

Trends in Pepper Cultivation

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India, Indonesia, Malaysia, Brazil and Sri Lanka are the major pepper producing countries in the world today. Pepper is reported to be indigenous to the Western Ghat area of peninsular India. It was introduced into Indonesia from India. In the beginning of the 19th century, Indonesia, Malaysia and other Far East countries started commercial cultivation of pepper, and very soon, Indonesia became a major supplier of pepper in the world market.

The Second World War brought out a complete change. Pepper plantations in Indonesia were totally destroyed by the Japanese when they occupied Indonesia and the West had no alternative but to look to India and once again India became the major supplier of pepper in the world market. The prices started moving up in the world market and hit the ceiling in 1949-50. Stimulated by the high price incentive, the world production of pepper increased substantially during the early 1950's. Malaysia increased her production from 6000 tonnes in 1947 to 17,000 tonnes by 1955 and Indonesia reached a production level of 24,000 tonnes by 1955.

One important consequence of this phenomenal increase in production was a sharp fall in prices. The growth rate in the consumption of pepper during the early 1950's was considered very low even

though the price level was considered very much against the interests of the producer.

After 1955, the demand for pepper increased considerably. The demand from Africa and Asia and the entry of Japan in the world market as a buyer appear to have added to the encouraging situation in the pepper economy. The demand growth rate in the world market has been placed at 4% per annum by the V Session of the Pepper Community held at New Delhi in July 1977. Quantitatively, this would mean that the world would require over 1,70,000 tonnes of black pepper by the end of this decade — an additional requirement of 22,000 tonnes. The National Commission on Agriculture, New Delhi, in its report on pepper has projected the likely future requirement of pepper in India at 41,000 tonnes in 1980, 45,000 tonnes in 1985, 51,000 tonnes in 1990 and 58,000 tonnes in 2000. Thus, there is an immediate need to increase our pepper production not only to meet our internal demand, but also to exploit the opportunity in the international market to enhance our export earnings.

The main question that we should try to answer today is how we can increase our present production and productivity. We have 1,14,000 ha of pepper and our total production today is 31,580 tonnes of dried

berries. The average yield is estimated to be 250 gm/vine which works out to 275 kg/ha if we assume a plant density of 1100 vines/ha. In our country, pepper cultivation is confined to the foot hills of Western Ghats in the states of Kerala, Karnataka and Tamil Nadu. Andhra Pradesh and Maharashtra also have introduced pepper in recent years. Kerala contributes about 96% of the total production, Karnataka 3% and Tamil Nadu less than 1%. Large scale pure plantations of pepper is confined to Cannanore and parts of Calicut and Idukki districts, and together, they account for over 40% of the total area; small holdings ranging from 0.3 to 1.5 ha form about 45% and homestead gardens having a few vines account for the rest of the area. The number of growers engaged in cultivation of this crop is estimated to be about 80,000. The average holding size in Kerala is 0.73 ha.

As in any other crop, the first factor to be considered is whether we can hope for more area to be brought under pepper in the future. Or should we rely on increased productivity from existing areas only? The possibility of extending pepper as monocrop on plantation scale to new areas seems to be limited. First, there is a scope for expansion in coffee and cardamom plantations where 200 — 250 standards can be maintained per hectare. A second possibility is the planting of more vines in homesteads/small holdings as intercrop with coconut, arecanut and other crops. The present estimate is that 45% of the total area of 1,10,000 ha under pepper in Kerala (which works out to 50,000 ha or nearly 50 million standards) is accounted for by small holdings. Even if we consider coconut alone there are nearly 1 million ha of land which can be brought under pepper or nearly 160 million "ready-made" standards. Add to this the total number of arecanut palms available and we can come

up with some wild estimates of possibilities of increasing the number of pepper vines.

As much as we don't ignore this possibility of increasing the area under the crop in mixed gardens, we should recognise that any immediate increase in production will have to be achieved through higher productivity of existing vines.

