cent superphosphate as in the previous year. Approximately the same quantity of phosphorus was thereby applied to each acre. The results of the 1931 experiment are shown in Table 4, which follows:

TABLE 4.—FERTILIZER EXPERIMENTS WITH COTTON; 1931.

Fertilizer treatment	Lint yield per acre	Relative lint yield per acre	Percentage of seed cotton harvested		
			First picking	Second picking	Third picking
No treatment	Pounds 906	Per cent 100.0	55.5	35.0	9.5
150 pounds ammonium sulfate per acre	833	91.9	51.6	37.6	10.8
135 pounds 45% superphosphate per acre	924	102.0	51.2	36.4	12.4
150 pounds ammonium sulfate + 135 pounds superphosphate	953	105.2	50.6	36.9	12.5
Manure, 6 tons per acre	985	108.7	46.8	39.9	13.3

The results are somewhat similar to those of the preceding year, in that manure gave the highest yield, but the difference was not as great as in the preceding year. It is also noted that manure showed the same tendency to delay maturity, as indicated by the percentage of the crop picked at the first picking, which was on October 25. The other two pickings were on November 20 and December 22. The results would seem to indicate that the commercial fertilizers on this particular field, or this particular type of soil, were of practically no value and were not used at a profit. The ammonium sulfate actually showed a decreased yield of cotton, compared with no treatment.

SPACING EXPERIMENTS.

When cotton became an important commercial crop in the Mesilla Valley, there was very little information available as to what should be the proper method of spacing the plants. The general tendency was to leave single plants about 10 to 12 inches apart, as an average. There were indications that cotton should be spaced more closely on light types of soil where a rank vegetative growth could not be obtained.

The first spacing experiment conducted by the Experiment Station was in 1924 in a field with a soil of comparatively heavy texture. The results obtained in the spacing experiments that year are shown in Table 5, which follows:

TABLE 5.—SPACING EXPERIMENTS WITH COTTON; 1924.

Distance of spacing	Seed cotton yield per acre	Relative yield of seed cotton	Percentage of seed cotton harvested				
			First picking	Second picking	Third picking	Fourth picking	Total
	Pounds	Per cent					
Single plants, 12 inches	2,163	103.0	21.7	35.9	33.8	8.6	100.0
Blocked, 12 inches	2,087	96.5	18.9	33.0	34.8	13.3	100.0
Single plants, 8 inches	2,204	101.9	21.8	35.2	32.3	10.7	100.0
Unthinned	2,147	99.3	18.3	34.4	33.9	13.4	100.0

It will be noted that when the cotton was spaced 8 inches apart it gave the highest yield, by a very small amount, but that the widest variation from the highest to the lowest yield was slightly more than 5 per cent. In this experiment and in all later experiments where the term

"blocked" is used, this means that an average of two or three plants was left at intervals as designated, with no attempt to thin to single plants.

The data in Table 5 show further that spacing had little, if any, effect upon the earliness of the crop as indicated by the percentage harvested at the first picking.

The next spacing experiment was conducted in 1927, the results of which are reported in Table 6.

TABLE 6.—SPACING EXPERIMENTS WITH COTTON; 1927.

Distance of spacing	Seed cotton yield per acre	Relative yield of seed cotton	Percentage of seed cotton harvested			
			First picking	Second picking	Third picking	Total
Single plants, 12 inches	3,032	100.0	28.4	43.7	27.9	100.0
Blocked, 12 inches	3,011	99.3	31.6	42.6	25.8	100.0
Single plants, 18 inches	3,124	103.0	31.6	45.1	23.3	100.0
Blocked, 18 inches	2,964	98.0	27.6	42.1	30.3	100.0
Single plants, 24 inches	2,994	98.7	29.4	45.3	25.3	100.0
Blocked, 24 inches	2,977	98.2	29.2	43.0	27.8	100.0
Blocked, 36 to 40 inches	3,059	100.9	29.0	44.7	26.3	100.0
Unthinned	2,556	84.3	31.1	41.1	27.8	100.0

This year comparisons were made with single plants and blocked plants 12, 18, 24, and 36 to 40 inches apart. Also, a series of plots was used in which no thinning whatever was done.

