

Agriculture in the Northern Division

S. K. THURAISINGHAM

Geography

THE Northern Division comprises the whole of the Northern Province including the Islands. The Jaffna Peninsula and a group of Islands lying off the west coast form one part, and the mainland consisting of the Karachchi and Pooneryn Tunukkai Divisions of the Jaffna District and the two Districts of Vavuniya and Mannar form the other part. The area of the Province is 3,429 square miles of which 75 square miles are covered by water leaving a land area of 3,354 square miles. Of its total acreage 10.6 per cent. is cultivable. The cultivable paddy lands form 40 per cent., the coconuts 11.5 per cent. and home gardens rotation crops, &c., form 48.5 per cent. of the cultivable area. The Jaffna Peninsula and the Islands are flat. There are no rivers. In many places the sea runs in and forms large lagoons which cut right through the centre and eastern portions of the Peninsula. The southern portion of the Peninsula is sandy and covered by shrub jungle with coconut plantations on the west coast and palmyrah along the east coast. The northern portion, except for scattered patches of rocky land, is almost entirely garden cultivation; paddy, tobacco, chilli, cereals, &c., are grown. On the other hand, the mainland is covered with jungle which is only broken here and there by cultivation and habitation close to a tank. The Mannar Island is open sandy shrub land. Along the western coast which skirts part of the mainland of the Mannar District, and along the north-eastern coast of the Province, salt marshes alternate with jungle. The major portion of the Vavuniya District is a tableland rising to about 300 feet above sea level, and there are a few rivers which flow only in the North-East Monsoon season.

Rainfall

The rainfall for the Province in 1952 was as follows:—

	<i>Jaffna District</i>		<i>Vavuniya District</i>		<i>Mannar District</i>	
	<i>Rainfall Inches</i>	<i>No. of Rainy Days</i>	<i>Rainfall Inches</i>	<i>No. of Rainy Days</i>	<i>Rainfall Inches</i>	<i>No. of Rainy Days</i>
January	4.40	8	6.66	7	4.26	9
February	1.36	3	1.92	1	1.89	3
March	1.85	3	2.42	4	2.14	4
April	2.41	5	4.51	9	3.83	7
May	1.95	3	3.23	5	1.98	4
June	0.40	1	1.07	1	0.33	1
July	0.52	1	1.09	1	0.30	1
August	1.19	3	2.64	3	0.64	2
September	2.36	4	3.67	2	1.13	3
October	9.31	12	8.74	18	7.25	11
November	17.01	18	14.85	12	10.64	17
December	10.88	14	12.47	24	7.67	14
Total	53.64	75	63.07	87	42.06	76

The Northern Province experiences one main Monsoon season, the North-East Monsoon, and little or no rain fall during the South-West Monsoon. Even during the North-East Monsoon season the rainfall is restricted to the three months October to December during which period heavy precipitations of as much as 5 inches and over in a day are not infrequent. Failures of the North-East Monsoon have not been rare, especially in recent years, and these have resulted in total loss of crops grown.

The main cultivation is determined by the rainfall and therefore coincides with the North-East Monsoon season. All rainfed crops are planted at the commencement of the North-East Monsoon season. The annual crops grown are such that they mature at the end of the Monsoon season. Little or no rainfed crops are sown for the South-West Monsoon season. Although the North-East Monsoon cultivation is the major season, yet where ample irrigation water can be had from wells the actual planting or sowing is done with most crops at the tail-end of the Monsoon. It is not often that successful crops are raised with the Monsoon rains which, either due to scarcity or excess, cause some damage to crops in most years. The Jaffna Peninsula and parts of Vavuniya District receive a fair rainfall during the North-East Monsoon ; yet where there are wells with abundant supply of water the cultivators prefer to commence cultivation of crops such as chilli, onions, tobacco and local vegetables towards the tail-end of the season to avoid damage by excess or scarcity of rain.

