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APPENDICES.

APPENDIX I.

Cropping Scheme for the year 1923-24.

(Each plot is of 10 gunthas.)

Nilwa Fodder. (571)	Nilwa Fodder. (554)	● Nilwa Fodder (528)	Brinjal. (501)				
Nilwa Fodder. (572)	Nilwa Fodder. (555)	Nilwa Fodder (529)	Brinjal. (502)				
● Nilwa Fodder. (573)	Nilwa Fodder. (556)	Nilwa Fodder. (530)	Brinjal. (503)				
	Nilwa Fodder. (557)	Nilwa Fodder. (531)	Brinjal. (504)				
	Nilwa Fodder. (558)	Nilwa Fodder (532)	Cabbage. (505)				
		Nilwa Fodder. (533)	Bhindi Guwar. (506)	Dharwar Chillies. (476)	Jowar Fodder (443)	Jowar Fodder. (406)	Jowar Fodder. (368)
		Nilwa Fodder. (534)	Beans Bhindi. (507)	Dharwar Chillies. (477)	Suran. (444)	Onion for seeds. (407)	Onions. (369)
		Nilwa Fodder. (535)	Beans and Guwar (508)	Dharwar Chillies. (478)	Ginger. (445)	Onions. (408)	Garlic. (370)
		Nilwa Fodder. (536)	Chillies. (509)	Dharwar Chillies. (479)	Turmeric. (446)	Onions. (409)	Tomatoes. (371)
			Chillies. (510)	Chillies. (480)	Turmeric. (447)	Cucurbits. (410)	Turmeric and Guwar. (372)
			Chillies. (511)	Chillies. (481)	Ginger. (448)	Khira and leafy vegetables. (411)	
			Tondall. (512)	Onions and Beans. (482)			

Cropping Scheme for the year 1924-25.

(Each plot is of 10 gunthas.)

		Dharwar Chillies. (528)	Onion for seed. (501)				
		Dharwar Chillies. (529)	Peas and Garlic. (502)				
Guvar mixture. (571)	Guvar mixture and Cucurbit. (554)	Tobacco. (530)	Onions. (503)				
Guvar mixture. (572)	Brinjal. (555)	Tobacco. (531)	Onions. (504)				
Guvar mixture. (573)	Brinjal. (556)	Chillies. (532)	Beans and Mogari (505)				
	Brinjal and Cabbage. (557)	Chillies. (533)	Cucurbit. (506)				
	Wal-papdi (558)	Chillies. (534)	Cucurbit. (507)	Suran. (476)	Jowar Fodder. (443)	Jowar Fodder. (406)	Jowar Fodder. (368)
		Chillies. (535)	Khira and Cabbage. (508)	Suran. (477)	Nilwa Fodder. (444)	Nilwa Fodder. (407)	Nilwa Fodder. (369)
		Chillies. (536)	Double Beans. (509)	Suran. (478)	Nilwa Fodder. (445)	Nilwa Fodder. (408)	Nilwa Fodder. (370)
			Chillies. (510)	Suran. (479)	Nilwa Fodder. (446)	Nilwa Fodder. (409)	Nilwa Fodder. (371)
			Chillies. (511)	Turmeric. (480)	Nilwa Fodder. (447)	Nilwa Fodder. (410)	Nilwa Fodder. (372)
			Tondali. (512)	Turmeric. (481)	Nilwa Fodder. (448)	Nilwa Fodder. (411)	
				Ginger. (482)			

Cropping Scheme for the year 1925-26.

(Each plot is of 10 guntas.)

