

4. Application of organic and chemical manures increases the yield of roots as well as their oil content as seen from preliminary trials.

5. With the present price of oil, the crop is capable of yielding a much higher profit per acre than most other crops now grown under similar soil and climatic conditions and is at the same time capable of providing employment for a much larger number of people.

6. As the country is not producing even 5% of its requirements of vetivert oil there is bound to be a ready demand for genuine oil for a long time to come. The home-made oil also enjoys a protective duty of 31½% on the imported stuff.

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Exploratory Trials of Virginia Tobacco Cultivation at Nandyal (Kurnool District)

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Introduction: In Guntur district more than 80,000 acres are cultivated with Virginia tobacco. The cultivation of this variety has spread over 12,000 acres in East Godavari, 19,000 acres in West Godavari and 15,000 acres in Kistna, which form the coastal districts north of Guntur. In order to explore the possibilities of extending its cultivation to other areas of the Madras State, a scheme was sanctioned in 1948 with financial aid from the Indian Central Tobacco Committee, for an initial period of two years, with five centres of work at Yellamanchili, Nandyal, Salem, Eliyarampannai and Cuddalore. This article deals with the work at Nandyal Exploratory Station, where the scheme was worked for one year more than the initial period of two years.

Soils and Climate: Nandyal represents clayey soils of medium fertility. The tract receives an annual rainfall of about 28 inches of which 18 inches are received in the South-West Monsoon period, 6 inches in the North-East Monsoon and 4 inches in the Hot-Weather period. The soils and rainfall therefore do not substantially differ from those

found in the neighbouring district of Guntur, which accounts for 75% of the Virginia tobacco grown in the State. Nevertheless, one factor, which finally decides the fate of the spread of the tobacco, was found to be humidity, the lack of which during the curing season was the greatest stumbling block.

Materials and Methods: Nurseries of H. S. Virginia tobacco, an improved strain finding favour in Guntur district, were raised on the Agricultural Research Station, Nandyal and seedlings utilised for the exploratory trials each year. Ten acres was taken on lease adjacent to the Agricultural Research Station for these exploratory trials. Every year six acres were planted to tobacco and the remaining four acres were put under the rotation crop of cholam (Sorghum). Thus during the second and third year tobacco followed cholam in 2 acres, while tobacco followed cholam in all the 6 acres during the first year.

The rotation of Virginia tobacco after cholam has been found to be the most suitable under Nandyal conditions. Its cultivation after chillies, which is followed in certain parts of Guntur can also be adopted. It is however, believed that Virginia tobacco following a cereal crop gives leaf of a higher grade. Being a rainfed tract with a lower rainfall only one crop per year is possible.

During the two seasons of 1948—'49, and 1949—'50, the transplanting of the crop was done in October as followed in Guntur district, the nurseries having been sown in the first fortnight of September. This resulted in the curing starting from the third week of January and ending by the middle of March. From February onwards the atmospheric humidity fell below 75 maximum and 35 minimum, affecting curing and bundling of the tobacco leaves. To get over this difficulty the plantings were advanced to September by sowing the nurseries in the first week of August. Although advancing the season for the nursery and early transplantation is bound up with two adverse factors in Guntur tract such as (1) heavy rains of the early part of the North-East Monsoon washing out the crop and necessitating replanting on a large scale and (2) optimum conditions for curing connected with the prevalence of the humid South-East winds, occurring only from January - February, this advancement has been found to be advantageous under Nandyal conditions. Here the North-East Monsoon is generally weak with light rains and the humid South-East wind has optimum humidity during December - January, gradually decreasing as days pass by. Thus while the second half of October is the optimum for planting in the Guntur tract to produce leaf of the best quality in regard to body, texture etc., the optimum planting period for Nandyal conditions was found to be earlier than October. By this the crop started giving leaf for curing from the middle of December till the end of February. The

leaves cured in December and January were found to lend themselves well for handling, although not as satisfactorily as in Guntur district, where the moisture-laden *pyru gali* (South-Easterly wind) softens the leaf and facilitates easy handling. When the leaves were carried and carefully kept over flowing channels or between paddy fields overnight, it was found that they could absorb enough moisture to become soft for bundling. It was therefore concluded that the difficulties in curing can be overcome by constructing the tobacco curing barns near water sources such as on tank bunds or along the Kurnool - Cuddapah canal, so that the humidity in the atmosphere there, could enable easier bulking. Keeping the cured leaf in underground cellars is also practised.

Growth and Yield of Crop: Due to the annual lease of the land taken for exploratory trials, it was not practicable to manure the fields. This reflected badly on the yields.

The growth of the crop was really good during the first year. An average yield of 507 lb. of flue-cured leaf was obtained per acre. The leaf was also of good size and quality and the number of leaves per plant fit for flue-curing was also above average. The yields however decreased appreciably during the next two years, due to inadequate manuring. A statement of the manures applied and the yields obtained is given below for the three years of trial.

1948—'49 (6 acres)

<i>Manures applied:</i>	<i>Yields obtained:</i>	
1. At the rate of 3 tons of cattle manure per acre.	Flue-cured leaf	3,044 lb.
	Sun-cured leaf	795 lb.
	Total	3,839 lb.
	Average per acre	639.5 lb.

1949—'50 (6 acres)

No manure was applied.	Flue-cured leaf	1,948 lb.
	Sun-cured leaf	740 lb.
	Total	2,680 lb.
	Average per acre	448 lb.

1950—'51 (6 acres)

No manure was applied.	Flue-cured leaf	1,677 lb.
	Sun-cured leaf	880 lb.
	Total	2,557 lb.
	Average per acre	439 lb.

Due to the higher rainfall and the depleted nature of the soils in Guntur tract heavy manuring is practised there. But in the Nandyal tract which is comparatively new to this crop, the manuring may be as

Basal: Farmyard manure 10 cart-loads.

Subsequently: 112 lb. of Tobacco mixture. Heavier dosage than the above will adversely affect the quality of the leaf.

Pests and Diseases: No major pests or diseases were noticed during the three years of cropping. The absence of the plant parasite "*Orobanchae*" otherwise known as '*Tokra*' was one of the redeeming features here.

Future Prospects: The exploratory trials have shown that the crop can be successfully cultivated in the Nandyal tract. Given proper facilities, flue-curing can also be successfully managed. Otherwise sun-curing is the only alternative. During 1950-'51, enterprising cultivators in Cumbum taluk grew an area of nearly 300 acres under this crop. They experienced the same difficulty in matter of humidity for flue-curing purposes. The Imperial Leaf Tobacco Development Company—the premier purchasers of Virginia tobacco have already opened their branch at Nandyal and seem to be assuring a guaranteed purchase for sun-cured Virginia tobacco. The prospects of expansion of this crop therefore seem to be bright, especially when groundnuts, the main industrial crop of this district, is of late giving diminishing returns due to various pests and diseases.

Regular research work may have to be taken up in the years to come as the area under the crop expands and new problems arise.

Use of 'Cut Sets' and 'Whole Seed' for Planting Potato

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Introduction: The use of cut sets, i.e., seed tubers cut into two or three bits according to size, for planting the crop, has been common since the early days of the introduction of the potato as a cultivable food crop. The earliest record of this dates back to the year 1834 when Lindley (8) reported the development of seedlings even from mere potato peelings.