THE GROWING OF CABBAGES IN THE JAFFNA PENINSULA

N. SENATHIRAJA,
AGRICULTURAL INSTRUCTOR, BANDARAGAMA

THE first trials with these vegetables which ordinarily grow in temperate climates and which have hitherto been grown in Ceylon only on the hills were made in the Experiment Station, Jaffna, in 1924. The work has been continued up to the present.

The aim of the management from the beginning was to test the possibility of growing cabbages on an economic scale to be adopted by the village farmers as a money crop. Observations were made and valuable experience gained with regard to the time of sowing, preparation of the seed bed, watering, transplanting, spacing, preparatory cultivation, suitable manures, after cultivation irrigation, etc.

Since 1930 a progressively growing number of farmers have been encouraged to grow this crop on a commercial scale, and with its increasing popularity here is a demand for information with regard to the most suitable varieties and the proper method of cultivation. This article is intended to meet this demand.

The Cape cabbage has given the best results. There are several types of this which thrive equally well under the same conditions and can be grouped into early and late varieties. Early varieties take 80 to 100 days to mature while late varieties 100-120 days. Of the types tested the best were (1) Cape Largest Solid Drum Head—this variety withstands heat and sun admirably well. It produces a high percentage of uniform good quality heads. (2) Cape Early Drum Head—this is a flat headed variety and has an abundance of wrapper leaf of deep green colour. (3) Cape Early Sugar Loaf—it is a medium sized variety with pointed heads, slightly lighter in colour than Cape Early Drum Head.

SELECTION OF SEED

The seed cannot be matured satisfactorily under local conditions. Imported seed should be secured for each season.

It is specially necessary that good seed with a reputation for a high percentage of germination be obtained from a reliable seedsman.

METHOD OF GROWING PLANTS ON SEED BEDS

The season for sowing cabbage is from the latter half of August to the middle of October. It is a good practice to make three sowings say one by the 25th of August, one about the 15th of September and one by the beginning of October. The first and second sowings can be done in well prepared beds as there will be less damage by rain, but for the third sowing boxes should be used to save loss from heavy rains. A bed of $5' \times 30'$ should give ample plants for an acre. The third sowing is the most important for a strong plant is required for late planting. When the plants are about four weeks old in the boxes they should be transferred to a bed richly manured before they are set out in the field. These will head quickly and will be ready before the dry weather sets in. The first and second sowing need not be pricked out from the seed bed but may be taken direct therefrom to the field. The seed beds should not be as rich as the place where they are to finish their course. The seed should be sown in the beds rather thinly either broadcast or in the drills which may be about two inches apart and covered with an inch of soil.

Plants grown in drills are harder and much easier to lift and transplant. The soil should be of friable sandy loam free from stones and should receive an application of well rotted manure and leaf mould. After sowing the seeds the beds are covered with dried plantain leaves to hasten germination; after the seeds have germinated the plantain leaf covering is replaced by twigs of some shrubby growth known locally as "Manthu" which protects the young seedlings from the hot sun. It is not necessary to remove this cover of the bed to water it as it could be thoroughly watered with a watering can with a fine rose. When the seedlings are well up they should be exposed to the sun for a short time in the morning. The period of exposure should be gradually increased and when they are sufficiently hardened the covering is no longer necessary. The seedlings will be ready for transplanting when they are 4 to 5 weeks old. It is necessary to water the beds copiously at the initial stages to keep the surface moist in order to facilitate the germination of seed; later on the quantity of water should be reduced. The object of watering the seed bed is to keep it moist but not wet.

TIME OF PLANTING

If the bed is started about the 25th of August the plants should be ready for transplanting by the 15th October, with the initial rains of the North-East monsoon. The greater part of the rain falls between October and the first half of December. A large portion of this moisture is available for the early growth of the crop. The rainfall diminishes during the latter half of December and a dewy weather sets in and lasts till the middle of March. During this period occasionally light showers are received which tend to maintain the temperature of the soil and the air moderately cool which is a requirement to promote the development of heads of good quality. Cabbage must have an adequate supply of moisture throughout the growing season. An excessive amount of water in the soil is however not desirable and too much fluctuation of soil moisture may cause the production of loose and small heads.

Cabbage is grown successfully in a wide variety of soil types ranging from clay loams to sandy loams, but it grows to perfection on fertile loams rich in organic matter. For late crops which mature during dry weather, the heavier types of soil should be used for they hold more moisture and are cooler. The lighter and well drained soils may be employed to produce the crop that is planted early and grown during the cool season.

