Kosi zone of Bihar – Potential area for coconut

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Agriculture is the core of Bihar's economy, employing 77% of the workforce and generating 35% of the state domestic product. With 88 % of the state's poor living in rural areas, improving agricultural performance and related rural non-farm activity is critical for improving the livelihood and reducing poverty. Coconut is a traditional plantation crop of India and assumes the status of a high value commercial crop and coconut gardens offer excellent opportunities to exploit the inter-space potential for maximizing returns per unit area. Sustainability is the main objective of farming system, where production process is optimized through efficient utilization of the inputs in safeguarding the environment.

Fig. 1 Agroclimatic zones of Bihar

Suitability of Bihar for coconut cultivation

The state of Bihar is a land-locked state situated on the eastern part of India. It is situated between 83°-31°' to 88°-00° E longitude and 21°-58° to 27°-31° N latitude. The climate of Bihar is mostly semi-arid, sub-tropical, experiences moderate rainfall, hot summer and cold winter. Nevertheless, this region being close to Tropic of Cancer experiences tropical climate during summer. Average maximum temperature is 35°-40°C throughout the summer months and the average minimum temperature during the coldest month of December and January goes down to 5° to 10°C. Bihar gets its maximum rainfall during South-West monsoon season which prevails from June to September. The natural precipitation ranges between 990 mm and 1700 mm, with an average annual rainfall at 1205mm. Thus the climate of Bihar is not much suited for the cultivation of all plantation crops, even though the crops like coconut, betel vine and tea are successfully grown in some of the pockets of the state. Plantation crop requires a moderate climate with respect to temperature with high humidity and do not thrive well under extremes of climate. An average temperature of about 25°-35°C and humidity above 60 per cent is ideal for most of the plantation crops. It requires less variation in diurnal temperature and well-distributed rainfall throughout the year.

Based on soil characterization, rainfall, temperature and terrain, three main agro-climatic zones in Bihar have been identified. These are: Zone – I (North West Alluvial Plain), Zone – II (North East Alluvial Plain), and Zone-III (South Bihar Alluvial Plain). The climate of Zone II commonly known as Kosi zone consisting of the districts like Kisanganj, Araria, Purnea, Katihar, Eastern part of Madhepura, Saharsa, and some parts of Bhagalpur covers 11.96% (20797.4 km2) of the total geographical area of Bihar

Coconut based cropping system in Bihar

Nursery at CDB, Madhepura farm

has been found to be suitable for coconut cultivation (See Fig-1). The zone experiences an average minimum temperature of 8.8°C and maximum temperature of 33.8°C. This zone has a network of rivers like Bagmati, Kosi and other small rivers, thus humidity is quite high as compared to other areas of the state.

Potential area of coconut cultivation in Bihar

The area of coconut in the state is about 14090 ha with an annual production of 141 million nuts (Database, 2016-17, CDB). Coconut planted in these areas is mostly of tall type and most of the plantations are stray backyard or bund plantation. However few orchards in Katihar and Purnea districts have also been established. The soil under the influence of these areas is mostly new alluvium, non- calcareous and non-alkaline soil. The districts in Zone II have the potential for coconut and hence effort should be made for further expanding area under coconut cultivation in this zone.

Status analysis of coconut in Bihar state:

Following SWOT analysis has been carried out with regard to coconut in Bihar

A.STRENGTHS:

1. High demand for coconut:

- There is much scope of coconut in Bihar especially in some of the districts where in suitable weather condition exists, the crop can be exploited at a commercial level.
- Demand is very high for tender coconut during the months from March to August and for matured nuts demand is very high during Dussehra and Chchath Puja in the month of October- November.

2. Suitable climate in some of the districts:

- The climate of Zone II commonly known as Kosi zone consisting of the districts like Kisanganj, Araria, Purnea, Katihar, Eastern part of Madhepura, Saharsa, and some parts of Bhagalpur has been found to be suitable for coconut cultivation.

3. Suitable for bund planting:

- Coconut can be planted on bunds of the field crops in the suitable area for getting additional income.

