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Fertility Status of Soils of a Typical Dryland Village- Aasur and Thalavaipuram Villages (Kovilpatti taluk)

Drylands occupy more than 60 per cent of the cultivable area in Tamil Nadu. The fertility of the dryland tracts has not been systematically studied though soil testing of certain farmers fields have been done at random earlier. Studies in other states have revealed that the soils in dryland tracts are poor in available nitrogen and phosphorus and that there is a possibility of good response to fertilizer applications (Venkateswarlu 1976; Kanwar, 1977).

Hence a detailed study of the nutrient status of all the fields of two typical villages in the dryland tract viz. Thalavaipuram and Aasur villages in Kovilpatti taluk, was taken up by the All India Co-ordinated Research Project on Dryland Agriculture. The villages were *surveyed during May*, 1980 and soil samples were collected from each of the farm holdings and in cases where there were reported differences in crop growth during previous years, more number of samples were collected to represent those areas also. A total of 208 samples was collected and analysed for available nutrients and other characters by the following methods: available nitrogen - alkaline permanganate method (Subbiah and Asija 1956); available phosphorus (Olsen *et al*, 1965); available potash (Stanford and English 1949); pH (soil to solution ratio 1:2.0); Electrical conductivity (soil to solution ratio 1:2.5) using solu bridge; and organic carbon (Walkley and Black 1934). The classification adopted for the available nutrients status is as follows: Available nitrogen low <113; medium 113-180 and high above 181 Kg/ac, available phosphorns low <10, medium 10-14 and high more than 15 Kg/ac, available potash low <48, medium 48-113 and high more than 114 Kg/ac.

The results of the above study showed that the soils in these villages could be broadly put into two groups viz., black soils and red soils. The former covered about 76 percentage of cultivable area while the latter covered the rest.

The soluble salt content of the soil samples from the black soil area was less than one mmhas/cm and hence could be classified as harmless. The pH of the soils from black soil areas ranged from 6.0 to 8.4. Only 13 per cent of the area fell under the alkaline group. Areawise 24, 71 and 5 per cent of the soils was very low, low and medium respectively in available nitrogen content. Similarly 66, 3 and 31 per cent of the soils was very low, low and medium respectively in the available phosphorus status. Regarding available potash, 58 per cent and 42 per cent of the soils fell under

medium and rich categories respectively.

In the red soils, the soils, the soluble salt content was also less than 1 mmhas/cm (harmless) and the pH of the soils ranged from 5.3 to 7.9. Ninety per cent and 9.7 per cent of the red soils were classified under low and medium available nitrogen status respectively. The available phosphorus contents of 59.1, 31.9 and 9 per cent of the red soils were very low, low and medium respectively. Similar to the black soils, the available potash content was medium and high in about the available potash content was medium and high in about 56.3 per cent and 43.7 per cent of the soils respectively. Also the organic carbon content of the black and red soils ranged from 0.150 to 0.165 per cent and from 0.420 to 0.570 per cent respectively. Compared to the soils of irrigated areas organic carbon content was very poor in these soils and needed to be improved through application of manures like farm yard manure, and compost. Here also there are limitations as the number of bullock pairs available (46 pairs) will not be sufficient to supply even for 20 acres of the cultivable area with farm yard manure. Also other sources like green manure etc. are not available in these villages and hence steps have to be taken to introduce crops as well as other industries that can provide manures to the dryland farmers. The fertility level of soils closer to village site was much better than that at the periphery of the due to better management and as such in the fields away from the village sites, only crops like fodder cholam were grown and in the fields closer to village, grain crops as well as cotton were grown and wherever possible, the farmers manured the feilds and adopted better management practices.

Though the soluble salt content and the pH of the soils of the typical villages were favourable for good crop growth, the available nitrogen and phosphorus of the soils were very low. The available potash status of soils of this village ranged from medium to high. Hence application of nitrogen and phosphatic fertilizers to crop is likely to help in increasing the yields.

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