

## A Note on Potatoes and their Cultivation in South India.

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*Introduction.* The object of this paper is to make more widely known the possibilities of growing the potato over a wider area in the Madras Presidency than is now being done. At present, its cultivation is practically confined to the Nilgiri District where climatic conditions are more or less suitable for its growth. The potato being bulky and perishable cannot be sent great distances without increasing its cost to such an extent as to place it out of reach of the masses, and if it could be grown by the ryots in rotation with other garden crops for consumption on the spot, I have no doubt that it would provide a cheap and welcome change of diet. The potato, however, is essentially a Hill crop and its successful cultivation below, say, 3,000ft. elevation is very problematical, but there are, I take it, many places in the Madras Presidency about, and above, that elevation, where potatoes are not now grown; and with the many early maturing varieties now on the market it might be possible to grow a crop even on the plains during the cold weather. The main difficulty in the past has been, I believe, the non-existence of a source of seed supply. That want has now been made good and first class seed potatoes in about 20 of the best varieties are now to be had at the Government Seed-Potato Farm near Ootacamund, which is under the control of the Deputy Director of Agriculture, VIII Circle.

*History.* The potato (*Solanum tuberosum*) is a native of the elevated valleys of Chili, Peru, and Mexico and requires a comparatively cool and moist climate for its growth. It was first introduced into N. America, probably by Spanish Voyagers, sometime before 1585, for it is recorded that it was brought to England from Virginia under the patronage of Sir Walter Raleigh in 1586. The Spanish had previously carried it from Peru to Spain and from thence it passed into Italy, France, Germany etc. The potato,

however, was not extensively cultivated in Europe, with the exception of Ireland, until the middle of the 18th century, from which period it has been largely grown throughout the temperate regions of Europe, and America. In Ireland the potato gradually replaced cereals and similar food crops on account of its heavier yield per acre. This brought about a dependence upon one food crop, with the result that when "Irish Blight" (*Phytophthora infestans*) devastated the potato crops in 1846 a famine occurred, and in the short period of two years no less than 600,000 persons died from diseases brought about mainly from want of insufficient or proper food.

The date of the introduction of the potato into India is obscure. But it was probably first brought from Spain during the 17th century. Roxburgh writing at the end of the 18th Century stated that it was largely cultivated in India during the cold weather and eaten by Hindoos. I have no information as to when the potato was first introduced into the Madras Presidency, but it was grown on the Nilgiris in 1821 as it is stated in Sir Frederick Price's History of Ootacamund, page 124, that a potato weighing 5 lbs. was grown in Mr. Sullivan's Garden at Stone-House Hill in that year. The original "seed" was probably brought from Bangalore some years earlier.

*Cultivation.* Potato growing as applied to the Nilgiris is undertaken on very much the same lines as in Europe with the difference that in Europe only one crop is grown annually, whereas on the Nilgiris two crops are usually grown, one called the first or main crop in April—July, and the second or seed crop in August—December. The dates of actual planting and harvesting vary according to local climatic conditions. For instance, in drained swamps the potatoes are sown as early as February, the soil being moist enough to start the tubers into growth before the Spring showers commence. On Hill-sides the first crop is planted at the end of March or early in April, and by the time the tubers commence to grow and require more moisture than the ground can give, the April showers commence, but should these much-looked-for

rains fail to materialise the result is a late crop, which is seriously damaged by the Monsoon. The second crop is only grown on hill-sides and in places where frosts are not likely to occur before it is mature. This as I have stated above is called the seed crop and is grown primarily to provide "seed" for the following year, as it is difficult to keep potatoes in store in the sub-tropical conditions of the Nilgiris from July until the following March, especially as the ryots have little or no facilities for storage.

There is always difficulty in getting "seed" for the second crop sprouted by the end of August as most varieties usually require to be stored in a warm godown for 3 months before the shoots begin to appear, until which time it is not ready for planting since it will not grow readily if planted before. We have artificially sprouted potatoes at Nanjanad on one or two occasions by covering them with fermenting stable manure, with very fair results; but this must be carefully done, otherwise the tubers rot through excessive heat and moisture.

As early as possible before planting, the ground should be dug or ploughed to a depth of not less than one foot and well weathered to destroy insects and weeds. A month or so before the "seed" is sown the ground should be harrowed, and if available, cattle manure applied evenly over the ground at the rate of 10 to 15 tons per acre, or failing it fish guano at the rate of 15 cwts, and well forked in. Drills about 2'3" apart and 6" deep should then be made and the "seed" or "setts" planted in these drills 15" apart and and cattle manure, or a slight sprinkling of fish guano, may be put in the rows before they are covered in. No further cultivation should be necessary until the first earthing, which consists of drawing the soil from either side of the rows towards the potatoes so that the plants appear to be growing on the ridges. This is done when plants are about 6" high and just before this operation a dressing of Nitrate of Soda applied around the plants at the rate of 1 cwt. per acre will be beneficial. This works out at about 2 tea-spoon-fuls per plant. Before application the Nitrate should be finely powdered and care must be taken to apply it *around* and not on the plant, otherwise the haulms will be damaged.