4. Demonstration cum Seed Production (DSP) Farm:

One of the Centre of Coconut Development Board (CDB), a statutory body established under the Ministry of Agriculture and Farmers Welfare, Government of India has established a Demonstration cum Seed Production (DSP) Farm in Bihar at Madhepura with the following thrust area:

- Increasing the production of quality planting material.
- Creating future production potential by bringing more area under coconut.
- Improving the productivity of existing coconut holdings.
- Integrated management of major pests and diseases.
- Strengthening coconut industry by promoting product diversification and by-product utilization.

High yielding germplasm

Hence proper policy should be made for optimum utilization of facilities and bringing additional area under coconut cultivation the suitable region.

B. WEAKNESSES

1. Lack of awareness about health benefits and potential of coconut.

2. Lack of awareness on coconut production technology:

- People are not much aware of the technology know how for successful cultivation of coconut even the area where coconut can be grown successfully.

3. Lack of recommended suitable varieties:

- There are no recommended varieties for this region. Experiments are under progress to identify the suitable variety of coconut under AICRP on Palms (Coconut) and Sabour centre to identify the varieties suitable for this region.

4. The agronomic and plant protection practices for the crop demands special type of skilled labour.

C. OPPORTUNITY

1. Suitability of different genotypes:

- During a survey of the coconut growing area under the state, it was found that different types of germplasm exists with good nut yield.

Following genotypes have been noticed during the survey and seednuts have been collected for further multiplication.

2. Scope of multi-storey cropping system:

- On knowing the success of multi-storied cropping system in other parts of India, coconut based high density multispecies cropping system model was established under AICRP, Palms which aims at developing a system which is self-sustaining and produces maximum biomass and returns with least inputs.

Coconut + Guava + Banana + Turmeric + Elephant Foot Yam+ Cowpea +Pea + Mustard (integrated cropping system can be followed for Bihar region)

3. Exploitation of value added products for improvement of human health and wellness

4. Involvement of community level approach for augmenting farm income

5. Favourable policy environment for production and marketing of neera and coconut sugar

6. Alternative utilization of wood for furniture and support for handicrafts artisans

D. THREATS:

- Lack of interest among the farmers for growing coconut as it is not a commercial crop in Bihar.
- Coconut was not included in the priority list of state government.
- Unavailability of quality planting material.
- Climate change and deteriorating natural resources in crop growing areas and consequent drought and high temperature affecting cultivation
- Chilling injury occurs in tropical species at temperatures above freezing and occasionally as high as 50°F.
- Possibility of frequent price shocks due to the change in demand supply chain.

Achievements of AICRP on Palms, Sabour centre:

The centre is working since from 2009 in the state for the promotion of coconut in Bihar; however many more efforts are needed to be taken up in order to educate the growers regarding the scientific method of cultivation practices, its care and maintenance of coconut.

- Manuring before winter i.e., in September-October and water sprinkling during morning and evening hours reduces frost injury in coconut seedlings.

Independence day 2018

Dr. Raju Narayana Swamy IAS, Chaiman, Coconut Development Board hoisitng the National Flag at CDB Headquarters premises on 15th August 2018. Shri. Saradindu das, Chief Coconut Development Officer, Shri. R. Madhu, Secretary and other Officers and staff of the Board are seen.

Seedlings protected from frost damage

- Pomegranate should not be planted as intercrop in coconut based cropping system in Bihar region.
- Seedlings planted should be protected from frost during winter by covering it with transparent polythene sheets and proper shading should be provided to protect the young seedlings during summer.

Frost damage

An experiment conducted at Bihar Agricultural University, Sabour under All India Coordinated Research Project on Palms revealed that crops like guava, banana, Turmeric, elephant foot yam, cowpea, pea, mustard, cucurbits and amaranth are considered as suitable intercrops in coconut garden. Besides, commercial flowers like marigold, tuberose, gerbera and gladiolus has also been found suitable intercrop in order to get a high return from coconut garden in other parts of the country.

For managing bud rot disease, the package developed by CPCRI is being adopted.

Bihar belongs to non traditional coconut cultivated area and special focus is being given for development of coconut sector in the state. Kosi region in North East Bihar which comprises places on either sides of the Kosi River is suitable for coconut cultivation. Hence there is much scope for area expansion of coconut and need to promote this crop by creating awareness among the farmers and by providing technology. ■