When a comparison is made of the relative yields, it will be noted that the differences were slight in all yields except from the plots which were unthinned, which produced 15.6 per cent less than single plants spaced 12 inches apart; the latter being considered the standard. The conclusion which was drawn from the work in 1927 was that there seemed to be comparatively little difference in yield from various spacings of cotton on a comparatively heavy type of soil, and that any kind of spacing is better than no spacing at all. Again, there is no very prominent indication that the method of spacing had any particular effect on the earliness of the crop. The plots which were blocked 36 to 40 inches apart were included with the idea of studying the effect of spacing at sufficient distances that the crop might be cultivated in both directions. It will be noted that this method of spacing on this particular type of soil actually yielded 1 per cent more cotton than when single plants were spaced 12 inches apart.

A similar experiment was continued during the season of 1928, the results of which are shown in Table 7, which follows:

TABLE 7.—SPACING EXPERIMENTS WITH COTTON; 1928.

Distance of spacing	Lint yield per acre	Relative lint yield per acre	Percentage of seed cotton harvested			
			First picking	Second picking	Third picking	Total
	Pounds	Per cent				
Single plant, 12 inches	1,022	100.0	31.4	20.0	48.6	100.0
Blocked, 12 inches	1,013	99.1	34.0	17.8	48.2	100.0
Single plant, 18 inches	969	94.8	23.4	23.2	53.4	100.0
Blocked, 18 inches	994	97.3	25.1	22.9	52.0	100.0
Single plant, 24 inches	1,053	103.0	17.7	26.7	55.6	100.0
Blocked, 24 inches	1,062	103.9	21.7	25.9	52.4	100.0
Blocked, 30 inches	998	97.7	19.3	28.2	52.5	100.0
Blocked, 40 inches	977	95.6	15.4	28.0	56.6	100.0
Ordinary chopping	975	95.4	20.1	25.2	54.7	100.0
Unthinned	920	90.0	24.5	23.7	51.8	100.0

In this instance the method of spacing which is designated as ordinary chopping means that the chopping was done in the ordinary manner in which any farmer might thin the crop, without regard to exact distances; which would ordinarily average 8 to 12 inches. In all other spacings, the distances were actually measured by markers laid alongside the row of plants.

Again it is shown that the differences in yield from the various spacings are not great and that the smallest yield was obtained from the unthinned plots. While the differences were slightly greater than in the preceding year, the conclusion might again safely be drawn that the spacing of the plants on a comparatively heavy type of soil is not a very important factor in determining the yield obtained, and that it is not wise to leave the plants unthinned.

The differences are also somewhat more noticeable in the percentage of the crop that was harvested at the first picking. The data show that the greatest amount of cotton at the first picking was obtained when the plants were blocked 12 inches apart, and the indications are that with wider spacings there is a slight delay in the maturity of the crop. However, when a comparison is made of the lateness as shown by the last picking, there does not seem to be much difference in the delay of maturity of the plants. Both the first and second pickings would be considered as high quality cotton and only the last picking would be considered as somewhat lower in quality of lint. It is probable that wide spacing permits a greater vegetative growth, which has a tendency to delay maturity slightly. It is again noted that with blocking at a sufficient width to permit cross-cultivation, the yield is reduced only a comparatively small amount, being only 4.4 per cent less than when single plants are spaced 12 inches apart.

The experiment was continued also in 1929, the results of the test being shown in Table 8.

TABLE 8.—SPACING EXPERIMENTS WITH COTTON; 1929.

Distance of spacing	Lint yield per acre	Relative lint yield per acre	Percentage of seed cotton harvested		
			First picking	Second picking	Total
	Pounds	Per cent			
Single plant, 12 inches	931	100.0	80.4	19.6	100.0
Blocked, 12 inches	885	95.1	73.4	26.6	100.0
Single plant, 18 inches	796	85.5	78.8	21.2	100.0
Blocked, 18 inches	887	95.3	75.0	25.0	100.0
Single plant, 24 inches	744	79.9	68.9	31.1	100.0
Blocked, 24 inches	956	102.7	69.8	30.2	100.0
Blocked, 30 inches	765	82.2	71.0	29.0	100.0
Blocked, 40 inches	682	73.3	72.1	27.9	100.0
Ordinary chopping	898	96.5	74.2	25.8	100.0
Unthinned	777	83.5	78.4	21.6	100.0

This year's results showed still greater variations from the previous years, with the highest yield obtained from blocking 24 inches apart. Some of these results are somewhat conflicting, however, as compared with previous years and no very definite conclusions could be drawn from this year's data concerning the effect of spacing on the relative yield. Blocking at a wide distance—40 inches—in 1929, gave the lowest yield. Possibly it was better that year to have the plants spaced more closely, as is indicated by the yields from ordinary chopping and from single plants 12 and 18 inches apart and from blocking 12 to 18 inches apart. It will be noted that with the exception of 24-inch blocking, all other yields were somewhat reduced.