The second and final earthing must be done when the haulms are about 1 foot high and during this operation as much soil as possible should be drawn around the plant, but care must be taken not to cover up too much of the stem. When the haulms, that is to say, the stem of the plant has died down completely, which will be between three and five months from planting according to variety and climatic conditions the crop may be lifted, sorted and dried and placed in the store. The portion of the crop to be reserved for "seed" should consist of tubers weighing about 2 oz. and be well formed and sound in every respect. The balance of the crop, to be used for eating purposes, should be kept in a dark shed, or in bags, to exclude light, otherwise they will become green and unfit for the table.

*Storage.* A most important item is the careful storage of potatoes for seed purposes. In the north temperate regions where the temperature is low during the period the potatoes are stored, that is, October to March, there is little difficulty as regards this matter, but here in Madras where, even in the hills, we have a fairly high day temperature at that time of the year, potatoes soon commence to sprout and deteriorate. From trials made at the Nanjanad Farm it was found that potatoes will keep fairly well several months if spread out singly in a light airy shed. If seed potatoes are stored in this way they will not sprout quickly and when the shoots do appear they will be slow in growth and strong, and will not in consequence have to be removed more than once a month. If on the other hand the seed is heaped up in dark damp places the shoots will appear months before the planting season and will have to be removed two or three times in a month, with the result that when the time for planting arrives the tubers will be weakened and will be quite unfit for planting. Of course the ideal way to treat the seed potatoes is to place them singly in trays made for the purpose, and store them in sheds where full day-light is admitted, and plant them when the first shoots are about half an inch long; but this is not practicable on a large scale, and in a warm climate the shoots begin to grow too soon and have to be removed long before the planting season comes round.

To sum up, the successful cultivation of this most important crop lies in careful attention to detail, for no plant responds more readily to good treatment, and none is more susceptible to bad farming; and although the potato requires a temperate climate in which to grow at its best, good and profitable crops can possibly be grown in many parts of South India where at present the potato is seldom seen.

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**Discussion :—**

*Rao Bahadur J. Chelvaranga Raju*—enquired of the writer whether whole tubers or cut ones were more suitable for planting as seed. Referring to potato-growing experiments at Kavali, he said that, while it was proved potatoes could be grown in the plains, yet it had to be acknowledged that the crop would not prove a commercial success.

*Mr. T. V. Rajagopalacharya*—said that he was of opinion that a trial of early maturing varieties would prove successful. He also remarked that the cold weather temperatures in Bellary and Coimbatore would prove suitable to the growth of potatoes.

*Mr. G. Rajagopal Nayudu*—observed that potato-growing would not prove remunerative in the plains, but added that though the tubers grown on the plains were small-sized they were superior in taste. He was of opinion that by plant-breeding strains profitable for cultivation on the plains might be produced.

*Rao Sahib T. S. Venkataraman*—enquired whether the potatoes on the Nilgiris produced flowers and mentioned that Mr. Venkata Rao Badami of Bangalore—one of our "Old Boys"—was raising seedlings from actual seed and carrying on breeding work.

*Mr. Austead*—said that by growing from seed two varieties, Nanjanad No. 1 and Nanjanad No. 2, had been evolved and were considered to be promising. As to planting cut and whole tubers, he said, whole tubers were certainly preferable, as cut ones were liable to be damaged by insects and fungi. In connection with the cultivation of potatoes on the Nilgiris, he observed, that the chief obstacle

in the development of potato growing was, till recently, what might be called the "Potato Ring." A group of Muhammadan merchants stationed at Mettupalayam had the monopoly of the potato trade on the Nilgiris and the Badaga cultivator was entirely at their mercy. As a consequence the actual rycet did not derive any benefits by the trial of superior or improved varieties. By the kind offices of the Registrar of Co-operative Societies—Mr. Gray, a co-operative association for selling potatoes had been formed and the Badaga had received his emancipation.

*Mr. Butcher*—said that cut tubers were wholly unsuitable for seed. He remarked that on the whole the potato was a healthy crop and the only disease observed was wilting, which might be due to the Ring disease or to excessive moisture. Temperatures varying between 55° and 75° F. were in his opinion best suited for the potato, though it could stand higher temperatures. Frost was its worst enemy on the Nilgiris. He observed that the potato did flower on the Nilgiris but not so freely as in Europe, where potato fields were usually one sheet of bloom. What were known as "Potato Apples" or fruits were obtained from the bloom and from the seeds of such apples the varieties, Nanjanad I and II, had been raised.

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### Star Dust from the Poets.

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While in thy lips thy words thou dost confine,  
Thou art their lord; once uttered, they are thine.

Dean French.

Honour and shame from no condition rise,  
Act well thy part, these all the honour lies.

Alexander Pope.

As one lamp lights another nor grows less,  
So nobleness enkindleth nobleness.

J. R. Lowell.

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