A major portion, in fact about 80 per cent. of the cultivated area under irrigated paddy in the Northern Province, depends on the water in the minor and major tanks for cultivation. These tanks fill in a normal North-East Monsoon season, and cultivation is undertaken either in anticipation of the tanks filling or after the tanks are full.

The rainfall in normal years should be sufficient to fill a number of tanks which can be restored or are in the process of being restored.

Land, Land Tenure and Capital

The area of land actually taken up for cultivation at one time or other does not total more than 10.25 per cent. of the total area of the Province. On a rough estimate another 40 per cent. of the land can be taken up for cultivation of paddy under irrigation, for dry farming and for cattle raising. The Iranamadu Augmentation Scheme and the restoration of tanks such as Vavunikulam, Akkarayankulam in the Jaffna District, Pavatkulam, Muthaikaddu and Thanimuruppu in the Vavuniya District and the Malwatuoya Scheme in the Mannar District, in addition to restoration of numerous minor tanks now lying in disuse should considerably increase the extent cultivated. Extension of cultivation even under the tanks restored, or whose supplies of water have been increased, tends to be slow due to want of capital.

Government assistance to develop land given out on permits, and the establishment of colonization and village expansion schemes under major and minor tanks, have assisted to a great extent in extending the area under cultivation.

One of the chief drawbacks to increased production and investment of capital on land is the insecurity of tenure. The issue of Crown land on permits, and the non-granting of outright sale permits, have to a great extent withheld capital which otherwise would have been invested on land. Another major reason for non-investment of capital on the land is the high cost of developing. Cheaper and quicker methods should tend to attract capital. The use of high-powered machinery in asweddumizing land for paddy and for reclaiming rocky land in the Jaffna Peninsula should attract capital because of the economic minimum prices guaranteed by Government for products such as paddy, cotton, chilli, onions, &c.

There are very few colonization or village expansion schemes. There is only one colonization scheme in the Jaffna District. With the restoration of minor and major irrigation schemes more colonization and village expansion schemes are under consideration or are in process of being established.

In recent years the organization of Co-operative Production and Sales Societies have assisted the cultivators in obtaining the capital they require for agricultural purposes. Short-term loans are granted by these societies for the purchase of seed for cultivation, for harvesting and marketing, and long-term loans for purchasing equipment such as barbed wire, pumps for irrigation, &c., and for the development of land.

The fixed rent systems of tenure now existing in most parts of the Province are fair and reasonable. However, the insecurity which now exists tends to deter general adoption of improved methods or the improvement of land.

In the Sinhalese D. R. O's Division of Vavuniya South the ancient system of "ande" is still in force.

Area of Holdings

The number of holdings and cultivable extents recorded according to the 1946 Census are as follows:—

		<i>Holdings</i>	<i>Cultivable Acres</i>
Jaffna District	..	210,395	151,384
Vavuniya District	..	16,050	31,650
Mannar District	..	14,738	37,535

The cultivable land is largely paddy and the analysis of holdings according to the 1946 Census is as follows:—

	<i>Jaffna District</i>	<i>Vavuniya District</i>	<i>Mannar District</i>
	<i>No. of Holdings</i>	<i>No. of Holdings</i>	<i>No. of Holdings</i>
Total number of holdings	.. 57,484	.. 8,258	.. 9,044
Holdings less than $\frac{1}{2}$ acre	.. 26,282	.. 240	.. 1,074
Holdings between $\frac{1}{2}$ and 1 acre	.. 17,144	.. 1,165	.. 1,331
Holdings between 1 and 2 acres	.. 8,699	.. 2,108	.. 2,283
Holdings between 5 and 10 acres	.. 727	.. 989	.. 939
Holdings between 10 acres and over	.. 478	.. 247	.. 303

Even though the average size of holding owned by each is small in the Vavuniya District and the Mannar District, yet the actual extent cultivated by a cultivator is larger due to the smaller number of persons interested in agriculture. The extra land is obtained on lease. The distribution of the size of holdings given above for Jaffna District is even true of the size of holdings cultivated by a cultivator.

