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major part of the finance is provided to the parties concerned in the form of 30 year annuities discounted to them by different institutions.

The scheme aroused such great enthusiasm that applications for funds were so numerous that the allotted sum was found far too small to meet them all. Preference was given for the execution of the work by public bodies which ensured a certain minimum of private initiative. Private rights were acknowledged and when curtailed, were said to be adequately but not excessively compensated. A special section of the Ministry of Agriculture which receives proposals and itself draws up plans, deals with land reclamation and no project is accepted unless it shows considerable possibility of securing notable improvements in hygiene, demographic, economic, and social conditions. The plan being accepted by government, the land owners proceed to execute the works either by themselves or through the consortium. They may provide all the money themselves or obtain government grants or special loans from the agricultural bank.

When the reclamation is completed, some internal migration and land settlement become necessary. A special commissariat like the "Ex-service Men's League" attended to this and the migrants were drawn mainly from farm workers brought from more densely settled regions. The system adopted was as follows:—The reclaimed land is cut up into holdings of 25 to 75 acres according to the quality of land each furnished with a house, stabling for ten cattle, poultry run, pig sty, well etc. The farms are taken by the immigrants first on a crop sharing basis the tenants receiving monthly advances in the shape of supplies and cash allowances from the League or other societies. When the head of the family gets experienced, an agreement is drawn up under which he will purchase the farm and the livestock from the League in 15 annual instalments covering capital and interest which varies in general from 200 to 630 liras per hectare as cost of upkeep and amortisation of the drainage work. These repayments do not cover the government contribution.

(One hectare = 2.47 acres; 1 metric ton = 2000 lbs.; 1 lire = 9½ d.)

(Extract of a lecture on land reclamation in Italy by Sir John Russel.)

Agricultural Jottings.

BY MEMBERS OF THE DEPARTMENT OF AGRICULTURE, MADRAS

The Madras Dry Farming Scheme. The Madras Dry Farming Scheme, which was started just over two years ago, has for its purpose the improvement of agriculture in the arid parts of the Presidency. The Research Station where the work is in progress is situated at Hagari in Bellary district.

An account of the progress made in the first year has been published already. The following notes give further general information about work done in the last season, and the manner in which it may be useful to the ryot.

The progress made lies in two general directions viz., improvement of the crop, and improvement of the soil.

Improvement of the Crop. *Korra.* This millet, which is one of the main food crops, has been studied intensively. It has been found in any crop grown under ryots' conditions that the plants differ in one important respect and that they are generally of two kinds. Some have a shallow spreading root that penetrates to depth of only about 6", while others have a different kind of root which grows deep in the soil up to 2 feet and even 3 feet. It has been found that the deep rooted kinds are most numerous which is evidently nature's way of providing a kind of plant adapted to resist drought. But what of the shallow rooted kinds that are present, although not in such large numbers? The information obtained

up to the present seems to show that the latter may frequently give the best yield in seasons when the rainfall is heavy or ill distributed. The reason is heavy black soil is soon spoiled by heavy rain which interferes with growth. In a season of light rainfall, which is usual in the district, the deep rooted varieties do best, but when too much rain falls at one time, the shallow rooted kinds may give more grain.

It is well known that on many holdings there are high-lying lands, medium level fields, and low lying areas. Crops grown on the ridge suffer much more frequently from drought than on low-level lands. It is possible, therefore, that deep rooted plants will do best generally under such conditions, whereas the shallow rooted kinds may be more suited to low-lying areas. New strains of Korra have been isolated. During the season these were compared not only at Hagari but on a number of ryots' fields. This line of work continues to be promising.

Jonna. The importance of Jonna as a food is well known in the Ceded districts. A common source of loss to the ryot is the frequent appearance of an inferior Jonna plant in fairly large numbers and in almost all crops. This is called "Jadu choppa". These plants do not produce an earhead and the cause has been traced to impairment of the root system. Efforts are being made to eliminate this loss.

Cotton. In Bellary district early season or '*mungari*' cotton is grown on about 2 lakhs of acres annually. The mixture grown frequently by the ryots spins up to not more than 15-18 highest warp counts. The lint is of inferior quality. As a result of new importations from other parts of India, a cotton of much superior quality which spins to 32's has been obtained. The variety which comes from Berar is called Verum. Wherever this cotton has been grown, it has proved to be equal in outturn of lint, as compared with the local low grade mixture. Further, it has been well reported on by a section of the cotton trade and the department of agriculture has been requested to ensure its wide cultivation.

With the advent of new strains of this variety as a result of two seasons' work, the ryot now has two types of proved quality, one for cultivation in the early season and another for sowing later.

Improvement of the soil. In the Bombay Presidency where the rainfall in quantity is about the same as in Bellary and Anantapur districts, it has been shown that as much as fifty per cent of the rainfall may be lost to the crop. This is caused in part by unsuitable cultural methods.

