

The Cultivation of Vegetables in the Northern Circars

By A. SANKARAM, B. Sc. (Ag.)

The important role that vegetables play in our diet, providing the necessary proteins, carbohydrates, fats, vitamins etc., is too well known. The need for the systematic development of market and kitchen gardening, with a view to overcome the shortage of food at the present moment, is very great. In the Northern Circars not more than 48,000 acres is utilised for vegetables, although the scope for their culture is exceedingly great. The province of Madras claims nearly 3 lakhs of acres under vegetables out of the 28 million acres occupied by different food crops. This is obviously insufficient to cater to the needs of the population.

Types of vegetable gardening The types of vegetable gardening met with in the Northern Circars may conveniently be divided into two sections based on the object sought and methods employed in producing and disposing of the crops.

(i) *Kitchen gardening* This type of vegetable growing has for its aim the production of vegetables in the back yard of the house solely to cater to the daily needs of the kitchen. It is a hobby giving both pleasure and profit. Limited holdings and nearness to the house form the outstanding features of this type, and their up-keep and development entirely depend on the availability of land and personal care and attention of the owner.

(ii) *Market gardening* This type of vegetable growing has for its object the production of vegetables for markets situated in towns and cities, and is the most common and popular type of gardening in the Northern Circars. Suitable land in the neighbourhood of towns and cities is most desirable. A fairly fertile land with some reliable source of irrigation will be suitable for this. Intensive cultivation with adequate manuring to maintain the fertility of the land, is essential for the success of this type of gardening.

Soils The garden land soils of the Northern Circars naturally vary widely in their fertility from place to place but on the whole are well adapted to vegetable culture. In certain localities the wet lands also offer scope for raising vegetables of the type of gourds, plantain and yams. In some localities the land is more of a sandy nature, which when well supplied with organic manures, prove suitable for successful vegetable cultivation.

Season and rainfall In the Northern Circars the season can be divided into three periods, viz., (i) the south west monsoon (June to September), (ii) the north-east monsoon (October to December) and (iii) the summer or dry season (January to May). The monsoon during the first season brings 40 to 45 in. of rainfall to parts of North Vizagapatam and the Vizagapatam agency. It gets feeble as it passes to the Godavari districts where the precipitation is only 36 in. There is a progressive decrease in the

districts of West Godavari and Kistna to below 40 in. and it is only about 30 in. in the Guntur district. During the second monsoon there is less rain on the hills, and all the districts in the plains receive about 10 to 12 in. only. In the summer period a few showers are received in the entire tract and are popularly known as "mango showers". The amount of rainfall received varies from 2 to 5 in. Dependent on the rainfall, there are three seasons for the sowing of the vegetable crops, viz., (i) the monsoon or *tholakari* (June), (ii) the winter (October—November) and (iii) the summer (February). The rains of the south-west monsoon are taken advantage of to raise most of the vegetables. With the setting in of the north-east monsoon rains different kinds of gourds, brinjal, tomato etc., are grown. But in the summer season great difficulty is experienced in securing water for irrigation. Conditions of weather are always very favourable in the first two seasons for producing bumper crops, with less expense for irrigation. The relatively higher prices of vegetables in summer compensate to a certain extent the increased cost of irrigation.

Lay-out of vegetable gardens Based on the nature of the soil, the plot is first divided into different blocks. Parts of the field with soils of a heavy nature are utilised for root crops like yams, sweet potato and colocasia. Other blocks with light loamy soil are set apart for vegetables like brinjal, lady's finger and gourds. High level plots with drainage are particularly set apart for the culture of greens. In the vicinity of the water source, a small high level plot is usually used for the nurseries.

Tillage An optimum tilth brought about by 8 to 12 ploughings with the wooden plough depending on the previous crop, is all the preparatory tillage given to the lands to bring them into condition for sowing. Generally great care is bestowed during the growth period of the crops and clean cultivation is maintained.

Manures The only manure that is commonly used is the cattle manure. Vegetable crops in particular give marked response to large dressings of well prepared composts and town refuse. Adequate manuring will be amply repaid by higher yields. The growers therefore will do well to conserve all possible farm wastes and convert them into valuable manure by composting as suggested by the Agricultural Department.