The extents of land cultivated with crops other than paddy are also small in the Jaffna District where intensive forms of cultivation with irrigation from wells is done. The income however is high because of the high yields obtained. These crops are cultivated in the Vavuniya and Mannar Districts on an extensive scale depending on the rains due to the absence of wells for irrigation. As yields under such conditions are poor, larger extents are cultivated to obtain the required income.

Soils

The soils of the cultivated area and of much of the uncultivated land in the Northern Province can be said to be fertile, except for a few tracts scattered throughout the Province which had been selected for cultivation owing to the proximity to their homes by a population which took to agriculture as a part-time occupation such as in Mannar Islands and along the east and west coasts of the Province where fishing is the main occupation.

With a few exceptions the whole of the Northern Province has the red to yellowish-red soils of the dry zone varying in texture from light sandy to heavy loams and contain high proportions of gravel and limestone. These soils respond well to cultivation of annual crops for the first two or three years, but subsequent yields are low. The exceptions, however, are:

(i) The red soils of the Jaffna Peninsula formed from sedimentary limestone, largely calcium carbonate, which vary from light to heavy loams overlying limestone rocks. These soils store a fair proportion of the rainfall that falls on the land.

(ii) The brownish-red soils close to Mullaitivu probably of pleistocene deposits overlying gneiss rock borne from the hills, poor in organic and mineral content.

(iii) Heavy dark clay loams of the Giants Tank area, which are poor in mineral and organic material, but which respond well to deep cultivation and are only suitable for wet cultivation of paddy.

(iv) The characteristic black soil found at Tunukkai which cover an extent of about 16 square miles. The soil resembles the black cotton soils and does not drain well. It is a heavy loam poor in organic and mineral matter.

(v) The calcareous loams found in the Islands. This greyish white calcareous loam comprised of miocene limestone is poor in organic matter and nitrogen.

Special reference has to be made to the reclamation of land in the Jaffna Peninsula and the Islands. A fair portion of the land now under cultivation in the Jaffna Peninsula was rocky land reclaimed in the last century or so. The process involved is long and tedious. The rock which is not in one mass but mixed with soil is removed in small stages by digging by hand and at times by blasting. After the rocks are removed all the rocky materials

and gravel are sifted out and the soil levelled. The cost of reclaiming an acre of land is in the neighbourhood of Rs. 6,000. There is very little land now not cultivated which is free from rocks. The extent that could be reclaimed and utilized for the cultivation of the two commodities, chillies and onions, which are in short supply is about 700 acres. The use of a D/8 Tractor with a ripper may expedite reclamation. This possibility is under investigation.

Population and Labour

The population for the Province is 571,214 persons according to 1953 Census, over 75 per cent. of whom are resident in the Jaffna Peninsula. The following are the figures for the various Districts:—

<i>District</i>	<i>Area</i>	<i>Population</i>	<i>Density per Sq. Mile</i>
Jaffna Peninsula	410½ sq. miles ..	414,326 ..	1,009
Jaffna District not including the Islands but excluding the Peninsula	554½	78,058 ..	140
Vavuniya District	1,431½	35,119 ..	24
Mannar District	957¾	43,711 ..	45

This uneven distribution is the main cause not only for the cultivated extent being small but also of the extensive methods of cultivation followed in the Vavuniya and Mannar Districts. Where the population is dense small extents of land are cultivated intensively. In the thinly-populated areas where the wants of population are few and the holdings are large there is generally a marked absence of enthusiasm to increase yields.

Scarcity of labour in the thinly-populated areas where there is ample land and abundance of irrigation facilities has, roughly speaking, acted as a deterrent to any form of large-scale investments of capital in agriculture. The present methods adopted in cultivation are unattractive to the youth. There is general dislike to any form of manual labour or to the handling of cattle, especially buffaloes. Mechanical forms of cultivation may prove to be more attractive.