Owing to the nature of the season in 1929, only two pickings were made; the first on November 10 and the second, December 15. The data as to the earliness gave no indication of any very definite effect of spacing upon earliness of the crop. Possibly, however, the conclusion might be justified that wide spacing, which is conducive to vegetative growth, has a slight effect in delaying maturity.

TOPPING COTTON.

Topping cotton, which consists of removing the terminal buds of the plants with the idea of slowing down the vegetative growth and producing a more spreading plant, has been practiced and advocated by various farmers for a number of years; and up to 1924 there was apparently little, if any, experimental evidence to prove or disprove the value of this practice in New Mexico. The first experimental work was done in 1924, the results of which are shown in Table 9, below:

TABLE 9.—EFFECT OF TOPPING COTTON ON YIELD AND EARLINESS; 1924.

Treatment	Seed cotton yield per acre	Relative yield of seed cotton	Percentage of seed cotton harvested			
			First picking	Second picking	Third picking	Fourth picking
	Pounds	Per cent				
Untopped	981	100.0	7.1	23.6	33.2	36.1
Topped	932	95.0	9.6	23.2	30.8	36.4

The topping was done on July 28 and comparison was made between plots of topped and untopped cotton. It will be noted that topping the cotton actually decreased the yield by almost 6 per cent. While the labor cost of removing these terminal buds is not very great, it will be seen, based on the 1924 data, that nothing was gained by the practice, and while topping probably caused a small percentage of bolls to open a little earlier, the difference as shown by the amount of cotton which was picked at the first picking was of little, or no, consequence.

The next topping experiment was conducted in 1927, the results of which are shown in Table 10.

TABLE 10.—EFFECT OF TOPPING COTTON ON YIELD AND EARLINESS; 1927.

Treatment	Seed cotton yield per acre	Relative yield of seed cotton	Percentage of seed cotton harvested		
			First picking	Second picking	Third picking
	Pounds	Per cent			
Not topped	2,377	100.0	4.1	41.6	54.3
Topped, August 5	2,410	101.4	6.7	45.1	48.2
Topped, August 15	2,340	98.4	10.8	44.4	44.8
Topped, August 25	2,377	100.0	18.0	41.0	41.0

In 1927, the cotton was topped at three different dates; August 5, 15, and 25. It was again shown that the differences in yield from the topping are so slight that the practice certainly does not pay. So far as the effect on early maturity is concerned, the data might indicate that late topping hastens the opening of the bolls, since cotton which was topped August 25 produced nearly 7.2 per cent more at the first picking than that topped August 15, and cotton topped August 15 produced 4.1 per cent more at the first picking than that topped August 1. However, it is doubtful if this slight advantage is sufficient to justify a recommendation of the practice.

The results of the topping experiment of 1928 are shown in the following table:

TABLE 11.—EFFECT OF TOPPING COTTON ON YIELD AND EARLINESS; 1928.

Date of planting	Treatment	Seed cotton yield per acre	Relative yield of seed cotton	Percentage of seed cotton harvested		
				First picking	Second picking	Third picking
		Pounds	Per cent			
May 2	Not topped	3,312	100.0	68.2	23.2	8.6
May 2	Topped, August 16	3,523	106.4	71.0	22.7	6.3
May 2	Topped, August 25	3,184	96.1	68.3	23.7	8.0
May 23	Not topped	3,069	92.7	28.6	44.2	27.2
May 23	Topped, August 16	2,888	87.2	33.4	44.6	22.0
May 23	Topped, August 25	3,027	91.4	25.0	47.8	27.2

Cotton planted at two different dates in 1928, and topped at two different dates, was compared with untopped cotton. In only one instance did topping pay, and that was when it was done on August 16 on cotton planted May 2. When the planting or topping was done at later dates, the yields were decreased. The effect of topping on early maturity was

not very pronounced and no definite conclusion could be drawn from the data available as to what the effect, if any, might be. Certainly the results would indicate, however, that topping was not profitable.

