THE CULTIVATION OF COLEUS ROTUNDIFOLIUS (POIR.) A. CHEV. ET PERROT (COUNTRY POTATO) IN CEYLON

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THE Country Potato, **Coleus rotundifolius* (Poir) A Chev. *et* Perrot S. *Innala, Ratala,* T. *Korana-kelangu* is a herbaceous annual having leaves with an aromatic smell resembling mint. The tuber too has a distinct aromatic flavour. It is commonly grown in the low-and mid-country wet zone of Ceylon, during the *yala* season as it germinates only during March–April. It is said to be a native of Tropical Africa from whence it was introduced into Asia. In Ceylon it has never been grown on a large scale, but is confined only to small village gardens, being grown for its tubers which resemble the common potato but are smaller and darker in colour. It is a useful substitute for the potato in the diet of the Ceylon people.

Soils.—Best yields are obtained on sandy loam soils well manured with cattle manure or compost. Fair yields can be obtained from loamy soils but heavy soils are definitely unsuitable.

Varieties.—There are two varieties, one a small tubered variety called " Singhala innala " and the other a larger tubered one called " Rata innala ". The latter yields more and is easier to harvest as the tubers are large. The former is favoured by some people as it is more tasty.

Nursery.—After harvesting in December–January, the plump and healthy tubers are stored, preferably covered with a layer of dry sand, to prevent drying, in a cool well-ventilated room. These are reserved for planting in a nursery when germination commences about the end of March. Raised beds are constructed three feet to four feet broad and any convenient length. These are manured with well decomposed cattle manure or compost at the rate of about forty cartloads or twenty tons per acre. The tubers are planted in rows six inches apart and six inches in the row, one tuber in each hole one and a half inches deep. Two inter-cultivations are necessary, one about three weeks after planting and the other about three weeks later. After each intercultivation, application of cattle urine diluted with fifty per cent.

**Coleus rotundifolius* (*Poir.*) *A. Chev. et Perrot* in A. Chev. Veg. utiles Afr. Trop. Franc. I p. 119 (1905) *Germanea rotundifolia* Poir. in Lam. Encycl. Suppl. II., p. 763 (1811); *Plectranthus tuberosus* Blume Bijdr. p. 836 (1826) non A. Rich. *Coleus tuberosus* (Bl.) Benth. Sab. Gen. et Sp. p. 59 (1832); *Coleus parviflorus* Benth. in DC. Prodr. XII., p. 72 (1848.)

water is recommended. Undiluted urine scorches the leaves. If there is no rain, irrigation is necessary, daily during the first week, twice a week during the next three weeks and once a week during the next month. No other attention is necessary, till the cuttings are ready for planting out with the rains, about the end of June or early July.

There are three methods of planting out in the field which will be described later and the amount of seed tubers necessary will depend on the particular method adopted. The methods are (1) planting cuttings in the ordinary way (2) planting coiled cuttings (3) planting cuttings horizontally. For the first method about 8,000 tubers planted in an area of about 2,000 square feet will give sufficient cuttings to plant an acre, while for the second and third methods approximately double and treble the quantities and areas respectively are needed.

If sufficient seed tubers are not available the difficulty of getting enough cuttings can be overcome by planting six inch cuttings from the first nursery, in a second nursery about the end of May or early June and planting out in the field about the middle of August.

If this method is adopted about one-eighth the quantity of seed tubers normally used will suffice. This method is more often the rule than the exception in the Galle district.

Preparation of land and planting.—Innala does not stand water logging, hence planting is best done in ridges, although planting in beds about three feet broad may be done in the drier areas. The land is ploughed about two weeks before planting and harrowed to break up clods. Ridges eighteen inches broad on top are now made either by means of a ridger or with the plough itself. The mammoty is used to complete the ridges according to the required dimensions. They should be eighteen inches broad at the top, twenty four inches broad at the bottom, about eighteen inches high and three feet from centre to centre. Where the area is too small for bullock drawn implements, all the operations are done with the mammoty. If the land is naturally well drained, the ridges and furrows are made on the contour to prevent soil wash. In land liable to waterlogging the ridges and furrows should be at a very slight gradient with shallow silt pits at twenty to thirty feet. Well decomposed cattle manure or compost is applied on the ridges at about ten tons per acre and lightly forked in.

Cuttings with three or four leaves at the top or tender end should be used for planting. In the ordinary method, cuttings about six inches long are planted about three inches deep in rows nine inches apart and nine inches in the row, one cutting per hole and three rows per ridge. This method is quite simple, needs less labour for planting and as stated earlier needs very much less seed tubers. In the coiled method cuttings about nine inches long are used. A length of about five inches of the more mature end is coiled and planted at the same spacing as the first method, in holes three inches wide and two inches deep. The horizontal method, chiefly adopted by villagers in the Galle district, consists in placing cuttings about twelve inches long horizontally across the ridges. Two cuttings are placed on the ridge in opposite directions and almost touching each other. About nine inches of each cutting is on the ridge and three inches outside. The next

pair of cuttings is placed in the same manner about three inches away, and so on. The ridges are now covered with an inch layer of top soil, mixed with cattle manure or compost, if the ridges were not originally manured. In fact if this method of planting is adopted it is more convenient and better to manure after placing the cuttings on the ridge.