Transport and Marketing

The slow and uncertain transport in the past has been replaced by more efficient motor transport. Except in the remote parts of Mannar and Vavuniya Districts the existing roads have been improved and new roads have been constructed in the Province to enable the producer to market his produce cheaper and more efficiently, so much so that produce is saleable today from the threshing floor. Losses incurred in transport of perishable produce have been reduced to a minimum with the use of motor transport, and the refrigerator van transport under consideration by the Co-operative Department should further reduce loss. The Province in addition to being served well with road transport is also served

efficiently by railway transport. The Jaffna-Colombo and Talaimannar-Colombo main lines pass through the Province, and at every five to ten miles sidings and stations cater for transport of agricultural produce.

Marketing has improved considerably. There are Marketing Department organizations in the three main centres, Jaffna, Vavuniya and Mannar, to assist the villager to market his produce profitably. The Co-operative Production and Sales Societies which number twenty-one in addition assist in marketing the produce of members. Paddy is collected by these Societies and sold to the Director of Food Supplies, or is supplied to rice mills worked by Co-operative Societies or by the Commissioner for Development of Marketing. The Co-operative Production and Sales Societies have been appointed agents by the Commissioner for Development of Marketing for the purchase and supply of produce from the villagers at fixed prices. These Co-operative Societies also assist the villager to market his produce through the Co-operative Central Market in Colombo or through an organization such as the Co-operative Wholesale Establishment.

In addition to these facilities fairs are held three days in a week at Chunnakam, Chavakachcheri, Kodikamam, and once a week at Palai Paranthan and Killinochchi in the Jaffna District, and once a week at Vavuniya. At these fairs the villagers are able to dispose of their produce at competitive prices.

Chewing tobacco meant for the Malayalam market is mainly handled by the Malayalam Tobacco Sales Society. Similar societies for marketing plantains and livestock and livestock produce are in existence and some are in the course of being formed.

Irrigation

The Northern Division, except Jaffna Peninsula and the Islands, is fairly well served by major and minor tanks. The Karachchi Irrigation Scheme in the Jaffna District, Kanagarayankulam, Kanunkerni, Vavuniya, Mamaduwa, Ulukkulama, Eratperiyakulam and Madukande Tanks in the Vavuniya District, and Giants Tank with its chain of minor tanks and the Agathimurippu Scheme irrigate 35,000 acres. The minor tanks scattered through the mainland of Jaffna District, Vavuniya and Mannar Districts irrigate 18,300 acres.

In the Jaffna Peninsula a number of salt water exclusion schemes are under construction to prevent inundations of land with salt water. The Valukki Aru Scheme in the Peninsula assists holding up water in a drainage channel to maintain the moisture of the soil on either side of the Aru. The irrigation of highlands is done from wells and described in full under irrigation of annual crops.

Paddy Cultivation

Almost 40 per cent. of the cultivable area is under paddy. Of a total of 98,881 acres of paddy about 46,000 acres are rainfed and the rest irrigated from a major or minor tank. The rainfed paddy areas are in the Jaffna Peninsula, around Mullaitivu in the Vavuniya District and along the coast in the Mannar District.

Dry Sowing

The cultivation of rainfed paddy differs from that of the irrigated paddy in that the paddy is sown dry and commonly called "Pluthi" as the seed is sown on soil practically dust which is bereft of all moisture. Sowing is done before the rains expecting the seed to germinate with the first N. E. Monsoon showers. The main point underlying this practice is utilization of every drop of rain for the growth and maturity of the crop. Ungerminated seed is also sown on land prepared with the N. E. Monsoon rains. This is done to a great extent under irrigation schemes in the Mannar District as well as under the Karachchi Irrigation Scheme as a means of saving irrigation water, but it is attended by the risk of heavy weed growth if sufficient irrigation water is not available to flood the fields to smother the weeds that may come up with the paddy.