PREPARATION OF THE LAND BEFORE PLANTING

It must be remembered that the soil should be in a high state of fertility if a satisfactory growth of cabbage is to be obtained. The land should be thoroughly prepared before setting out the plants in the field. Thorough preparation of the land enables the plants to establish quicker and grow uniformly. When cabbages follow tobacco, dry ploughing is done in March or April—cattle ponning is done from July to October. The land is again ploughed and cross ploughed in October after the rains to cover the droppings and mix it with the soil. The burying of green leaf is done after the last ploughing which in addition to increasing the humus and nitrogen content of the soil assists in conserving the moisture in the soil at a uniform depth. Well decomposed cattle manure is applied at the rate of 16 carts per acre and covered with mammotties while levelling. The ground is then ready for planting.

TRANSPLANTING

When the plants have put out six to eight leaves they are ready for transplanting. Strong vigorous plants only

should be selected for transplanting. Just before removal the beds from which the plants are to be taken should be thoroughly watered so as to soften the soil and to allow the seedlings being removed with a ball of earth attached to them. The rows should be marked out two feet apart and the plants set out $1\frac{1}{2}$ feet in the rows. Transplanting is done by the same method as for other plants, that is, either a wooden pin bluntly sharpened or the fingers are used for making the hole into which the plant is placed and the soil is then pressed around the rootlets. Planting should be done late in the evening. The plants should be shaded and pot watered immediately after planting. The crop should be pot watered every morning in the absence of rain for about three weeks.

AFTER CULTIVATION

The crop requires clean cultivation and unremitting care. As soon as the plants have started growing stir the ground around them and give frequent clean cultivation.

In addition to green leaf and cattle manure the use of inorganic nitrogenous fertilizers is necessary to keep the soil in a state of high productivity. Generally, lack of nitrogen is what usually limits the growth of cabbage. Nitrogen can be applied in the inorganic form as nitrate of soda, sulphate of ammonia or Nicifos. The fertilizer may be applied after the first hoeing which is usually done three to four weeks after planting and until a month before harvest. The first application is done round the plants after the first hoeing at the rate of 100 to 120 lb. an acre. The second application of 150 lb. to 200 lb. is done after the second hoeing and the formation of beds and channels for irrigation, which is usually done about seven weeks after planting. After the beds and channels have been formed for irrigation further cultivation is not necessary and even beneficial except the removal of weeds which rob the soil of moisture and soil nutrients. The beds for irrigation are formed with the soil drawn towards the plants so that the water may stand at a distance from the base. The soil at the base of the plant is always kept loose which facilitates aeration and better stand is obtained. The crop is usually irrigated once in three days but the frequency of irrigation depends on weather and soil conditions. It takes some experience to know when to irrigate but as a rule the plants are in demand of water when they become dark green

and the leaves look and feel leathery. When there is plentiful supply of moisture the leaves are brittle and are of a lighter green.

PESTS AND THEIR CONTROL

Serious damage is done to the crop by grasshoppers and caterpillars. The most serious injury is done by caterpillars to the terminal bud which hinders the formation of new leaves. The most destructive period is the rainy weather when the greatest number of the larvae are present. Control of these can be effected by spraying with a mixture made of 3 lb. of McDougal's lead arsenate to 100 gallons of water alternated with nicotine sulphate, spraying strength being 1 oz. to 2 gallons of water. These insecticides in amounts used have been found not poisonous to human beings and can be used without danger. On the beds ashes should be sprinkled over the young plants to prevent them being damaged by insects.

HARVESTING AND YIELD

Harvesting should not take place until the heads are hard. Inexperienced cultivators have a tendency at times to harvest cabbage too soon especially if prices are high. Immature heads wilt more readily and will not sell well. Harvesting should furthermore not be done after an irrigation. Then the leaves are crisp and brittle and breaks easily in handling. If just slightly withered they are injured less in handling and packing and consequently will carry better transit. Cabbage should be cut above ground. Then the stumps give a crop of sprouts which if tendered carefully supply another gathering.

The yield was recorded by the number of heads harvested and sold. The production of cabbage averaged about 8,000 good heads per acre. The prices received averaged 18 cents per head. The cost of cultivation was estimated to be Rs. 400·00 per acre including cost of seed, manures, labour and irrigation. This leaves a nett profit of over Rs. 1,000·00 per acre. But these figures cannot be regarded as stable. The novelty of the crop made the local consumers pay a price which cannot be demanded by an established industry. But even at a price of 10 cts. per head a substantial margin of profit will remain.