In 1929, the results of topping at three different dates were compared with those from untopped cotton, the relative yields being shown in Table 12, below:

TABLE 12.—EFFECT OF TOPPING COTTON ON YIELD AND EARLINESS; 1929.

Treatment	Lint yield per acre	Relative lint yield per acre	Percentage of seed cotton harvested		
			First picking	Second picking	Total
Not topped	830	100.0	81.8	18.2	100.0
Topped, August 1	849	102.3	86.1	13.9	100.0
Topped, August 15	808	97.3	83.5	16.5	100.0
Topped, August 27	843	101.6	85.0	15.0	100.0

Again the relative differences are so slight that there is no indication that the practice is profitable, and it may even decrease the yield. The results as they affect early maturity are not conclusive for this year and probably topping had no effect of any consequence on the percentage of the crop that was picked at the first picking.

SHRINKAGE OF COTTON SEED

A few years ago a question arose among local farmers and ginners as to the amount of shrinkage that might take place when cottonseed is left in a pile in the open, as is usually done at the gins. If the shrinkage was a considerable amount, it would be quite natural to expect that this should have an effect upon the value per ton of the seed. In order to obtain definite information on this subject, a large flat-top wagon was loaded with cottonseed and carefully weighed and placed where the seed would be exposed to the weather at all times. The wagon and seed were then weighed at various intervals of approximately 15 days; at the same time several bags of seed were stored in a building and these were weighed on the same dates as the seed stored in the open. The results are recorded in the following table:

TABLE 13.—SHRINKAGE OF COTTONSEED PILED IN OPEN AND STORED IN BUILDING.

Date	Weight of wagon and seed in open	Ratio	Weight of seed stored in building	Ratio
	Pounds		Pounds	
November 5	2,175	100.0	366.0	100.0
November 20	2,125	97.7	363.5	99.3
December 5	2,110	97.0	363.0	99.2
December 19	2,100	96.6	362.0	99.0
January 1	2,265	104.1	364.0	99.5
January 20	2,175	100.0	364.5	99.6
February 4	2,190	100.7	364.0	99.5
February 19	2,115	97.2	363.0	99.2
March 6	2,100	96.6	363.0	99.2
March 22	2,055	94.5	361.5	98.8

It will be noted that with the seed stored in the open, the weight decreased until January 1. Just before January 1 there occurred approximately .5 inch of rain, which caused an increase in weight of 4.1 per cent. Several lighter rains fell during the period, making a total of 1.35 inch in all. On March 22, when the experiment was completed, it was found that the shrinkage in weight had amounted to 5.5 per cent; while the change in weight of the seed that was stored in a sheltered place was very slight, it weighing only 1.2 per cent less at the end of the period than the original weight of the seed when stored. In view of these figures it is doubtful whether much, if any, loss occurs when cottonseed is piled in the open for a period of a few months; and the loss is almost negligible when the seed is stored in a dry place inside of a building.

SUMMARY.

1. The probable best date for planting cotton in the Mesilla Valley of New Mexico is about the last week in April. If planting is done earlier than this there is a risk of injury by cold weather, and if later, the yield is usually reduced and maturity delayed thereby.
2. Commercial fertilizers have apparently not given increased yields on soils of a heavy texture which are naturally productive. This applies to both nitrogenous and phosphatic fertilizers. Indications are that such fertilizers may give increased yields on lighter types of soil and on fields that have been continuously cropped to cotton for a number of years. Applications of manure give increased yields and probably delay maturity to a certain extent.
3. Where cotton is grown on a soil that produces much vegetative growth, there is little difference in yield from various distances of spacing. The usual method of spacing cotton, of leaving one plant every 10 to 12 inches, is as good as any other spacing, but unspaced cotton will probably give a reduced yield. It is doubtful, though, whether the same results would be obtained when the crop is grown on a comparatively light sandy soil which does not produce much vegetative growth. It is generally believed that cotton should be spaced rather closely when such a soil condition exists.
4. Topping cotton plants to check the vegetative growth has not been found to increase the yield and has often actually caused a decreased yield.
5. The loss from shrinkage of cottonseed piled in the open for a few months is probably of little importance and may not be more than 5 per cent. The loss is almost negligible when the seed is stored in a dry shelter.