Wet Sowing

Where irrigation facilities are available and where soil conditions do not permit dry sowing, wet sowing is adopted. Wet sowing is invariably done under all minor tanks in the Vavuniya District and on the clay loams under the Giants Tank in the Mannar District. Wet sowing is favoured, for it ensures a thorough preparation of the land and reduction of weeds, as in the course of preparation, i.e., ploughing, bunding in water in the fields after ploughing, and puddling and levelling before sowing the germinated seed, weeds are destroyed and a quick start to the germinated seed is ensured.

Improved Methods

The implements used in paddy cultivation have been improved in recent years. About 26,000 acres are yearly ploughed, harrowed, and the broadcast seed covered by tractor-drawn implements. The use of the Burmese harrow for churning the soil and harrowing the standing crop is steadily on the increase. The use of iron ploughs, both light and heavy, are limited to areas where the soil is sandy, and where there is an availability of draught bulls suitable for use with these ploughs. In general the cultivator is reluctant to change his methods: but in recent years a desire on the part of the cultivator to increase the yield per acre has urged him to try different methods to improve yields as a result of the increased yields obtained in the demonstration plots laid by the Department of Agriculture. Some of the methods which are becoming popular are:

- (a) Transplanting and manuring paddy by small holders to obtain the maximum yield.
- (b) Weeding in areas where cheap labour is available.
- (c) Harrowing the standing crop in areas where irrigation water is ample.
- (d) Use of pureline seed of varieties generally recognized as suitable for the Province

Planting Seasons

There are three seasons for the cultivation of paddy—the Maha or Kalapogam, Meda or Idaipokam, and Yala or Sirupokam. The Maha cultivation is generally the main major season as it coincides with the major rainfall season, the North-East Monsoon. Generally the extent sown for Maha is very large and sowing dates vary considerably according to the availability of draught animals and labour.

A Meda season in the past was a rare occurrence ; but in recent years due to scarcity of labour and of draught animals, and to the late arrival of the North-East Monsoon rains, Meda cultivation is finding favour as a means of spreading out the cultivation to make the best use of the late rains and full use of the poor supply of draught animals and of labour. The sowing for Meda normally commences in early February and may extend even up to the end of March. Wet sowing is the most common form of sowing seed. The extent sown for Meda is approximately 5,000 acres, and is confined to the Vavuniya District.

The Yala season commences immediately before the Hindu and Sinhalese New Year. It is a means of utilizing irrigation water left over after cultivation for Maha in major and minor tanks. The extent cultivated for Yala in the Vavuniya District is invariably low due to the cultivation of paddy for Meda ; whereas under the Karachchi Irrigation Scheme in the Jaffna District, Kanukerni Tank in the Vavuniya District, and Giants Tank in the Mannar District where there is no Meda cultivation, the extents cultivated for Yala in normal years are fairly large and it may be as much as 50 per cent. of the total area under the tank. For Yala 1952 the proportions cultivated are 6,600 acres under the Karachchi Irrigation Scheme, 320 acres under Kanukerni and 2,420 acres under the Giants Tank. Tank beds under low sluices are usually cultivated for Yala under the Giants Tank.

Subsidiary Crops

In the Jaffna Peninsula where there are no tanks and where paddy is cultivated with the rains, certain tracts such as Pandatherappu, Changanai, Mathanai, Mathagal, Manipay, Vadaliaddaipu, Karainagar are cultivated with crops such as tobacco, chilli, onions, manioc, brinjals and vegetables with well irrigation. When well irrigation is not possible as in Vaddukoddai, Araly, Karainagar, Kalapoomi, Moolai, Tholpuram, Navalay, Kaddudai, Sandilipay, sunhemp is sown immediately after the harvest of paddy, with the moisture still in the soil, as a means of fertilizing the soil. This crop in addition yields fodder for cattle and a small income if the stalks are sold. On fairly high land a mixture of 3 measures of gingelly and 5 measures of green gram is sown. If there should be a few showers in March and April, the sunhemp, gingelly and green gram yields well. Nett incomes of Rs. 100 and over are not rare.

