

BY: DR VIGNESHWARA VARMUDY

# CASSAVA CULTIVATION AND EXPORT: VAST SCOPE IN INDIA

There is a vast scope for cassava in our country. In order to promote the use of cassava, research attempts are needed to develop starch extraction technologies and to modernise the age-old equipment used in cassava products manufacturing units. There is also an urgent need to extend cassava technologies to non-traditional areas.



## Nutritional value and uses of cassava

The cassava root contains 30-40 per cent dry matter, which is principally carbohydrate. It has acceptable levels of vitamin B and other minerals. The leaves contain high levels of protein, i.e., 8-10 per cent on fresh-weight measurements. Various parts of cassava plant have medicinal values. As a human food, the cassava root is prepared in many ways, *viz*, boiled, baked, fried as meal, flour and even as beet. Starch extracted from the root is used to make a wide range of sweet and savoury foods such as tapioca pearls, noodles and cheese breads.

Cassava is grown extensively in the tropics of Africa and Asia. The major producers of cassava are Nigeria, Brazil, Indonesia, Thailand and the Democratic Republic of Congo. India stands tenth in the production of cassava in the world.

## Cassava in India

In India, the cultivation of cassava is mainly done in Kerala, Tamil Nadu, Andhra Pradesh, Nagaland, Meghalaya, Assam, etc. Tamil

**C**assava (*Manihot esculenta*) is the most widely cultivated root crop in tropics and is grown across a broad range of agro-climatic conditions. It is native to South America and is a basic food for millions of people around

the world. The cassavas are shrubby perennials with stems that reach a height of 274cm and above. Tapioca is the starch that comes from the roots of cassava, which is commonly used as a food thickener, and is best known as an ingredient in tapioca pudding.

Nadu stands first both in area and production followed by Kerala and Andhra Pradesh. As per the second advanced estimates for the period 2012-13, the total area under tapioca in India is 216.66 thousand hectares and the production is about 7319.13 thousand metric tonnes. Table I shows data on area and production in different states during 2012-13.

In Tamil Nadu and Andhra Pradesh, it is grown under open conditions whereas in Kerala about 40 per cent of cassava is raised as a mixed crop. About 40 per cent of cassava in Tamil Nadu is intercropped with short-duration crops such as cowpea, black gram, groundnut and vegetables. In Karnataka, it is grown along with areca, coconut and rubber. The mixed cropping system practiced in these states provides the much needed additional income to the small and marginal farmers.

### Varieties of cassava

The farmers cultivate cassava for edible and industrial purposes. The edible varieties are Sree Visakham, Sree Sathya, Sree Jaya, Sree Vijaya, Sree Rekha and Sree Prabha. For industrial purpose, the available varieties are H-97, H-165, H-226, Sree Harsha, etc.

### Harvesting and marketing of cassava

The cassava tubers get ready for harvest within eight to twelve months depending upon the variety. For domestic consumption, it is harvested in about six months after planting. As far as the marketing system is concerned, there is no organised market for cassava. Farmers either market it on their own or sell it through the contract system. In the contract system, the contrac-

Table I  
**State-wise Area and Production of Tapioca During 2012-13**  
(Second advance estimates)

State	Area ('000 hectares)	Production ('000 metric tonnes)
Tamil Nadu	109.56	4205.82
Kerala	72.47	2637.20
Andhra Pradesh	16.45	329.02
Nagaland	6.00	50.00
Meghalaya	5.60	30.05
Assam	4.48	38.31
Karnataka	1.00	12.90
<b>Total (including others)</b>	<b>216.66</b>	<b>7319.13</b>

Source: Ministry of Agriculture, Government of India

tor strikes a bargain with the farmer and a price is fixed. Because of this, the effective price received is always less than what the farmer gets by selling directly.

### Value-added products of cassava

**1. Sago** is the processed food starch of sweet potatoes, which is marketed in the form of small globules or pearls. Sago production units are located in Tamil Nadu, Andhra Pradesh, Gujarat and Maharashtra. *Moti*, medium, *bada dana* and nylon sago are the different types of sago produced in India. Nylon sago is produced in Tamil Nadu and Andhra Pradesh. More than 400 sago-producing units are located in Tamil Nadu alone.