Tomatoes. (571)	Cucurbit and Khol Khol. (564)	Guvar. (528)	Nilwa Fodder. (501)				
Guvar mixture. (572)	Cucurbit. (565)	Suran. (529)	Nilwa Fodder. (502)				
Wal-papadi. (573)	Khira and Cabbage. (566)	Suran. (530)	Nilwa Fodder. (503)				
	Double Beans. (567)	Suran. (531)	Nilwa Fodder. (504)				
	Peas. (568)	Suran. (532)	Nilwa Fodder. (505)				
		Ginger. (533)	Nilwa Fodder. (506)	Nilwa Fodder. (476)	Seasamum (443)	Seasamum. (406)	Seasamun. (368)
		Turmeric. (534)	Nilwa Fodder. (507)	Nilwa Fodder. (471)	Beans and Brinjal. (444)	Beans and Brinjals. (407)	Mogari. (369)
		Turmeric. (535)	Nilwa Fodder. (508)	Nilwa Fodder. (478)	Peas and Onions. (445)	Dharwar Chillies. (408)	Chillies. (370)
		Turmeric. (536)	Nilwa Fodder. (509)	Nilwa Fodder. (479)	Onions. (446)	Dharwar Chillies. (409)	Chillies. (371)
			Nilwa Fodder. (510)	Nilwa Fodder. (480)	Peas and Onions. (447)	Local Chillies. (410)	Yams. (372)
			Nilwa Fodder. (511)	Nilwa Fodder. (481)	Local Chillies. (448)	Local Chillies. (411)	
			Tondali. (512)	Brinjal (482).	Local Chillies. (449)		

APPENDIX II.

Crops and their botanical names.

Crops.	Botanical names.
Chillies	<i>Capsicum annum.</i>
Brijal (Dorali Poona Local).	<i>Solanum melongena.</i>
Garlic	<i>Allium sativum.</i>
Onions	<i>Allium cepa.</i>
Methi (Fenugreek)	<i>Trigonella fœnum-græcum.</i>
Coriander	<i>Coriandrum sativum.</i>
Bhendi (Lady's finger)	<i>Hibiscus esculentus.</i>
Guvar (Cluster-beans)	<i>Cyamopsis psoralioides.</i>
Yam	<i>Dioscores sativa.</i>
Turmeric	<i>Curcuma longa.</i>
Ginger	<i>Zingiber officinale.</i>
Suran (Elephant foot)	<i>Amorphophallus campanulatus.</i>
Cabbage	<i>Brassica oleracea.</i>
Knolkhol	<i>Brassica oleracea or caulocarpa.</i>
French-beans	<i>Phaseolus vulgaris.</i>
Tomato	<i>Lycopersicon esculenturæ.</i>
Khira (Cucumber)	<i>Cucumis sativus.</i>
Dudhya (Bottle gourd)	<i>Lagenaria vulgaris.</i>
Bhopla (Red pumpkin)	<i>Cucurbita maxima.</i>
Tondali	<i>Cocceinia cordifolia.</i>
Fodder (Jowar)	<i>Andropogon sorghum.</i>
Peas	<i>Pisum sativum.</i>
Mogari	<i>Raphanus sativus var. caudatus.</i>
Double beans	<i>Phaseolus lunatus.</i>
Tobacco	<i>Nicotiana tobacum.</i>
Sweat potato	<i>Ipomœa batatas.</i>
Dodka	<i>Luffa acutangula.</i>
Wal papdi	<i>Dolichos lablab.</i>
Maize	<i>Zea mays.</i>
Lettuce	<i>Lactuca sativa.</i>
Radish	<i>Raphanus salivus.</i>
Cauliflower	<i>Brassica oleracea var. botrytis.</i>
Beet	<i>Beta vulgaris.</i>

APPENDIX III.

Raising Seedlings.—The usual method of raising seedlings is to prepare ordinary beds and broad cast the seeds in the beds. On the heavier soils like what we have at Poona such a method does not give good seedlings. Soil being heavier, it hardens, cracks by wetting and drying and causes bad aeration and disturbs the root system of the growing seedlings. To avoid these troubles raised-beds are prepared and the seeds are sown on the top of these and water is given by percolation. Such a method provides a good home for seedlings to develop in. The method of preparing raised beds for growing the seedlings is given below:—

Preparatory tillage.—The area reserved for growing seedlings should be on a high level and near the water source. The land is ploughed to

the depth of 7" to 8" and well pulverized by subsequent discings and harrowings. If the same area is used for growing seedlings year after year it is better to burn the area to destroy insects or fungus that may have infested the land.

Manuring.—Manure is given to the seed-bed area at the rate of 40 cart-loads per acre. Manure should be spread evenly and should be thoroughly mixed with the soil. It is advantageous also to apply river earth (silt soil) at the rate of 40 cart-loads per acre if the soil is heavy. The addition of silt soil lightens the heavy soil mechanically and inhibits the cracking.