Irrigation Irrigation is a matter of great importance in the successful cultivation of vegetables. Irrigation with a *picotah* (counterpoise bucket lift) is commonly adopted in the Vizagapatam district. Of late, in and around Anepakalli the improved water lifts, the circular mhothe and the persian wheel are becoming popular. In the Godavari districts, besides lift irrigation with mhothes, cannal irrigation is also common.

Harvest and marketing Vegetables like brinjal and gourds are usually harvested in the evening and transported next morning to the neighbouring markets; greens are always gathered very early in the morning, for it is only in their fresh condition they are salable. Excepting the root crops, other vegetables do not keep well after a couple of days

Vegetables intended for sale in the distant markets and weekly fairs (*shandies*) are usually packed in palmyra leaf baskets and transported in bullock carts in the Vizagapatam district. In the districts of Godavari, transport by boat is very common. Gardeners who are not in the neighbourhood of towns dispose off their entire crop, before harvest, to middlemen. The middleman undertakes the harvest operations and sells the produce to retail market vendors. Where market gardens are advantageously situated within easy reach (2 to 3 miles) of towns or cities, growers sell their produce directly to the retail market vendors, thus avoiding the middleman. A few gardeners even effect direct sale of the vegetables to the consumers. However it is very unusual to find the growers coming into direct contact with the consumers. It is this that is responsible for the disparity between the price received by the grower and the price paid by the ultimate consumer. At Anakapalli certain dealers are engaged in the export of vegetables and derive very high profits. Retail sale of vegetables at the very door of the consumer in towns is common in the Godavari districts and of late this practice is slowly creeping into parts of the Vizagapatam district also.

Seed selection and preservation A majority of the common Indian vegetables are raised from seed. The first few fruits are generally set apart for seed. It is not uncommon to find seed being collected from odd ripe fruits that escaped harvest but were noticed at the time of pulling out the crop. This will result in reduced yield and quality. Well-grown vigorous plants, free from pests and diseases should be set apart expressly for seed collection. In the Northern Circars many market gardeners exercise a certain amount of care and attention in the collection and preservation of the seed required. Vegetable seeds are usually sold in the weekly fairs (*shandies*) but they are not of dependable quality. For preservation till the next sowing season, seeds of brinjal, greens, etc., are kept in cloth bags in a covered narrow-mouthed mud pot. Seeds of snake gourd, bitter gourd and cucumber are imbedded in *bratties* (dunk cakes) and dried. The dried cakes are carefully preserved in mud pots. Dry fruits of ribbed gourd, bottle gourd, *bendai* (lady's finger) etc., are kept in a safe place free from damage by rats and other pests. Seed is also kept in tins provided with tight-fitting lids.

A profitable enterprise Satisfactory returns are obtained from well-grown vegetables of the more common kinds viz., brinjal, yams, gourds, lady's finger, etc., and it is not therefore very surprising if these crops rank high amongst those to which the grower turns his attention. In very favourable seasons the profits are substantial. But the fickleness of the monsoon in certain localities and in certain seasons, resulting in higher expenses for artificial irrigation or at times by the damage of insects often reduce the profits. Nevertheless, market gardening is still accepted as a profitable enterprise in the Northern Circars.

Notes Brief notes on the cultivation of the common vegetables is given in a tabular form as an appendix.