Subsidiary crops grown on an intensive scale on paddy land with well irrigation are as remunerative as those crops cultivated on highland. In addition, the paddy which follows these crops gives very high yields, in some cases as much as 48 to 50 bushels per acre. Paddy seedlings are raised with well irrigation for transplanting. This is necessary as the subsidiary crops occupy the land till the middle of October.

The cultivation of subsidiary crops on paddy land is not practised in any other part of the Northern Province.

Highland Cultivation

Under this heading the cultivation of crops other than paddy is dealt with, both perennial and annual.

Perennial Crops

Coconuts, arecanuts and fruit trees inclusive of mango, citrus, jak, pomegranate, &c., are cultivated. The palmyrah which is found in abundance in the north and east of the province, is not cultivated systematically and is mainly the outcome of fallen fruits allowed to grow unattended.

Coconuts cultivated along the east coast in Pooneryn in the mainland, along the coast of the Jaffna Peninsula and in gardens totals 24,232 acres. The land in which coconuts are cultivated is a very sandy loam ; and the success of this crop depends on the steps taken to conserve moisture and on the amount of organic manures added. Cattle, goats and sheep penning in addition to growing of *Tephrosia purpurea* as green manure are the main ways of adding organic material.

Fruit trees except in very exceptional cases are not cultivated on an orchard scale. In the case of the mango a few trees of each variety are planted in gardens. Very few gardens in the Jaffna Peninsula are without a few mango trees. In the Vavuniya and Mannar Districts it is the reverse, only a few gardens have mango trees. In the Jaffna Peninsula 90 per cent. of the trees are budded or grafted. The varieties on a rough estimate number over two hundred. The most common varieties are Vellai Columban, Karutha Columban, Ambalavi and Chembattan. Little or no systematic cultivation is done except in the early stages when the plant is nursed to maturity by manuring and irrigation. In normal seasons the price of a mango fruit varies between 10 and 20 cents.

Citrus on the other hand is more popular in the Vavuniya District than in the Jaffna or Mannar Districts. Vavuniya sweet orange takes pride of place amongst the varieties cultivated in Ceylon. They are large, loose skinned and medium sweet. A few trees in each compound are more general than large orchards. There are only six orchards of an acre or more. The short life of orange trees, especially of budded trees, has to a great extent discouraged large orchards. Seedling plants tend to live longer than budded plants. Unlike the mango, citrus plants are systematically manured and irrigated. Heavy dressings of organic material and regular irrigation tend to extend the life of a plant. One or two orange plants per compound, and that too far and apart, are found in the Jaffna Peninsula. The other citrus variety which is commonly cultivated throughout the Province is the lime plant which is found cultivated under irrigation in all gardens. The most popular variety is one akin to the British Guiana lime. Lime trees are forced to bear right throughout the year by heavy dressings of organic material and regular irrigation.

Miscellaneous fruit trees such as pomegranate, grape vine, sapodilla, breadfruit, &c., are cultivated in scattered gardens in the Jaffna Peninsula. Pomegranate yields fair harvests in Point Pedro and Kayts in the Jaffna District, and in the Mannar Islands in the Mannar District where the sandy soil and dry climate are suitable for this crop. Grape vine was at one time a very good source of income to the cultivators in Mathagal, Sillalai and Vasavilan

in the Jaffna Peninsula; but in recent years the cultivation of this crop is on the decline mainly due to the incidence of pests and diseases which the cultivators find difficult to control.