Although sago production is confined to Tamil Nadu and Andhra Pradesh, it is consumed throughout the country. Maximum volume of sago is consumed in Maharashtra for the preparation of *khichdi*, *upma*, *bonda*, *payasam*, etc. In West Bengal, sago is used as a baby food. In other parts, it is used in preparing *payasam* and wafers. The demand for sago is generally more during festival seasons.

**2. Broken sago.** It is used in the textiles and sizing industries, and it is produced in Tamil Nadu and Andhra Pradesh. The marketing centres for broken sago are West Bengal and Maharashtra.

**3. Starch.** Starch is the most important value-added product produced from cassava. It is produced in Tamil Nadu and Andhra Pradesh. Approximately 400-500 starch-processing units are located at Salem, Namakkal, Erode, Dharmapuri and Tiruchirapalli districts of Tamil Nadu, and some units are located in Kerala also. As

a whole, 90 per cent of the cassava starch produced in India is from Tamil Nadu only.

Starch is used in textile industries, adhesives, dextrin, pharmaceuticals, confectionaries, laundry, paper industries, etc. It is marketed mainly in Gujarat, Maharashtra, West Bengal, Andhra Pradesh and Tamil Nadu. Out of the total production of cassava, starch textiles consume 40-50 per cent, adhesives consume 20-25 per cent, 10 per cent goes in food, 5 per cent in pharmaceuticals, liquid glucose and modified starches and 5 per cent in citric acid, ethanol, maltodextrins, etc.

**4. Chips and flour.** Andhra Pradesh, Tamil Nadu and Kerala are involved in the production of chips and flour. These are used in cattle feed units, adhesives, sizing, snack foods, etc. The marketing centres for these products are Maharashtra, Andhra Pradesh, West Bengal and Tamil Nadu.

**5. Wafer and papad.** These are produced in Tamil Nadu. Demand for wafers is more in northern states like Delhi, Uttar Pradesh, Gujarat and Maharashtra.

**6. Raw tubers.** These are produced in Kerala, Assam, Tamil Nadu and Andhra Pradesh and are con-



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Table II  
**Export of Cassava and its Value-Added Products During 2012-13**

Commodity	Volume (metric tonnes)	Value (Rs million)
Manioc (cassava) starch	244.50	6.603
Manioc (cassava)	2011.57	73.737
Tapioca and its substitutes	1846.53	77.192

Source: DGCIS Annual Export

sumed by humans. The raw tubers are also used for cattle feeding. Tubers are marketed in Kerala, Tamil Nadu and Andhra Pradesh.

### Export of cassava and its products

India exports cassava and its products such as raw tubers, flour, meal of sago, starch of manioc and sago and tapioca and its substitutes to countries like United Arab Emirates, Saudi Arabia, Oman, European nations, Kuwait and the United States of America. These products are exported through different ports. The Cochin port handles frozen cassava which is mainly exported to the Gulf nations. The commodities exported to European countries through Kakinada port are cassava dried chips. Sago, starch and sago *papad* are exported to the United States of America, Sri Lanka and Australia through the Chennai port. Along with these, Mumbai port also handles export of cassava products; however, the destinations are the Gulf countries, Australia and the USA. These products are also exported to Bangladesh through Kolkata Port.

The data on the export of cassava and its value-added products is shown in Table II.

As far as Cassava starch export is concerned, UAE accounts for about 40 per cent of the total exports during 2012-13 followed by Nepal with 13.66 per cent and Kuwait with 13.62 per cent. As a whole, cassava

is exported to 16 countries including but not limited to Sri Lanka, Mexico, Saudi Arabia, and Malaysia.

In terms of the export of cassava, Saudi Arabia stands first and its share is 25.37 per cent followed by Oman 21.8 per cent and the shares of the UK and Qatar are 10.77 per cent and 10.76 per cent, respectively. About 21 countries import cassava from India.

