

Safed Musli



1. Introduction :

Safed Musli (*Chlorophytum borivilianum*) is a tuber crop belonging to the family Liliaceae. It is partly a herb with sub-erect lanceolate leaves. There are about 256 species of Chlorophytum and 17 among them are found in India. Among these, *Chlorophytum borivilianum* has good market both indigenously and globally. It is an annual crop capable of giving good returns to farmers under irrigated conditions. Safed Musli is found growing in thick forests in its natural form. The roots of safed musli is reported to contain 2-15% saponin, which has the medicinal property of enhancing vitality and immunity to human beings. It also helps in correcting gynaecological disorders. There are many other therapeutic uses of safed musli where dried tubers are used as a curative for pre-natal and post-natal illness, arthritis, restorative and a health tonic etc. Because of its medicinal property, safed musli is known as divya aushadhi and ayurvedic anori. Safed musli is naturally grown in the hilly areas of Gujarat, Rajasthan and Madhya Pradesh. It is reported that the annual demand for dried safed musli roots is 500 t in India. The natural source is getting fast depleted necessitating field cultivation of this medicinally important crop.

Chemical fertilisers have played a significant role in Indian agriculture facilitating green revolution and making the country self reliant in crop production. However, concentrated and continuous use of easily soluble chemical fertilisers disturbs soil health, leading to acidification, micro nutrient depletion, soil degradation, reduction in the activity of soil micro flora and fauna, poor crop health and lower crop yields and quality. Besides, use of fertilisers may contribute to environmental risks like increase in global temperature, ground and surface water pollution, etc. In view of this, it is desirable that we may have to return to less resource demanding agricultural practices viewing the gaps in domestic production as also nutrient depletion estimates. In this direction, organic farming offers scope to mitigate the above problems especially to medium and large farmers who can create their own organic manurial resources / do recycling of farm waste. The National Programme on Organic Production (NPOP) of Government of India has defined Organic Farming as a " holistic system of farm design and management that seeks to create healthy ecosystem which can achieve sustainable productivity without the use of artificial inputs such as chemical pesticides and fertilizers".

2. International Scenario :

The cropped area under organic farming was 26.4 million ha. with an estimated production of 26 million tonne. The organic market, though growing, is still in a nascent stage and accounts for 1 % of conventional agricultural production and consumption. Almost 92% of the organic industry comprises of farm products and 8% of animal products. Over 95% of organic products are reported to be consumed in developed countries. The major producers and importers of organic products are European Union, United States of America and Japan.

3. National Scenario :

In Indian agriculture, organic manures have been used since Vedic period and Sir Albert Howard, a British agronomist had started organic agriculture way back in 1900. Since then farmers in some parts of India have been practicing it either by default or under compulsion in the absence of resources. According to a survey of IFOAM and Stiftung Oekologie & Landban (SOEL), February 2005 India had about 76,326 ha land under organic management, which is only 0.05% of total agricultural land. According to the survey there were about 5,147 certified organic farms in India.

The Indian organic farming industry is estimated at US \$ 20 million and is mostly export oriented. As per APEDA report annually about 6792 t of organic products worth Rs.72 million are exported from India. The data on area and production of Safed Musli both under organic as well non-organic mode is not available. However, Safed Musli is cultivated in most states of the country, the prominent amongst them being Madhya Pradesh, Maharashtra, Punjab, Andhra Pradesh etc. Based on agro climatic suitability, Safed Musli can be cultivated in Eastern, Western, Central and Southern Plateau and Hill regions, East and West Coast Plains and Hill regions and Gujarat Plains and Hill regions comprising the states of Bihar, Orissa, Madhya Pradesh, Uttar Pradesh, Rajasthan, Maharashtra, Andhra Pradesh, Karnataka, Kerala, Tamilnadu and Gujarat.

4. Organic farming in Madhya Pradesh :

Madhya Pradesh is one of the fore runners in promotion of organic farming. The State Government has adopted a concept called Bio farming through bio-villages for the promotion of organic farming. Bio-farming is implemented in 1565 villages selected from 313 blocks of 48 districts in the state. It is reported that the message of growing crops through organic resources is spreading from village to village through farmers contact programme.

The survey conducted by the Indian Institute of Soil Science (IISS-ICAR), Bhopal on organic farming in Central Madhya Pradesh revealed that the major crops grown under organic farming are soybean, wheat, lentil, safed musli, maize, pigeon pea, vegetables and sugarcane. The survey

also revealed that more number of large and medium farmers are involved in organic farming as compared to small farmers. The average area under organic farming varied from 0.80 ha (with small farmer) to 5.00 ha (with large farmer)

Adoption of organic farming is reported to have a positive correlation with the number of cattle maintained by the farmers, in the state. The large farmers have more cattle and hence more resources for organic manure which facilitates more area under organic farming. Compost or Farm Yard Manure (FYM) is the common source of organic manure used by the farmers, followed by Vermicompost and Narayan Devaraj Pandey (NADEP) compost. Farmers are also using bio-gas slurry, green manure and cow horn manure. Poultry manure, neem cake, karanjee cake and bio-fertilizers like rhizobium, azospirillum, phosphate solubilizing bacteria etc, are the other supplements under off-farm organic sources.

