

## **A Short Note on the Cultivation of Elephant Yam (*Amorphophallus campanulatus*)**

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**Introduction** When propaganda for reduction of area of commercial crops like groundnut and cotton is done, it is desirable that profitable substitute money crops, which are at the same time food crops also should be suggested to the *ryots*. The substitute crops should be those that can be cultivated by the ordinary *ryot* without much cultivation expenses and at the same time easily marketable. One such crop is Elephant yam. It is a nutritive 'root vegetable' which can be stored for a long time. Extension of cultivation of this will add to the vegetable production in the country and at the same time be profitable to the cultivator.

This crop requires about 10 months to mature. It is usually planted in *Chitrai* (April—May) and harvested in *Thai* (January—February). A profit of more than Rs. 400 per acre can be secured in normal seasons by growing this crop. It is an exhaustive crop and can be grown in rotation once in three years in wet lands or garden lands. A short note on its cultivation is given below.

**Soil** Loamy soils rich in organic matter are often preferred for cultivation of this crop. Stiff clayey soils or soils with *korai* grass or *pasali* weed are often avoided as weeds cause a lot of damage to the growth of the crop.

**Preparatory cultivation** About 10 to 12 ploughings are usually given with the wooden plough. Ploughing is commenced as early as March so that soil may be brought into good tilth. The use of iron plough will be economical as the number of ploughings can be reduced.

**Manuring** About 50 cartloads of cattle manure are applied per acre and covered with the plough. Paddy husk, dried leaves or *varagu* straw are also applied, as much as available, at the time of ploughing and these get incorporated in the soil.

**Seed-material** Selection of seed material is the important item of work and should be done carefully, from the last year's crop left unharvested for the purpose. Yam has a face or front portion with a number of rings over the face, with a projection in the middle. These rings are places where from future plants germinate. A big yam is cut into small bits in such a way that each bit gets at least a small portion of this ring or germinating portion. There are also caruncle like projections, which are tender shoots ordinarily called *Arumbu*. These are broken before planting, as they do not give vigorous growth. An ordinary sized yam gives about 6 to 8 bits for planting. 'Depressed head' yam is always preferred for seed purposes.

As a preliminary treatment the cut pieces of seed material are dipped in cowdung water so that the cut portions are coated with cowdung. This is said to prevent evaporation of moisture from the cut seed bits. About 5000 to 6000 lb. of seed material is required to plant an acre.

Ridges are formed with the plough  $1\frac{1}{2}$  feet apart, with irrigation channels for every 10 ft. of ridge. The seed material is distributed over the ridges and are planted on the sides of the ridges  $1\frac{1}{2}$  feet apart in the row. The ring portion is planted downwards-towards the soil, and earthing up of soil is done immediately with the plough. Irrigation follows after earthing up of soil.

**Irrigation** The second irrigation is done three or four days after planting and subsequent irrigations are done once a week or whenever the field needs or gets dried up. The planting is usually done in April-May; earlier plantings always give a good yield. *Ryots* are careful not to flood the crop when irrigating as they believe that flooding reduces the yield of the crop. Water, on the other hand, is allowed to stand in the furrows up to half the height of the ridges. About 16 irrigations are given from May to October; the moisture requirement during the rest of the period is made good with the occasional receipt of rains.

**Weeding** This operation is done almost once a month during the growing period, or as often as necessary, and for the entire growing period about six weedings are done. Earthing up of soil with the plough followed by irrigation is done after every weeding.

The plant begins to form corms or tubers from September onwards, five months after planting and grows to a height of 4 to 6 ft. in 8 months. It takes about one to one and half months for complete germination. Off shoots spring up from main shoots, the first one appearing in 3 to 5 months after planting. The second one appears in October and the third one in November. After the springing of the third off shoot, the crop is supposed to be ready for harvest. When the crop is mature the leaves turn yellow.

**Harvest** The crop is usually harvested from January onwards according to the demand in the market. Harvesting earlier results in reduced yields. The harvesting operations consist of cutting away the shoot portion and lifting up the underground corms.

Each plant gives about 6 to 8 lb. of corms. The normal yield per acre is about 21,600 lb. (18 cart loads). The present price is Rs. 38 per cart load of 1200 lb. Thus the gross income from an acre is Rs. 684.

**Economics** The economics of cultivation of this crop of an ordinary *ryot* who cultivates 33 cents or  $\frac{1}{4}$  *kanni*, which is the normal area cultivated per holding, is detailed below. This gives a clear margin of profit of more than Rs. 400 per acre.

	Rs.	As	Ps.
12 ploughings at 4 as. each	3	0	0
Cattle manure 12 cart loads at 10 as. each cart load	7	8	0
Spreading manure	0	4	0
Two ploughings for covering manure	0	8	0
Forming ridges and furrows	0	6	0
Cutting seed	0	4	0
Spreading seed and planting on the ridges	1	0	0
Earthing up furrows	0	12	0
First irrigation—3 men	1	0	0
Second irrigation	0	8	0
Subsequent irrigations—16 for 7 months (May to October)	11	4	0
Weeding 6 times and earthing up	6	0	0
Harvesting at 8 as. per cart load	3	0	0
	35	6	0
Cost of seed material 1600 lb. at Rs. 38 per cart load of			
1200 lb.	51	0	0
Add assessment for 33 cents	3	15	0
Total expenditure	90	5	0
Yield—6 cart loads or 7200 lb.			
Value—Rs. 38 per cartload (1200 lb.)	228	0	0
Net profit for 33 cents or $\frac{1}{4}$ kanni	137	11	0
Net profit for one acre	413	0	0

The yield taken is normal and it goes up to 10 cartloads depending upon manuring and field conditions

## Preliminary Trials with *Trichogramma* Parasites for the Control of the Cotton Boll Worms

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**Introduction** Species of *Trichogramma* are well known egg-parasites used extensively in biological control of some of the major pests of crops the world over. Their distribution is world-wide and their range of hosts varied, comprising several orders and families. Their life-cycle is short and they can be bred in very large numbers with comparatively little cost. The breeding technique is simple and manipulation of the parasites in the field easy.

These parasites have come into prominence since the time of their being used against the sugarcane borer *Diatraea saccharalis* (Fabr.), one of the most serious pests of sugarcane in many of the American States, West Indies, Hawaii etc. They are also used in the control of the codling moth *Cydia (Carpocapsa) pomonella* (L); the Oriental fruit moth *Cydia (Grapholitha) molesta* (Busck); and the European corn-borer, *Pyrausta nubilalis* Hbn. in America. In Russia they are used extensively against the American