Annual Crops

There are two main forms of cultivation—one extensive under rainfed conditions, and the intensive method with irrigation from wells. The extensive form is mainly confined to gardens and chenas in the Vavuniya District and provides part occupation to those who are really paddy cultivators. The gardens are blocks of land adjoining dwellings. These are prepared for planting crops such as chilli, manioc, maize, cowpea, sorghum and vegetables with the first showers of the North-East Monsoon. In normal years of rainfall very remunerative incomes are obtained by the sale of green chilli and vegetables which come into production in December when there is a demand.

Chena cultivation in recent years is confined to blocks of Crown jungle given out to middle-class persons and peasants in the Vavuniya, and to a very few in the Mannar and Jaffna Districts. Paddy chenas are more popular than a mixture of kurakkan, cowpea, mustard, chilli, maize, &c. This change over is partly due to the change in the issue of land permits which are confined to land which can be asweddumized as paddy land. Middle-class allottees seem to prefer paddy. These allotments will, in time, have permanent crops such as citrus, and annual crops such as chilli and onions under well irrigation. All land both highland and chenas cultivated extensively are with few exceptions sown in March and April with gingelly and green gram immediately after the harvest of the Maha crops.

The general trend in recent years is towards the intensive form of cultivation. This is due to the fairly high minimum prices guaranteed, and because of the increase in marketing facilities provided for products such as chilli and onions and the high prices realized for local and Malayalam tobacco, plantain, betel, and local vegetables.

In the past intensive cultivation of crops such as chilli, tobacco, plantains and onions were confined mainly to the Jaffna Peninsula; but during the past ten years the intensive form of cultivation has increased considerably in the Vavuniya District.

The intensive form of cultivation depends on the availability of water for irrigation from wells. Sinking of wells with good supplies of water is a certainty in the Jaffna Peninsula. Water levels in the Jaffna Peninsula are more or less maintained right throughout the year because of the regular flow into the well of water held in the numerous cavities of the sub-soil rock formation.

Wells with good supplies up to the end of July have been sunk in a few centres in the Vavuniya District. A few such centres are Rambaikulam, Vairavapuliankulam, Sinnakulam, Puthukulam, Thatchankulam, and Kulamkulam in Vavuniya South Tamil Divisional Revenue Officer's Division; Odduchuddan, Nedunkerni, Thanduan, Palampasi, Mamadu in the Vavuniya North Divisional Revenue Officer's Division; and Muliavalai, Taniyuthu, Kumulamunai and Kanukerni in the Maritime Divisional Revenue Officer's

Division. With the restoration of tanks in the District more centres with good supplies are now found. Wells in the Vavuniya District depend on seepage water from the neighbouring tanks.

A well in the Jaffna Peninsula will irrigate about 2½ acres whereas a well in the Vavuniya District can irrigate only one acre because of the poor flow.

Water is lifted from the well by means of well sweeps, single mshots, double mshots and pumps. The layout of the land for irrigation varies with the crop cultivated, and a full chapter could be written on the subject if it is to be dealt with in detail. The layout presents no difficulty as the land is level. Leading of the water into bays planted with the crop is the commonest method of distribution of water. The channels, bays, &c., are so designed that it is not only economical in labour but also saves water and time in irrigation.

A rough estimate of the acreage and crops cultivated are as follows:—

<i>Crop</i>	<i>Rainfed</i>	<i>Irrigated</i>
Chilli	480	2,720
Tobacco	—	3,000
Onions	—	5,000
Manioc	900	500
Maize	505	—
Sorghum	350	—
Gingelly	3,000	—
Green gram and other pulses ..	550	400
Local vegetables	350	1,550
Yams	—	250

Definite forms of rotation are practised. The land is manured so heavily that as many as three crops are taken in one year from the same land. The most common rotation was tobacco and a cereal followed by a short-term legume such as green gram, all cultivated in the course of the same year. In recent years due to the fall in prices of cereals, onion which has a very remunerative minimum guaranteed price is cultivated instead. There are rotations with chilli as the major crop followed by a cereal. A five-year course rotation is practised in areas where plantains are cultivated. If yams which occupy the land for nine months is the main crop, yam is planted with mixed local vegetables such as brinjals, pea, &c. Manioc is often found in a rotation and mainly on land which requires cleaning. Manioc is planted on this as a single crop, or mixed with a cereal or onion.

