

KERALA KARSHAKAN

English journal

The first English farm journal from the house of Kerala Karshakan

Underutilized **Leafy** **Vegetables:** A Vast Hub of Nutrition



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Nendran is one of the most important banana cultivar of Kerala. It occupies an area of 57683 ha with a production of 411626 t in Kerala. The average yield realized in this popular variety is about 7.14 tons per ha against the potential yield of 30 - 45 tons per ha. One of the reasons for low productivity is imbalanced manuring coupled with improper management of pest and diseases. Deficiency of secondary and micro-nutrients especially Ca, Zn and B has been observed in many banana fields, which might be another reason for low production. It is possible to double the farmers' income by increasing the yield of Nendran banana through integrated crop management practices as detailed below.

Integrated Crop Management Practices

Using Quality planting material

Quality planting materials play a great role in improving the yield. Normally farmers collect suckers from unreliable sources and hence often encounter with many viral diseases like bunchy top, cucumber mosaic and banana bract mosaic diseases. Hence suckers need to be collected from reliable sources like Government farms, VFPCCK and progressive farmers. Another alternative is use of tissue culture (TC) plants ensuring freedom from diseases and

Strategies for Doubling Farmers' Income through Integrated Crop Management Practices in Nendran Banana

uniform bunching. It offers a rapid method of multiplication of quality, uniform, pest and disease free production of planting materials in large quantities. The productivity of banana can also be increased by cultivation of TC plants.

Planting of Improved varieties

There are many cultivars of nendran like Manjeri nendran, Nedunendran etc. which are grown by farmers. In addition, cultivars with improved yields are also available like Myndoli (Quintal Nendran), Big Ebanga and Swarnamukhi (farmer's selection) which can substantially increase yield levels from normal 8 – 10 kg to 16 – 20 kg with a potential yield upto 35 – 40 kg per bunch.

High Density Planting

Normally nendran is cultivated at a spacing of 2 m x 2 m (2500 plants/ha). Tissue culture plants can be used for High Density Planting (HDP) to achieve higher returns. Two approaches are possible to adopt for this. Planting in spacing of 2 m x 3 m with two plants per pit achieving 3332 plants per ha or with a spacing of 1.75 m x 1.75 m with one plant per pit achieving 3265 plants per ha. Studies conducted at ICAR- Krishi Vigyan Kendra, Kozhikode has shown that HDP with two tissue culture plants per pit is more profitable than single sucker planting per pit in realizing more yield and thereby net return from unit area. An average yield of 24.2 kg per pit of two plants was obtained in HDP while single sucker planting yielded only 9.8 kg per pit.

Integrated Nutrient Manage-



ment

Organic manures such as cattle manure, compost or green leaves have to be applied at the rate of 10 kg per plant at the time of planting. In acidic soils, 0.5 to 1.0 kg of lime or dolomite also needs to be given at the time of planting. Normally recommended chemical fertilizers of $N:P_2O_5:K_2O$ @ 190:115:300 g per plant per year are applied in two equal split doses, the first at two months after planting and second four months after planting. In order to improve finger size and bunch weight, fertilizers can be applied in six split doses at monthly intervals starting from one month after planting to five months after planting and also once just after complete emergence of the bunch. Among these, phosphatic fertilizers are recommended at one and two months after planting.

Generally deficiency of

secondary and micro – nutrients are widespread in nendran tracts especially in TC plants. Calcium and Boron are found to be more deficient compared to other nutrients. At present two technologies are available to manage this problem. One is foliar application of the nutrient solution (ICAR-IIHR, Bangalore technology) and another soil application of nutrient mixture (KAU, Thrissur technology). The foliar application @ 5g/l of water is to be carried out at monthly intervals from four months after planting till bunching and once after bunching also. The soil application is recommended at two and four months after planting @ 100 g each per plant. Either of these two applications can improve yield levels by 15 – 20 per cent. Pre – harvest bunch sprays of 3 % Potassium Sulphate twice, the first two weeks after bunch emergence and second four





weeks after bunch emergence can also increase the fruit yield substantially.

Intercropping

Intercropping with vegetables and tubers like cucumber, amaranthus, greater yam and elephant foot yam are suitable crops for inter cropping.