India exports tapioca and its substitutes to more than 45 countries including but not limited to UAE, Saudi Arabia, Nepal, the USA, Netherlands, Qatar, Oman, the UK, etc. The share of UAE is 21.35 per cent, followed by Saudi Arabia at 18.72 per cent, Nepal 10.16 per cent, the USA 9.24 per cent and the Netherlands 8.54 per cent.

### Problems

1. Non-availability of qualitative high-yield hybrid varieties of cassava. The quality of the available cassava hybrids is poor as compared to the local popular cultivars. As the major chunk of cassava production goes into direct consumption, the quality of the product becomes an important aspect.

2. Frequent attack of diseases, especially the cassava mosaic virus, tuber rot, etc create problems in its cultivation.

3. Lack of effective research towards evolving varieties with short-duration cultivation, drought tolerance, shade tolerance, resistance to diseases and pests, suitable cropping systems for both uplands and lowlands, etc.

4. Poor resource base of the farmers limits the scope for the adoption of proper technologies.

5. Poor shelf life of cassava tubers.

6. Lack of information on the price behaviour, market demand and marketing channels.

7. Absence of a proper marketing system.

8. Lack of awareness about the product diversification.

9. Lack of any well-defined policy from the Indian government reduces the scope for its improvement.

10. Lack of organised efforts in tapping the export potential of cassava products.

### Future prospects of cassava cultivation

The use of cassava as a human food and in the form of value addition has increased in the recent years. Cassava is rapidly becoming a major industrial crop. There is a vast scope for area expansion in our country. The advantages from this are: the rate of dry matter is the highest amongst all the crop plants and it can be grown under a wide variety of climatic and soil conditions. Also, it provides rich sources of energy, vitamins, minerals, etc. All these point towards the positive effects of increase in the production of cassava in India. In this regard, the following steps are useful:

1. Adopting high-yield disease-free varieties with high starch content.

2. Identifying and supplying short-duration early-bulking cassava varieties.

3. Research directed towards water, nutrient and drought management to augment productivity.

4. Developing cassava-based value-added products like cassava as a plastic crop, as a fish feed binder, cassava tissue culture, etc.

5. Popularising the use of cassava food items such as chips, wafers and breakfast foods.

6. Integrated management strategies to overcome the problem of diseases.

7. As the demand for liquid glu-

cose and dextrose is increasing in food and pharmaceutical industries, the scope of converting cassava into glucose/dextrose is more; hence, efforts are needed to make use of these opportunities.

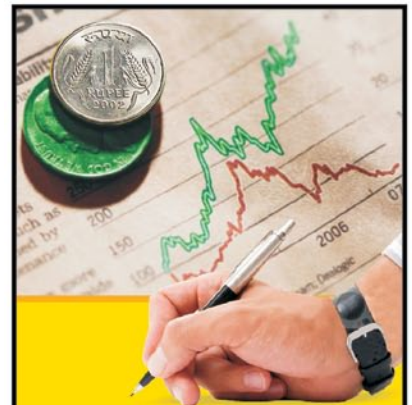
8. Need for organised efforts to tap the export potential. In this regard, studies should be conducted on market assessment for export potential exploration, on export demand assessment of cassava-based products and on policy issues for the development of exports.

9. Spot surveys on pre- and post-harvesting aspects are needed to assess the future demand for cassava.

Cassava has so far been utilised mainly as a fresh food and for the production of starch and sago. The country may require a minimum of 10 million tonnes of cassava by 2025 as per its present demand and growth rate, and the starch and sago production may be more than 0.5 million tonnes in the coming 25-30 years. As a whole, there is a vast scope for cassava in our country. In order to promote the use of cassava, research attempts are needed to develop starch extraction technologies and to modernise the age-old equipment used in cassava products-manufacturing units. There is also an urgent need to extend cassava technologies to non-traditional areas.

Cassava has a number of attributes like it is an efficient carbohydrate-producing crop, has tolerance to low soil fertility, has the ability to recover from biotic stress, can be adaptable to multispecies agricultural cropping system and is an alternative crop for small-scale farmers who have limited resources in marginal areas. By considering all these attributes, there is an urgent need to improve cultivation of cassava and manufacturing of its value-added products in our country. ■

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