The most important factor in this regard probably is to arrive at a reliable figure of our present productivity level. The estimates of average yields which we often quote today — 250 gm/vine — is in my opinion a low estimate. These figures are computed on the basis of total estimated production and the total area assumed to be under the crop. What is erroneous in these computations is the estimate of the number of vines per unit area. If we visit contiguous areas under the crop in Cannanore and Calicut districts, we will realise that there are several standards — as much as 30% or more on which the vines are either dead or have become senile, but we still assume a plant population of 1000 — 1100 vines/ha. Most of these vines have died due to diseases like quick/slow wilt or because of age. The surviving vines are invariably in favourable situations like valley bottoms and therefore, the real productivity is more likely to be about 0.5 kg/vine.

Secondly, we don't have reliable estimates of the area under different known varieties. Establishment of nurseries and distribution of cuttings of Panniyur I and other local varieties to farmers are only a recent phenomenon in the improvement of the crop. Also, adequate data on minikit trials in different agroclimatic regions are yet to be gathered. However, we may safely assume that an average yield of about 1 kg/vine is easily attainable if only we can assure better management practices and pest and disease control. Foremost among

the problems faced by the farmers today is the loss of vines due to wilt diseases. This problem will be discussed by pathologists in this Seminar and I don't intend to dwell on this aspect as it is more of a research problem today than a question of non-adoption of recommended control measures by the farmers.

Then comes the question of replanting and replacing diseased vines with new planting material. As long as we don't have known disease resistant varieties, we can only recommend the known high yielding hybrid Panniyur I and other local varieties like Karimunda, Kalluvally and Balankotta. It is gratifying to note that the Central and State Government agencies are taking necessary steps to ensure an adequate supply of superior quality planting materials to the farmers.

Where we lag behind sadly is in our understanding of the nutritional and agronomic requirements of the crop. In earlier days, most of our pepper was cultivated on virgin soils along the Western Ghats after forest lands were cleared. Today, this ideal ecoclimate and soil conditions are no longer available which is reflected in our present day poor yields.

What can we honestly recommend to the farmers? Do we have enough research data for any specific recommendations? Unfortunately the answer is an unqualified "no".

As much as we may claim that research input was meagre until the initiation of the All India Co-ordinated Project on Spices and Cashewnut Improvement and the establishment of the CPCRI Regional Station at Calicut, we must recognise the manurial experiments were conducted on the crop as early as in the early 1920's by the then Madras State Department of Agriculture. The Panniyur Research Station was established in the 1950's. It is true that the station has Panniyur I to its credit,

but what of other agronomic and fertilizer trials? Many agronomic trials were initiated as early as twenty years ago, but unfortunately in spite of the forethought and planning, the technical reports of the projects were mostly a case of missing data. No statistical interpretation was possible because data are missing in too many plots. This has happened probably because of lack of adequate manpower and facilities. This situation must change. We cannot find another location like Panniyur where we can get a plantation of bearing vines for agronomic and other trials. It will take years to establish such a farm. What is lacking at Panniyur is a good laboratory and qualified staff in disciplines like pathology, entomology, soil science and agronomy. If adequate facilities are provided I am sure that by the time we celebrate the golden jubilee of the Panniyur Station we will have a lot more to talk about our achievements as in the case of the Pattambi Station which is celebrating its golden jubilee later this week.

Finally, I would like to identify the areas in agronomy/soil science that require our immediate research attention.

1. The nutritional requirements of the crop, especially when grown in homestead gardens, and trained on coconut, arecanut and other live standards.

2. The role of mineral nutrition in relation to the wilt diseases and spike shedding.

3. Shade requirements of varieties especially of Panniyur I which is reported to be less tolerant of shade than other local varieties like Kalluvally and Karimunda.

4. Water management for the crop, especially the need for a water stress during flowering/bearing stage.

5. The choice of standard, with special attention on the role of live standards in harbouring pests and pathogens *vis-a-vis* the cost of dead standards.