Preparing the seed-beds.—Raised beds are prepared 4' apart from centre to centre and of any convenient length. The raised part of the bed is 2½' wide and the remaining space is occupied by the water channel. The channel should be about 6"—7" deep. The top portion of the bed should be uniformly levelled.

Sowing seed.—On the top of the bed lines are opened 4" apart. Seeds are sown in the furrows at the rate of about 3—4 seeds per inch. Immediately afterwards the furrows are covered and pressed lightly by hand. The depth of the furrow when seeds are sown is about ½" to ¾".

Irrigation.—The seed-bed should be watered immediately preferably by a rose can. If watering is given carelessly the soil on the top of the seeds will be washed out and the seeds will be exposed. To avoid this it is better to spread old gunny bags on the bed before watering or to spread grass thinly. Light watering should be given morning and evening for a few days or until seeds germinate. The gunny bag or grass should be taken out after the seeds germinate. Subsequent waterings should be given in the furrows and water should be allowed to percolate through the raised beds. This should be done once in four days according to the season.

After-care.—Beds should be kept free from weeds and should be stirred after each irrigation. If there is insect attack, spraying, dusting or hand picking should be done to check the trouble.

Preparation for uprooting.—When the seedlings come to 4 to 6 leaf-stage or about 4" to 5" high they should be transplanted. A day previous to uprooting, the beds should be watered to facilitate the taking out of the seedlings. Seedlings usually should not be uprooted as in doing so the roots get injured. The best way to take out the seedlings is to use the fork to lift up the soil containing the seedlings. While the seedlings are being removed for transplanting they should not be exposed to sun or wind or allowed to become dry.

The areas required for growing seedlings for one acre of different crops are as follow :—

• Chillies, Brinjals, Tomatoes, Cabbage, etc ..	200 to 240 sq. feet,
Onions	1½ gunthas.
• Knolkhol as a whole crop • .. •	• .. 800 sq. feet,

APPENDIX IV.

Labour requirements for different operations.

Nature of operation.	Crop or implement.	Labour units per acre.			Remarks.
		Men.	Women.	Bullocks.	
1	2	3	4	5	6
Ploughing	CT2	4	..	8	
Crushing	Norwegian harrow ..	1	..	2	
Discing	Disc-harrow ..	$\frac{1}{2}$	..	1	
Rowing	Blade harrow ..	$\frac{1}{2}$	..	1	
Seeding F. Y. M.	Twenty cart-loads ..	..	2	..	
Seeding cake	1,000 lbs. ..	..	4	..	
Seeding and covering..	Country Drill and plank.	1	..	2	
Transplanting	Chillies ..	..	10	..	
	Brinjals ..	..	10	..	
	Tobacco ..	..	10	..	
	Tomatoes ..	..	10	..	
	Cabbage ..	..	10	..	
	Onions ..	..	20	..	
	Knolkhol ..	..	16	..	
	Khira ..	..	6	..	
	Dudhia and Bhopla ..	..	2	..	
	Planting	Garlic	20	..
Sowing	Mogari ..	..	6	..	
	Double beans ..	..	2	..	
	Ginger ..	..	12	..	
Sowing	Turneric ..	..	12	..	
	Onion for seed ..	..	12	..	
Digging pits	Suran ..	..	..	..
	" ..	..	16	..	
Digging sets	" ..	..	2	..	
Digging sets in beds ..	" ..	..	4	..	
Digging pits and preparing beds.	" ..	..	8	..	
Digging by hand	21' x 21' ..	..	2	..	
Digging rings	Five feet apart ..	..	6	..	
"	Twelve feet apart ..	..	2	..	
Seed casting	Methi ..	..	1	..	
"	Guvar ..	..	1	..	
Digging by rake	" ..	..	..	..
Digging beds	By hand 12' x 6' ..	..	16	..	
"	By BT 2 or Victory plough.	..	8	..	3
Digging beds	By hand ..	..	4	..	..
Digging beds	By ridger ..	..	8	..	4
Digging ridges	By harrow ..	..	$\frac{1}{2}$	..	1
Digging channels	By plough ..	..	1	..	1
Digging beds	" ..	..	4	..	..
Digging	By ridger ..	..	2	..	2
Digging ridges	By victory plough ..	..	4	..	4
"	" ..	..	1	..	..
Watering	Canal water ..	..	2	..	..
Tilling	By bullock hoe ..	..	1	..	1
"	By tooth cultivator ..	..	2	..	2
Planting	" ..	..	..	12	Depending upon weeds.