In the Colombo district, *innala* is common in most vegetable tracts during *yala* but is never grown on ridges or beds. Holes about one foot square are dug, three feet apart. These are manured with about a basket of cattle manure and four cuttings planted in each hill in the ordinary way. Many cultivators first sow *Hibiscus esculentus*, S. *Bandakka* or cucumber on these hills and plant the *innala* cuttings about a month later. The former is uprooted after its period of usefulness and the *innala* is manured again with cattle manure.

Trials have not been conducted to find out the best method of planting, but from data gathered it appears that the best method is planting coiled cuttings on ridges or beds.

After cultivation.—If a mulch can be applied at a low cost this is recommended as this will reduce weeding costs, otherwise two hand weedings are necessary. One about three weeks after planting and the other about a month later. In certain areas a third weeding may be necessary. Thereafter little or no attention is necessary, as the branches and foliage completely cover the soil and smother weeds. With the first two methods a light earthing-up with soil from the furrows is helpful to encourage rooting at the nodes. This is done after the second weeding.

Harvesting.—The crop is ready for lifting by the end of December or early January, when the plants begin to die. The tubers are formed almost on the surface and there is no difficulty in harvesting which is best done with hand forks. Harvesting of the small variety needs more care, as otherwise some of the smaller tubers will be left behind. Yields vary from three to six tons per acre, the average being about four tons per acre.

Pests and Diseases.—The crop is almost free of pests or diseases. A caterpillar pest sometimes attacks the leaves usually in the nursery, but can be easily controlled by spraying with Lead Arsenate.

Food value and uses as food.—The following is an analysis of *innala* as given by the Agricultural Chemist, Ceylon. The analyses of some other important root crops are also given for comparison :—

	Moisture per cent.	Proteins.	Carbo-hydrates.	Fat.	Fibre.	Mineral Matter.
Innala ..	.. 77·6	1·3	19·7	0·1	0·4	0·9
Manioc ..	.. 67·8	0·8	29·7	0·6	0·7	0·4
King Yam	.. 71·2	1·7	25·5	—	0·6	1·0
Sweet Potato	.. 81·0	1·4	16·0	0·2	0·2	1·2

Innala is usually cooked as a curry and eaten with rice. It is boiled and eaten the same way as manioc and also fried and eaten as chips, which are as palatable as the common potato chips.

Cost of Cultivation.—Innala is one of the most paying food crops. The average cost of cultivation of this crop per acre is given below, based on figures obtained from the cultivation sheet of this crop during "yala" 1945, at the Experiment Station, Peradeniya. The crop grown on a loamy soil yielded five and half tons per acre.

Discription of Work.	Supervisors at Rs. 2·50	Bullock pairs at Rs. 2	Men at Rs. 2	Women at Rs. 1·50	Boys at Rs. 1·50	Cost of Work
Nursery						Rs. c.
Preparation of beds (spreading manure &c.)	1	—	8	5	—	26·00
Cost of 5 cart-loads compost Rs. 7 per cart	—	—	—	—	—	35·00
Planting	—	—	—	4	—	6·00
Weeding	—	—	—	8	—	12·00
Watering during drought	—	—	—	8	—	12·00
Cost of 125 lb. seed tubers at 20 cents per lb.	—	—	—	—	—	25·00
One acre.						
Ploughing	—	2	2	—	2	11·00
Disc harrowing	—	1	1	—	—	4·00
Spike harrowing and collecting weeds	—	½	½	—	2	5·00
Constructing ridges with plough	—	1	1	—	1	5·50
Manuring ridges with compost	—	—	—	6	—	9·00
Cost of 15 cartloads compost at Rs. 7 per cart	—	—	—	—	—	105·00
Completing ridges with mammoty	1	—	20	—	—	42·50
Planting cuttings (including preparation of cuttings)	1	—	—	50	—	77·50
Weeding twice	2	—	—	24	—	41·00
Earthing-up	1	—	10	—	—	22·50
Harvesting with hand forks	1	—	—	80	—	122·50
					Total	561·50

Where preparatory cultivation and ridging are done only with the mammoty the cost will be about Rs. 150 more and the total cost Rs. 711·50. Where preparatory cultivation is done only with the mammoty and no ridging is done the cost will be about Rs. 75 more and the total cost Rs. 636·50.

Taking the average yield of four tons per acre at an average cost of fifteen cents per pound the return is Rs. 1,344 giving a profit of over Rs. 600 per acre.

Conclusion.—Innala has been found to be one of the most paying crops and is also a popular food which can appreciably supplement the diet of the people in Ceylon. It is easily grown, is almost free of pests and diseases and is a suitable crop for any wet zone rotational scheme. There is ample scope for trials and experiments in methods of its cultivation.