APPENDIX

Hints to grow common vegetables in the Northern Circars

English or local name	Botanical name	Natural order	Month of sowing or planting	Seed rate	Month of harvest	Duration of the crop	Yield	Remarks
Fruit Vegetables								
Brinjal	<i>Solanum melongena</i>	Solanaceae	June November February	8 to 12 oz. of the seed sown in 5 cents will give seedlings for one acre	September February May	3½ to 4 months	10,000 lb. 12,000 " 8,000 " per acre	Seedlings planted 3' apart on square in a well-manured rich light loamy soil.
Lady's finger (<i>bandai</i>)	<i>Hibiscus esculentus</i>	Malvaceae	June November	2 to 2½ lb. of seed for an acre	September February	3 months	6,000 to 8,000 lb. per acre	Seed sown in rows 1½' apart and 1' from plant to plant. Picking continues for nearly five weeks.
Tomato	<i>Lycopersicon esculentum</i>	Solanaceae	October— November	8 oz. of seed to be sown in five cents plot	January— February	3½ months	8,000 to 10,000 lb. per acre	Seedlings to be transplanted 4' in rows and 3' from plant to plant.
Plantain	<i>Musa para-disiaca</i>	Musaceae	June or November	800 suckers acre	August or December of the following year	12 to 14 months	700 bunches per acre	Ratooned for two years, and in the third year, the return is by sale of leaves only.
Beans								
Lablab, Garden bean	<i>Dolichos lablab</i>	Leguminosae	June	5 to 6 seeds per pit and pits 10 to 12' apart	November	5 to 6 months	5 to 6,000 lb. per acre	Commonly grown in the back yards of the houses on <i>bandais</i> (trellis). There is also a bushy field variety.
Cluster beans	<i>Cyamopsis psoralinoides</i>	Do.	June October	1 to 1½ lb. per acre	September February	3 to 3½ months	8,000 to 10,000 lb. per acre	Seeds to be sown 2' apart on square. Grown alone or as an inter-crop with root crops.

<i>Rajula chikkudu</i>	Leguminosae	June	5 to 6 seeds per pit and pits 10 to 12' apart	November	5 to 5½ months	5,000 lb. per acre	Commonly grown in the back yards of houses, trailed on old trees and thatched sheds. Only tender seeds are consumed. Very popular in parts of North Vizagapatam.
<i>Zolonda chikkudu</i>	Do.	Do.	3 to 4 seeds in pits. Pits 8 to 10' apart	October	4 to 5 months	5,000 to 6,000 lb. per acre	Plants trailed on individual bamboo poles. Very popular in Vizagapatam Dt.
Leafy Vegetables							
Amaranthus thus Mokka or perugu thotakura	Amaranthaceae	Throughout the year	2 lb. per acre	—	40 to 45 days	Rs. 80 to 100 worth of greens per acre	Greens marketed in summer will fetch higher price. A cent plot will yield a produce of the value of 14 annas to a rupee.
Koyys thotakura	Do.	Do.	Do.	—	40 days	Rs. 50 to 60 worth of greens per acre	A cent plot of the green will fetch annas 8 to 10.
Rega thotakura	Do.	June	About ½ lb. of seed to be sown in a nursery of 250 sq. yds. to plant an acre	October	4 months	10,000 to 12,000 plants per acre	Seedlings of 3 weeks' age are to be transplanted 2' apart either way in the field. Grown only in Vizianagaram taluk. Sold one or two for 3 pies.
Spinach Matlu batchais	Chenopodiaceae	June October	8 to 10 oz. per acre	August December	50 days	A rupee worth green from a plot of 1 cent	Broadcasting seed or transplanting of seedlings 1' apart on square. A very popular green in the Circars.
Padda batchais	Do.	June	6 to 8 seeds in pits 10' to 12' apart under <i>pendals</i> (trellis)	August	50 to 60 days	—	Largely grown in Peddapur and Pithapur taluks. Mostly grown in back yards. Not available in large quantities.

English or local name	Botanical name	Natural order	Month of sowing or planting	Seed rate	Month of harvest	Duration of the crop	Yield	Remarks
Gogu	<i>Hibiscus cannabinus</i>	Malvaceae	Throughout the year	8 to 10 lb. of seed per acre	Tender plants ready for harvest after 2½ months	5 to 6 months	One cent plot will fetch greens worth 8 to 10 annas	Sowing in June will yield abundant greens. Sour, Red and <i>Darsari gogu</i> are the more common varieties. Very popular greens in the Guntur district. Leaf is preserved with salt to prepare <i>chitni</i> .
Root Vegetables								
Elephant yam	<i>Amorphophallus campanulatus</i>	Araceae	June—November	1,500 to 1,800 lb. of corms per acre	January May	8 months	12,000 to 15,000 lb. per acre	Corms to be planted 1½ to 2' either way. Acridity depends on the type of soil. <i>Pati kanda</i> is considered to be the best.
Colocasia	<i>Colocasia antiquorum</i>	Do.	June—July	650 to 750 lb. per acre	December	6 months	2,000 to 2,500 lb. per acre	Tubers to be planted 1½' either way. Also grows well in shade and wet conditions obtaining in plantain gardens.
Sweet potato	<i>Ipomoea batatas</i>	Convolvulaceae	September—October	12,000 sets per acre	January	3½ months	8,000 to 10,000 lb. of tubers and 8,000 lb. of vines per acre	The vines should periodically be pruned and lifted to prevent the formation of small and unmarketable roots. There are two varieties of roots, white and red.
Chara kanda or Chara chema	<i>Colocasia</i> sp.	Araceae	June—July	1,000 lb. per acre	January	7 months	15,000 to 16,000 lb. per acre	Grown only in parts of North Vizagapatnam and Orissa.
Yam— <i>Pendalam</i>	<i>Dioscorea alata</i>	Dioscoreaceae	June	800 to 1,000 lb. per acre	January to March	8 months	6,000 to 7,000 lb. per acre	Tubers planted 1½' apart either way. A set of four vines are trailed on a single pole planted at the centre of the four vines.