A similar problem exists in parts of the Ceded districts and it is being overcome to some extent by the erection of small field bunds. The implements used for this purpose is simple in design and can be drawn by a medium sized pair of animals. It costs Rs. 7-8-0. The year before last an experimental crop of cotton yielded 51 per cent more kappas than unbunded land, and last year the difference in a Jonna crop was 31 per cent in favour of the new method. Further, there has been a cumulative rise in yield per acre.

In the past the problem of drought in Utah, U. S. A. has been acute. As a result of twenty five years' experience much progress has been made in designing methods of tillage conducive to the storage of rain in the soil. It has been found that in time if land is cropped in alternative years instead of every year, the yield will double itself.

The Anantapur ryot seems to understand this practice to some extent, but his methods need improvement. A study of the possibilities of cropping in alternative years is to be undertaken at Hagari. It has been found during one season that a cotton crop can deplete the soil of moisture to an extent of 7,98,700 lbs per acre. This compares with as little as 2,55,200 lbs. per acre when no crop is grown.

An Officer of the Madras Agricultural Subordinate Service has been sent to America to study methods of dry farming practice. With his knowledge of the Ceded districts he should learn much that will be of use in improving methods of cultivation in Bellary and Anantapur district.

The place of other crops than Paddy in the Tanjore Delta. It is well known that over a million acres of land are devoted to cultivation of paddy annually in the Tanjore District without rotating it with any other crop. Of this area, about $1\frac{1}{2}$ to 2 lakhs of acres are cropped with paddy twice a year while the rest of the area is devoted to a single crop. When paddy prices were ruling high at Rs. 2-8-0 to Rs. 3-0-0 a kalam of 64 lb. there was a decent margin of profit left for the cultivator even from a low average yield of 30 kalams per acre. But with the fall in price of paddy ranging from 40 to 60 per cent from 1930 onwards the margin of profit has become very narrow.

The immediate problem for the Department was to find out whether there was any possibility of introducing with success other and more profitable crops in the wet lands of the Tanjore district. From 1930 onwards experiments with various commercial crops have been under way in the Paddy Station at Aduturai. The following crops were under trial on this station so far:—Sugarcane, plantain, groundnut, soy beans, Cambodia Cotton and turmeric.

Sugarcane. The trials conducted with sugarcane of various varieties have definitely established the fact that it is quite possible to grow fairly good crops of sugarcane in the paddy fields of Tanjore. The yields per acre ranged from 25 to 35 tons and it is reckoned that an average of 30 tons per acre could be realised under proper cultivation and management. The best time for planting canes is March and April.

Of the thin canes Co. 281 and Co. 285 have been found to do very well. These canes have the reputation of standing water-logged conditions. Among the thick canes, Co. 402 is a very good cane to grow and has been given to the cultivators for trial. Co. 419 and Co. 421 under trial for the second year on the station give promise of being suitable for the tract. Among the Sorghum cane hybrids, Co. 352, 353 and 355 have been found to do well. Of these Co. 352 is ready for harvest in about $8\frac{1}{2}$ to 9 months.

Canes have been introduced in all the taluks of the district. It is also gratifying that mirasdars who were new to this crop, straightaway adopted along with the new canes, the upto-date methods of cultivation. This is indeed a distinct gain.

Plantain. Generally plantain crop in the Tanjore district was confined to 'Padugai' lands adjoining river banks and it was seldom grown in paddy fields. The trial crops grown in the paddy fields during the last six years have shown that under proper cultivation fairly good crops of plantain can be grown in paddy fields of the district either for three years or more in the same field. But due to prevalence of cyclonic weather almost every year during the north east monsoon period when bunches appear on the plants, the plants have to be propped. It has been shown that it is quite possible to grow plantain in the paddy fields of Tanjore as is done in the neighbouring district of Trichinopoly.

Poovan and Monthan varieties are found to be the best varieties to grow. The cultivation of Mauritius plantain avoids the costly item of propping.

Turmeric. It has been possible to take very good crops of turmeric in paddy fields by growing it on raised beds with drainage channels at intervals. Yields varying from 16,000 to 22,000 lb. of green turmeric have been obtained. The only precaution to be taken is that the crop should be grown in July on raised beds and beyond the reach of stagnant water during the rainy months.

Groundnut. Trials made to grow groundnut in the single crop on samba fields as a catch crop before planting the fields to paddy crop during the season have proved to be very successful. Yields have ranged from 1,200 to 2,000 lb. of pods and 10,000 to 12,000 lb. of haulms which could be used either as green manure to the succeeding paddy crop or as excellent fodder for cattle. Being a legume, it enriches the field sown to it with nitrogen, the most needed plant food in our soils.

Cambodia Cotton. Trials to grow Cambodia cotton in between two samba paddy crops have proved to be of considerable promise. The cotton seeds are dibbled in lines in the stubble after the harvest of samba crop in January or February. With the available moisture, the seeds germinate and the young plants grow. With the help of summer showers the crop is given one or two courses of intercultivation with mammatty or a bullock-drawn hoe and earthed up. The crop is allowed to grow as best it can with the help of the moisture in the soil and the few summer showers. The crop is given irrigation after the receipt of water in the channels in June. Thereafter it makes very rapid growth and flushes well, bearing a heavy crop of bolls. A heavy picking can be taken before the rains in October when the crop is pulled out and the field planted to paddy. In the years of well distributed rainfall in summer, the yield of kappas from an acre has gone up to 900 lb. but an average yield of 300 to 400 lb. of kappas per acre is quite a possibility.