The IISS survey has indicated that the quantum of organic manure applied by the farmers do not have any scientific basis to meet the nutrient requirements of the crops grown. The quantity applied is based on the on-farm availability and the nature of crops grown. However, the periodicity of application is found to be regular, either every season or crop grown under organic farming as against application once in two or three years under conventional farming.

5. Organic Production :

5.1 Climate and Soil

Safed Musli can be grown in hot and subtropical climate. Normally the agroclimatic conditions suitable for potato, onion and garlic are also suitable for safed musli crop. Well drained soils with rich mineral content is ideal for this crop. Hard and acidic soils are to be avoided.

5.2 Propagation

Fingers or tubers are commonly used as planting material. Before planting, the fingers are separated in such a way that each finger has a portion of crown disk attached to it. Seeds can also be used for planting, but for good results fingers are preferred. Tissue culture plantlets can also be used for planting.

5.3 Planting

Being a kharif crop, sowing starts with the onset of monsoon. Planting of fingers is done in beds or ridges depending on the slope and drainage of the soil. Generally fingers are planted at a distance of 35 to 40 cm. About 80,000 fingers weighing 10-12 q are required for planting in one hectare.

5.4 Manuring

Vermicompost, well decomposed organic manure and FYM are the major sources of organic

manure. 30 to 35 t/ha of organic manure is applied to take care of the major and micronutrient requirements of the crop and also soil conditioning, biological activity enhancement etc.

5.5 Plant Protection

Diseases like leaf spot, anthracnose and wilt affect this crop. Spraying of neem or chrysanthemum or tobacco extracts (upto permitted levels) or application of *Trichoderma* etc., are adopted under organic growing. Plant extracts and biological agents are also used for pest control.

5.6 Harvesting

Three to four months after planting, the leaves start yellowing. Subsequently they become dry and fall off and get detached from the tuber/ disc. The moisture level in the soil should be maintained for another two to three months. After this, the skin of tubers mature and it turns dark brown. At this stage the tubers and fingers are dug out.

5.7 Yield

On an average the crop gives a yield of 40-50 q of wet musli tubers per ha. After peeling and drying nearly 20% dry musli (8-10 q) is finally obtained.

6. Processing :

After digging out the musli tubers from the soil, they are thoroughly washed in fresh water. The large and healthy fingers are separated from the tubers and the small ones are kept aside to be used as planting material for the next season. The large fingers are taken for processing. The outer brown skin is peeled off with a stainless steel knife and sun dried for three to four days. Dried fingers are packed in polythene bags and sent to the market.

7. Linkages :

Safed musli is one of the important medicinal crop grown in Madhya Pradesh. Organic growing of safed musli is gaining importance among the farmers, mostly because of the bio-farming and bio-villages concept promoted by the State Government and other support systems made available through National Horticulture Board (NHB), National Horticulture Mission (NHM) etc., for organic interventions.

Safed Musli is mostly marketed locally in Madhya Pradesh. The weekly mandies at Indore (Tuesday), Mansur (Thursday), whole sale buyers at the farm are the major market outlets for safed musli in the State. Besides, the crop is also marketed at Organic India, Lucknow; Baidhyanath, Lucknow/Delhi etc. However, a separate / premium price for organic safed musli is yet to be stabilised in these markets mostly because of lack of awareness and certification for

organic systems. With the area expansion under organic safed musli, the situation is likely to improve and incentive price for organic products is expected to be introduced in the markets.

8. Financial Aspects :

8.1 Unit Cost

The unit cost for organic cultivation has been worked out based on the technical and financial parameters indicated in Annexure II. The unit cost for one ha of organic safed musli works out to Rs.518000. The details of the unit cost are given in Annexure I.

8.2 Sale Price & Income

The average domestic price of good quality dry musli is Rs.450/- kg and from one hectare a gross income of Rs.3.60 lakh to 4.50 lakh can be obtained.

8.3. Margin Money

The percentage of margin / down payment to investment cost prescribed is 5, 10 and 15% for small, medium and large farmers respectively. The rest of the investment cost will be provided as bank loan. Margin considered in the present model is 10%.

8.4 Bank Loan

Bank loan of 85 - 95 % shall be available from the financing institution. Bank loan considered in the model is 90%.

8.5 Interest Rate

The rate of interest to be charged to the ultimate borrower would be guided by RBI guidelines issued from time to time. However, the ultimate lending rate has been considered as 12 % for working out the bankability of the model scheme.

8.6 Security

Banks are guided by RBI guidelines issued from time to time in this regard.

8.7 Financial analysis

The detailed economics for one hectare model of Safed Musli has been worked out based on the

discussions and data collected on the techno-economic parameters, and the same is given in Annexure III & VI. Some of the important financial indicators are given below :

- NPW : Rs.462837
- BCR : 1.52 : 1
- IRR : > 50%

8.8 Repayment schedule

Based on the cash flow the detailed repayment schedule has been worked out in Annexure V. The bank loan along with accrued interest can be repaid in five years including a grace period of six months.

9. Conclusion :

Based on detailed economics, the one hectare model for organic cultivation of safed musli is found to be technically feasible, financially viable and bankable.