Yam— Siragadam	<i>Dioscorea esculenta</i>	Dioscoreaceae	June	1,500 lb. per acre	November continues till February	6½ months	6,000 to 7,000 lb. per acre	Cultivation similar to <i>Dioscorea alata</i> . White-skinned tubers are very tasty. Very popular in the Vizag. district.
Gourds								
Ribbed gourd	<i>Luffa acutangula</i>	Cucurbitaceae	June January	2 to 2½ lb. per acre. 3 seeds in pits 4' apart either way; sown broadcast also	October April	4 months	36,000 fruits or 8,000 lb. per acre	Picking continues for two months. Harvest on alternate days and each picking gives on average 1,200 fruits per acre.
Snake gourd	<i>Tricosanthos anguina</i>	Do.	June December	3 to 4 seeds in pits 12' apart either way; 1 to 1½ lb. per acre	November April	4 to 4½ months	A plot of 5 cents yields 800 fruits or 300 to 400 lb.	Picking continues for 1 to 1½ months and in all 15 pickings can be made.
Bitter gourd	<i>Momordica charantia</i>	Do.	June October	3 to 4 seeds in pits 12' apart under <i>pepdals</i> (trellis)	October February	3½ to 4 months	—	Not grown on any considerable scale; only near hedges, bunds and such odd places. The white variety is much favoured.
Ash gourd	<i>Cucurbita pepo</i>	Do.	June	¾ to 1 lb. per acre; 3 or 4 seeds in pits 12' apart	November to December	4½ to 5 months	2,000 to 2,400 fruits per acre	Mostly a rainfed crop. Allowed to spread on ground or on old trees or thatched houses. Very largely grown in the Godavari <i>lanukas</i> (islands in the river bed of the Godavari).
Bottle gourd	<i>Lagenaria vulgaris</i>	Do.	June October	¾ to 1 lb. per acre; 3 of 4 seeds in pits 10' apart	October February	4 months	3,000 to 5,000 fruits per acre	Grown as a rainfed crop too. Trailed on hay stacks, cattle sheds and allowed to spread on ground. A very paying crop owing to its high yield even under neglected conditions.

English or local name	Botanical name	Natural order	Month of sowing or planting	Seed rate	Month of harvest	Duration of the crop	Yield	Remarks
Pumpkin	<i>Cucurbita maxima</i>	Cucurbitaceae	June	1 lb. per acre; 3 to 4 seeds in pits 10 to 12' apart	February	6½ to 8 months	2,000 to 2,500 fruits per acre	Very largely grown on the <i>lanakas</i> .
Cucumber	<i>Cucumis sativus</i>	Do	June October	Do.	September February	3 to 3½ months	8,000 to 10,000 fruits or 3,000 to 4,000 lb. per acre	Very popular throughout the Circars. A particular variety locally known as <i>Mudosa</i> with short spines on the fruit is grown in parts of North Vizag. Grown in the back yards of houses on <i>pendals</i> (trellis).

Acknowledgements I am deeply indebted to Sri T. Nataraj, B. A., B. Sc. (Ag.), Assistant Lecturer in Agriculture, Agricultural College, Coimbatore, for his sympathetic criticism and valuable suggestions on the paper.