Nature of operation.	Crop or implements.	Labour in units per acre.			Remarks.
		Men.	Wo-men.	Bullocks.	
1	2	3	4	5	6
Earthing up ..	By plough ..	4	..	4	
Spraying ..	Double beans ..	2	..	..
Supporting ..	Tobacco ..	16	..	..
Nipping and Suckering	Chillies ..	..	1	..	80 lbs. per day.
	Brinjals ..	..	1	..	400 " " "
	Tomatoes ..	..	1	..	300 " " "
	F. Beans ..	..	1	..	80 " " "
	Cabbage ..	..	1	..	400 " " "
	Knolkhol ..	..	1	..	250 " " "
Harvesting ..	Jowar Fodder ..	..	12	..	
	Double beans ..	..	1	..	70 " " "
	Onions ..	..	1	..	400 " " "
	Onion seeds ..	..	1	..	100 " " "
	Khira ..	..	1	..	500 " " "
	Gubar ..	..	1	..	50 " " "
	Bhindi ..	..	1	..	200 " " "
	Tondali ..	..	1	..	100 " " "
	Leafy vegetables ..	..	1	..	80 " " "
	Garlic ..	..	1	..	50 " " "
	Turmeric ..	..	1	..	Uprooting and cleaning.
	Ginger ..	..	1	..	400 " " "
	Turmeric ..	20	..	..	cleaning.
	Ginger ..	16	..	..	150 " " "
	Suran ..	22	..	..	Digging per acre.
	" ..	..	22	..	" " "
	Tobacco ..	..	4	..	Cleaning.
	Mogari ..	..	1	..	Cutting leaves.
Tying bundles ..	Tobacco leaves ..	12	..	..	200 lbs. per day.
" ..	Jowar Fodder ..	3	..	..

APPENDIX V.

Annual cost of upkeep of one pair of bullocks excluding home produced fodder.

	Rs.	a.	p.
1. Concentrates 2,880 lbs. at Rs. 6 per 100 lbs. ..	172	12	0
2. Average yearly interest on Rs. 200 at 9 per cent. ..	10	0	0
3. Depreciation at 10 per cent. ..	20	0	0
Total ..	202	12	0

On this basis the average charge per acre of the cultivated area comes to Rs. 13-6-0.

N.B.—Shoeing charges, medicine, etc., may be covered by the manure produced and hence, not calculated. The value of the manure has not been taken as receipts.

APPENDIX VI.

Statement showing the list of implements used.

No.	Name.	Price.		
		Rs.	a.	p.
1	CT2 Plough	67	12	0
2	Victory Plough	64	0	0
3	Disc-harrow	60	0	0
4	Norwegian harrow	120	0	0
5	Blade	15	0	0
6	Plank	9	0	0
7	Country Drill	20	0	0
8	Country hoes (2)	8	0	0
9	Tooth Cultivator	35	0	0
10	Grubber	30	0	0
11	Cart	150	0	0
12	Sprayer	35	0	0
<i>Miscellaneous.</i>				
1	Spades (4)	6	0	0
2	Pick axes (2)	5	0	0
3	Sickles (4)	4	0	0
4	Weeding hooks (6)	1	12	0
5	Iron Baskets (4)	4	0	0
6	Bamboo baskets (2)	3	0	0
7	Improved yokes	8	9	0
8	Yoke	5	0	0
9	Chains 8' and 16' long	12	0	0
10	Trowels (4)	4	0	0
11	Rakes (2)	3	0	0
12	Water cans (2)	2	0	0
13	Crow bar (1)	1	8	0
14	Small Kudalis (2)	2	0	0
Total		675	0	0
		Rs. a. p.		
Depreciation at 10 per cent. on Rs. 675		67	8	0
Interest at 9 per cent. on Rs. 675		33	8	9
Repair charges and replacing of the hand tools at 3 per cent.		20	4	0
Total		120	4	0

Average charge per acre of cropped area will come to Rs. 8 per year.

