

## Strategies for Popularizing Millets in West Bengal

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### SUMMARY

Millets are the climate resilient crops and can adapt to wide ranges of climatic conditions. They are source of many nutrients so called as Nutri-cereals. Millets are not a conventional crop of West Bengal. Its cultivation is confined to some parts of Hilly districts of West Bengal (Darjeeling, Coochbehar) and Red & Lateritic zones. Being rich in nutritional value, climate resilient and drought tolerant crops, millets may be the best choice for the rice-based crop sequence, any fallow and marginal land or even for escalating the level of livelihood of the small and marginal farmers of West Bengal. The agriculture scientists and policy makers are focussing to promote millets production in West Bengal. The government has taken many initiatives and has started some programmes regarding this.

### INTRODUCTION

Millets are a group of cereal food grain crops which are profusely seeding, adapted to cultivation over a range of tropical and subtropical climates and can be grown with very low inputs. These crops are climate resilient, hardy and dryland crops also termed as Nutricereals which contribute substantially for food and nutritional security. Generally, these are rain fed crops grown in areas with low rainfall and thus resume greater importance for sustainable agriculture and food security. Major millet crops include pearl millet (*Pennisetum glaucum*), finger millet (*Eleusine coracana*), foxtail millet (*Setaria italica*), proso millet (*Panicum miliaceum*), little millet (*Panicum sumatrense*), barnyard millet (*Echinocloa crusgalli* (Japanese) and *E. colona* (Indian)), kodo millet (*Paspalum scorbicum*). All these millets are nutritionally rich, complete their life cycle in 2 to 4 months, adapting to the shorter cropping windows that facilitated wider adaption. All millets are essentially *kharif* season crops that complete their life cycle in the monsoon period. Millets are especially drought tolerant and can perform well in areas receiving rainfall of 450 mm or more. Despite the fact that they are staple in the diets of millions of people residing in the semi-arid and arid regions of the world, millets are sometimes referred to as famine crops since they are the only crops that assure yields in famine situations. However, these neglected crops are important by virtue of their contribution to the means of livelihood, food and nutritional security of the poor in various parts of the world and they diversify our food basket.



### Importance of Millets Cultivation

#### From Farming point of view:

- Millets are highly tolerant to increased temperatures, droughts and floods.
- Water requirement is very less as compared to other crops due to an efficient root system. For example, pearl and finger millet can make do with 28% of paddy's rainfall needs.
- The short rotation (65 days) characteristic of the millets is of vital importance to meet the food demand, especially in the highly populated regions.
- Storage life is comparatively high (two years or beyond).
- Millets farming requires a small investment.
- They provide both food and fodder.

### From Nutrition point of view:

- Millets are rich source of nutrients. A regular consumption can help to overcome malnutrition among majority of our Indian population.
- Millets are richer in calcium, iron, beta-carotene etc. than rice and wheat.
- Millets are rich in dietary fibre, which is negligible in rice. Jowar has 8 times more fibre, ragi has 40 times more calcium and bajra has 8 times more iron and 5 times more both riboflavin and folic acid than rice.
- Millets help check diabetes, improves digestive system, reduces cancer risk and strengthen the immune system.
- With no gluten and low glycaemic index, millet diet is ideal for those with celiac diseases and diabetes.
- Millets contain high amounts of lecithin are useful for strengthening the nervous system.

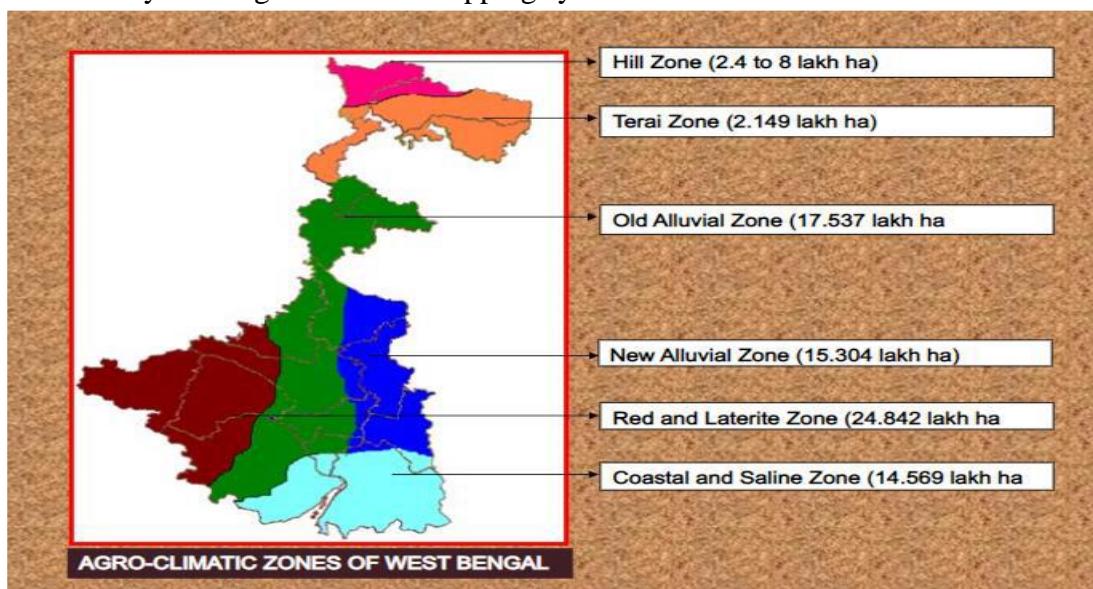
### West Bengal State Profile

#### Climate

The climate of the State is tropical and humid except in the northern hilly region which is close to the Himalayans. The temperature in the mainland normally varies between 24°C to 40°C during summer and 7°C to 26°C during the winter. The average rainfall in the State is about 1750 mm with considerable variation among the districts ranging between 1234 mm in Birbhum to 4136 mm in Jalpaiguri.