Rotations vary according to place and convenience of cultivators; but in all cases the principles underlying rotation are not lost sight of.

The actual commencement of cultivation of annual crops is the tail-end of the N. E. Monsoon season, that is December. The three main planting seasons are the December, April and July planting seasons.

The heavy manuring consists primarily of dressings of earth manure and green leaf; cattle and sheep manure is also very common. Growing of sunhemp as a green manure is very widely done. Hedges planted with *Gliricidia*, dadap, tulip, &c., provide a fair portion of the green leaf required.

Livestock

The livestock population as enumerated in the Census of 1946 is as follows:—

	<i>Cattle</i>	<i>Buffaloes</i>	<i>Goats</i>	<i>Pigs</i>	<i>Fowls</i>	<i>Sheep</i>
Jaffna District ..	94,128	1,098	70,784	119	111,215	7,000 (Estimated)
Vavuniya District ..	13,848	7,829	1,184	30	9,615	—
Mannar District ..	12,758	7,415	6,791	23	11,772	—

There is very little difference in the number of cattle and goats, but the number of poultry has increased considerably since the Census.

The type of livestock in the Province is in keeping with what may be called an equilibrium with the food supply, and any change cannot be seen in the type without seeing some change in the means of feeding and management. For example, in the Jaffna Peninsula where the standard of feeding and management are far superior to that in the rest of the Province, the livestock maintained are definitely of a better type.

Except for pure-bred draught cattle and a few cows imported from India, the rest of the cattle in the Peninsula are crossbreds. Both European and Indian breeds have been utilized in the evolution of these types. The cattle in the rest of the Province consist mainly of the Singhalese type bred indiscriminately.

The goats in the Jaffna Peninsula are crosses of the Jamnapari, Kamouri, Alandi and Surat breeds with the local indigenous breed. The goats in the Mannar and Vavuniya Districts are of the meat type and are akin to the South Indian goats. The original stock seems to have been imported from South India and fresh blood introduced from time to time.

The poultry in the Province are as a rule of very mixed breeds. The R. I. R., Australorp and White Leghorns breeds have been utilized from time to time to improve the stock. Poultry-keeping could, having careful regard to the limitations of feeding and breeding, be very considerably improved.

Sheep are generally utilized for manuring, and thrive on the sparse grazing available in the Jaffna Peninsula.

Buffaloes provide the main draught in the cultivation of paddy. These maintain themselves on the grazing available in the jungle and tank beds. Very little progress has been made with the breeding and feeding of buffaloes.



PHOTO 1.—Bullock operated water lift on well.

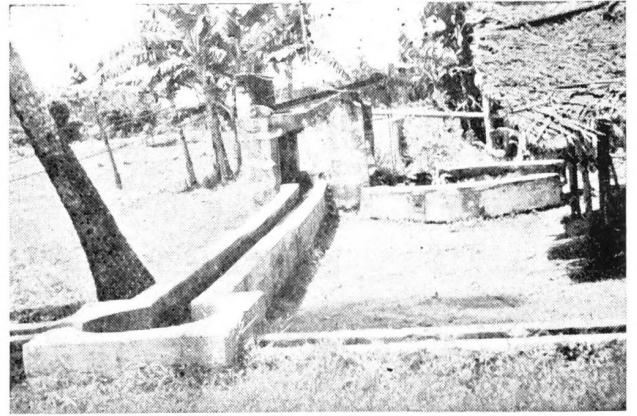


PHOTO 2.—Flume from well.



PHOTO 3.—Lined pond for irrigation.



PHOTO 4.—Irrigation from ponds with palmyrah pails.



PHOTO 5.—A garden of irrigated chilli.



PHOTO 6.—Penning cattle in Jaffna.