Tips to those Interested in Poultry. While quite a number of people like to keep poultry, their interest wanes as soon as they find things are going wrong. There has been of late, much awakening among villagers and townspeople to raise exotic breeds. While they are excellent both for the table and breeding purposes there are certain difficulties in the way of their becoming popular and remunerative at present. So long as they are subject to certain contagious and infectious diseases which play havoc among them, and so long as there are no specific remedies as at present, the safest advice one can give is to go slow in introducing such birds. Improvement can be achieved by selecting the best layers among the local types found in the country. Another way is to grade the local birds by mating the hens with good foreign cock, such as white Leghorns, Rhode Island Reds, Light Sussex, Black Minorcas, etc. By adopting these two methods alone a fair progress in the improvement of poultry could be effected.

An important point one should remember in raising poultry is that they should be housed in sanitary surroundings which should be dry, airy and roomy and should be protected against their natural enemies. The Department has in several of the agricultural farms types of poultry houses which can be adapted to suit local conditions. Poultry are subject to parasites like lice, mites, ticks, fleas, etc. which if not attended to promptly multiply rapidly and weaken the birds by sucking their blood. Therefore a good supply of disinfectant powders like a mixture of wood ashes and sulphur, sweet flag, tobacco, etc. to dust the birds should be available. Again, the birds should be fed regularly; to keep them in good condition different kinds of green food is essential. Clean water with a few grains of potassium permanganate in it should be within easy reach of birds. Also grit which would aid digestion and help in the formation of shell should be supplied.

A very important point to bear in mind always is that prevention of disease is better than cure; this is all the more necessary when no cure has been found for several of the ills of poultry. To this end, a place where the birds could be isolated as soon as the first signs of disease are noticed is very necessary. The rapid spread of diseases in the villages, is due to want of facilities in this direction. Therefore, poultry raising in villages becomes very unsuccessful. It is best that poultry are kept in fields as far as possible or in isolated places where

contact is not so intimate. In the case of diseases like chicken pox, inoculation as a preventive should be taken advantage of.

It should be the concern of every one who keeps poultry to periodically see if poultry keeping is a paying concern or not. Business methods are necessary at every step. Attention should be paid to proper marketing of eggs. Eggs should be examined first to see if they are sound or not. A good method is to place the egg against the sun or strong light and note the air space, condition of the albumen and yolk within the egg. Eggs should be graded according to their size and colour before marketing and prices fixed accordingly. If these suggestions are followed, it is possible to make poultry raising a paying proposition.

Crop & Trade Reports.

Receipt of raw cotton at press & spinning mills.

Total cotton pressed & unpressed

	Bales of 400 lbs. against an estimate of 540,700 bales for 1935-36.	Figures for corres- ponding period in previous years.
1-2-35 to 20-11-36	586,412	434,633
" 27-11-36	592,688	439,278
" 4-12-36	597,070	444,642
" 11-12-36	603,272	449,964
" 18-12-36	606,931	455,964
" 25-12-36	610,882	458,876
" 1-1-37	616,044	462,558

	Cotton bales received at Mills.	Exports by Sea.	Imports by Sea.
1-2-36 to 20-11-36	336,378	239,524	95,934
" 27-11-36	372,368	243,623	96,593
" 4-12-36	378,560	248,312	98,525
" 11-12-36	384,639	251,145	98,704
" 18-12-36	389,220	253,775	99,484
" 25-12-36	391,906	254,967	99,567
" 1-1-37	396,169	259,065	99,843

Paddy—Second forecast report. The average of the areas under paddy in the Madras Presidency during the five years ending 1934-35 has represented 13.4 per cent of the total area under paddy in India.

The area sown with paddy up to the 25th November 1936 is estimated at 8,504,000 acres. When compared with the area of 8,410,000 acres estimated for the corresponding period of the previous year, it reveals an increase of 1.1 per cent.

The increase in area occurs in Vizagapatam, West-Golavari. Kurnool, Chingleput, Trichinopoly, the South and West-Coast. There is a marked decrease in area in Nellore (130,000 acres) owing to the unfavourable season.

The first crop has been generally harvested throughout the Presidency.

Normal yields have been reported from all districts outside the Circars (Vizagapatam excepted) Bellary, Anantapur, the Carnatic districts, North Arcot and Salem. The severe cyclone of the 28th October lodged the crop in parts of East Godavari, West Godavari, Kistna and Guntur.

The seasonal factor for the Presidency works out at 98 per cent of the average as against 95 per cent in the corresponding period of the previous year.

The wholesale price of paddy per imperial maund of 82 2/7 lb. as reported from important markets towards the close of November 1936 was Rs. 2-14-0 in