APPENDIX VII.

The following table shows the pests and diseases on different crops and remedial measure followed for each:—

Crop.	Pest or disease.	Remedy.
1. Chillies and Tomatoes.	Mosaic	No remedy.
	Thrips	Kerosine oil emulsion
	Mites	Lime sulphur dusting.
2. C a b b a g e family.	Aphis	Fish oil rosin soap.
	Mustard saw fly caterpillar	Lead arsenate or Paris green.
	Diamond moth caterpillar	Do. do.
3. Brinjals	Eel worm	No remedy.
	Malformation	Do.
	Fruit borer	Affected fruits to be picked up and destroyed.
	Shoot borer	Affected shoots with the caterpillar to be removed and destroyed.
4. Onions and Garlic.	Jassides	Fish oil rosin soap.
	Thrips	Kerosine oil emulsion.
5. Guvar	Mildew	Sulphur dusting.
6. Cucurbits	Red pumpkin beetle	Picking of beetles and destroying the same or lead arsenate or Paris green spraying.
	Mildew	Sulphur dusting.
	Fruit borer	Affected fruits to be removed.
7. Tondali	Mildew	Sulphur dusting
	Aphis	Fish oil rosin soap.
8. Ginger	Ginger rot	Selections of the sets and avoid growing of the crop in the affected soil.

Method of preparing the insecticides and fungicides.

1. *Fish oil rosin soap.*—Dissolve half a pound of the stuff in four gallons of water and mix thoroughly. Sixty gallons of the stuff was required to spray on an acre of Mogari, Cabbage, etc.

2. *Kerosine oil emulsion.*—Take one pound of bar-soap and make it into fine sticks and put the same in one gallon of water. Heat it well and keep stirring. Remove the stuff from the fire and add two gallons of kerosine and mix it thoroughly by churning. The success of preparing the medicine depends upon its thorough mixing. If kerosine remains floating it destroys the crop in spraying. This is the stock solution. At the time of spraying dilute it to 6 or 8 times with water. 32 gallons of the stuff was required to spray one acre of chillies.

3. *Lead arsenate.*—Dissolve one ounce of well powdered lead arsenate in four gallons of water. Add one ounce of quick lime. Sixty gallons of the stuff was required to spray Cabbage, Mogari and Cucurbits.

4. *Paris Green.*—Dissolve half ounce of the stuff in four gallons of water; add one ounce of quick lime. Sixty gallons of the stuff is required to spray one acre.

5. *Lime Sulphur Dusting.*—Mix slacked lime and Sulphur well powdered in equal proportion. 16 lbs. of Sulphur was required to dust Chillies crop in the early stage.

APPENDIX VIII.

Glossary of Works.

Aeration	..	..	Circulation of air.
After-tillage	..	..	Tillage given after sowing or planting of the crop.
Basin	..	..	A circular pit of about two feet diameter and about 6 or 7 inches deep for planting cucurbits.
Dibble	..	..	Putting seeds in the soil by hand.
Discing	..	..	Working with a disc harrow.
Drainage	..	..	Removal of excess of water.
Dry crops	..	..	Crops grown on rain water only.
Erosion	..	..	Washing away of the soil.
Earthing up	..	..	Throwing soil on both the sides of the plant.
Friable	..	..	Loose.
Farm income	..	..	Returns from a farm, after deducting all the cash expenditure.
Harrowing	..	..	Working with a blade harrow.
Insecticide	..	..	Medicine used for killing or preventing insects.
Kharif season	..	..	Monsoon season or rainy season.
Perennial	..	..	Growing for more than a year.
Physical condition of the soil.			Condition of the soil as regards its looseness, circulation of water and air.
Preparatory tillage	..	..	Tillage given before sowing or planting of a crop.
Pulverise	..	..	Making fine.
Suckers	..	..	Side shoots.
Top-dressing	..	..	Applying manure when the crop is growing.
Topping	..	..	Removing the top-most growing part.
Transplanting	..	..	Transferring seedlings from the nursery to the field.