#### Agriculture

Agriculture is the primary occupation in the State of West Bengal. It is the main stay of 62.7 per cent of rural work force, and about 70 per cent of the rural population depends on agriculture for their livelihood. The state's six agro-climatic zones, namely Hill zone, Terai zone, Old Alluvial and New Alluvial zones, Laterite zone and Saline Coastal zone offer an extensive and diverse climate, soil, water availability through irrigation and rainfall, and biodiversity creating diversified cropping systems.



#### Limitation for Growing Millets

Before proceeding to making strategies for popularising millets, firstly we have to look for reasons behind this, then we have to work on that areas.

- Mostly millets are grown on marginal lands under rainfed condition.
- Lack of proper package and practices for small millets is being followed by the farmers.
- Quality seeds of improved varieties are not available to the farmers.
- Lack of availability of latest post-harvest operation techniques.
- Changing consumer tastes and preferences due to rising per capita incomes
- More remunerative crop alternatives in *kharif* competing with millets in question
- Supply of PDS rice and wheat at cheaper price introduced in non-traditional areas of fine cereals.

## Strategies for Popularising and Adaptation of Millets

The state of West Bengal has very less area under millets except for the Darjeeling district that has nearly 0.1 lakh ha under ragi with yield levels matching the national average. Small millets such as foxtail millet are also grown in limited areas in Coochbehar and Darjeeling districts. Following are some strategy for popularising the millets in West Bengal: -

### Production Strategy

- Evolving, demonstration and support for location specific package of practices (PoPs) for all millets, with special focus on small millets inclusion.
- Support for seed production following a two-pronged approach, one in the lines of large-scale organized seed channels for generally established and proven varieties and another involving local seed banks for niche varieties grown in specific areas.
- Support for selective mechanization covering various activities, especially for weeding, harvesting, threshing and dehulling.
- Support for drying and threshing yards: The need for this is common to various crops and such yards built under existing general agricultural schemes are utilized by millet farmers.
- Financial support for small-scale millets cultivators who employ ecologically sound or organic-equivalent farming practices and maintain on-farm biodiversity.
- Organising procurement of millets all millets-cultivating districts based on a relevant intervention price (MSP).
- Establishment of such cottage level small scale millet processing industries in this region not only improved the farm income but also improved the food and nutritional security.
- Millets have diversified high food value, but for wider consumption of these millets it is required to formulate the standard protocol for diversified millet-based value products like Breads, Biscuits, Snacks (Pop sorghum, Pasta, Kurkure) and Beverages (Non-fermented and fermented drinks, Malt Drinks).

### Demand Strategy

- Inclusion of all millets into the PDS and menus of various food-based welfare schemes implemented at state level.
- Support for ready-to-eat millet food entrepreneurs.
- Government sponsored awareness raising programs focusing on three elements:
  - i. Consumption promotion campaigns through mass media coverage
  - ii. Integration of information on millets into education curricula
  - iii. Spreading information amongst farmers and other potential beneficiaries of the support offered through the strategy.
- Millets are course in nature, and they require series of post-harvest operations (cleaning, dehulling, milling etc.) before reaching to the end users.

### Research Strategy

Adoption of millets by the resource-challenged framers of this region is not an easy job. The successful introduction of millets requires scientific and step wise intervention strategies from selection and development of location specific cultivars to adoption of best crop management practices like nutrient, water and weed management strategies.

#### A. Crop Improvement

- Finger millet varieties A 404, WR 5 and EC 50-90 performed well in rainfed upland of red and lateritic belt of West Bengal

#### B. Crop Production

- Pre-sowing seed treatment with 100 ppm Na<sub>2</sub>HPO<sub>4</sub> or KH<sub>2</sub>PO<sub>4</sub> was found beneficial to maximize growth and productivity of finger millet.
- Seed soaking with water or 0.25% CaCl<sub>2</sub> has improved the growth and productivity of finger millet over un-soaked control.
- Application of 60 kg N + 30 kg P<sub>2</sub>O<sub>5</sub> + 30 kg K<sub>2</sub>O + 30 kg S/ha has recorded the maximum grain and straw yield of finger millet.
- Seed inoculation with biofertilizer Rhizobium alone or in combination with 30 kg N per ha has reported to enhance the growth and yield of finger millet.

### C. Crop Protection

- Millets are generally less prone to disease-pest infestation. But some serious disease like Downey Mildew, Ergot, Blight etc. may cause serious damage in millet production. Thus, adoption of need based Integrated Plant Protection Management (IPM) strategy with scientific integration of both organic and inorganic plant protection methods be formulated.

## CONCLUSION

Among the 6 zone of West Bengal, Hill zone and Red & Laterite zone have the high potential and suitable climate for the production of millets. Being rich in nutritional value, millets can replace rice to some extent in these areas. Govt. of India and the WB governments have taken several progressive measures during the last decade to promote millets farming on a mission mode and increase awareness among the people. Some recent initiatives to rejuvenate millets from production to Consumption, include: “Initiative for Nutritional Security through Intensive Millets Promotion” (INSIMP), under the Rashtriya Krishi Vikas Yojna of Government of India, “Revalorising Small Millets in the Rain-fed regions of South Asia (RESMISA) funded by International Development Research Centre (IDRC) and CIDA (Canadian funds), and DSR-led value chain development approach for commercialisation of millets. Other policy initiatives include: price and procurement support for millets, inclusion of millets in the Mid-day meal programme and, promotion of Nutrifarms.

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