Innovative ways and means to increase the bunch weight

Observations from farmers practice of feeding banana bunches with fresh cow dung enhanced finger size and marketability. Both KAU, Thrissur as well as ICAR – Indian Institute of Horticultural Research, Bangalore has recommended bunch feeding with chemical fertilizers. The technology of enhancing the size of fingers of banana in the bunch to suit the market demands by de-navelling and post-shooting feeding of N, K and S through the distal stalk-end of rachis was successfully developed. De-navelling saves mobilization of nutrients into the unwanted parts of banana plant and earns additional income when the excised male bud is used as a vegetable. The technique involves

blending of a solution containing 7.5g of urea and 7.5 g of sulphate of potash dissolved in 100 ml water with 500 g of fresh cow dung and applying the slurry to the de-navelled stalk-end of bunch soon after fruit set. About 10-15cm long rachis should be available after the last hand to tie the plastic bag with a strong string. It was found that by this treatment, the bunch weight increased by 67% over 'control' in which the male flower was retained till harvest. The technology is very cost effective also.

Timely management of pests and diseases

Banana pseudostem weevil, rhizome weevil, aphids and root mealy bugs are major pests that affect yield of banana. In addition, Sigatoka leaf spot, bunchy top disease and Kokkan disease also lead to yield loss. Timely management of these problems with recommended PP measures will ensure good yield in nendran.

Value chain development and market linkages

One of the major prob-

lems faced by banana farmers is intermediaries taking a major share of profit of the crop. In order to solve this, agencies like VFPC have started farmers markets where farmer themselves have started procurement centres ensuring a reasonable profit level for farmers. Government has also started Agriculture Wholesale Markets in major locations, where farmers can bring their produce and sell directly avoiding middlemen.

Mean while, value addition of banana also potential to increase the farm income. It may be planned with involving community and marketing in all parts of the state.

Policy decisions

The following points need to be taken care of by policy making bodies/ government to ensure a reasonable profit level for banana farmers.

1. Loss due to natural calamities is major problem faced by farmers. The present compensation is inadequate and procedure to avail this is cumbersome. Hence these should be simplified with a

Summary of successful technological interventions to improve yield of nendran banana

Technology	Present Status	New Strategy
Usage of Quality planting materials 1. Suckers 2. Tissue culture plants	Mostly suckers are used for planting. Only a very few farmers use TC plants.	To ensure disease free and quality planting materials, TC plants should be used for planting.
Planting of Improved varieties	Only local cultivars like nedunendran, manjeri nendran etc. are used by farmers.	Improved cultivars like Big Ebanga, Myndoli, Swarnamukhi with high yield potential of upto 45 kg per bunch can be recommended.
High Density Planting (HDP) of banana	Very rarely practiced by farmers.	By adopting HDP (2 m x 3 m spacing and 1.75 m x 1.75 m spacing), yield can be increased manifold.
Integrated Nutrient Management	Unbalanced use of fertilizers with complete absence of secondary and micro – nutrients lead to nutrient deficiencies and ultimate low yields.	By the use of balanced application of fertilizers including micro- nutrients, yield can be improved 15 – 20 per cent.
Intercropping	Practiced by a very few farmers.	Cultivation of inter crops especially legume crops increases soil fertility, reduces weed growth. Other intercrops like vegetables give additional income to farmers.
Timely management of pests and diseases	Indiscriminate as well as untimely use of pesticides leads to pesticide residues.	By following recommended pest management measures, yield loss can be minimized.
Innovative ways and means to increase the bunching	A few farmers are using bunch feeding of FYM/cow dung to increase finger size as well as to improve quality as well as appearance.	Bunch feeding / pre – harvest bunch sprays of chemical fertilizers as per PoP of KAU as well as ICAR-IIHR can enhance yield by 15- 20 per cent.
Value added products development and Value chain	Used rarely by farmers except banana chips making.	Technologies developed by ICAR – NRCB, Trichy and KAU, Thrissur may be popularized for additional income for farmers.

higher compensation package.

2. Though there are agencies that procure bunches, the present system is inadequate to collect the majority of the produce in the main cropping season. So it should be strengthened. Proper warehouse for storage of harvested produce is another requirement.

3. Though TC plants are the best for planting, its availability is limited to only a few locations. This should be improved by opening of more tissue-culture centres.

Summary

Banana is a crop that responds positively to crop management practices for an enhanced yield in a short period. It is amenable well to different integrated crop management practices in its short duration of one year and hence a multi-institutional approach involving all stakeholders can definitely bring about the ultimate aim of doubling farmers' income.

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