

Annual Progress Report: 2016-17

7. Tribal Sub Plan and NEH Programme



Seed distribution at Attapady and Mandya



Small Millets at Gossagaon and Agartala

Annual Progress Report: 2016-17

7. Tribal Sub Plan and NEH Programme

Contents

| | |
|---|----------|
| Executive summary | 3 |
| Detailed report | 3 |
| Tribal Sub Plan | 3 |
| Implementation of TSP programme at Mandya, Karnataka | 5 |
| Implementation of TSP programme at Dindori, Madhya Pradesh | 6 |
| TSP programme at KrishiVignan Kendra, Attapadi, Kerala | 7 |
| Implementation of TSP programme at Vizianagaram, Andhra Pradesh..... | 7 |
| Popularisation of Small Millets in North Eastern Hilly regions | 8 |
| Popularisation of Small Millets in Assam | 8 |
| Prospect and Promotion of Millets in Rain-fed Eco system of Tripura..... | 9 |

7. Tribal Sub Plan and NEH Programme

Executive summary

Tribal Sub Plan:

- Programme under Tribal sub plan resulted in introduction of finger millet in tribal populations for cultivation and also consumption. The tribal population in different small millets growing states are encouraged both in physical and financial terms by facilitating small millets cultivation and increasing production and consumption by providing them with improved varieties and also required inputs and implements.
- The TSP programme was carried out in six centres viz., Jagdalpur, Athiyandal, Dindori, Mandya, Vizianagaram and P.C unit (Palakkad, Kerala) and the amount of Rs. 29.50 lakhs was released to different centres during the year 2016-17.
- At Mandya, there was 45 % improvement in yield in farmer's fields with improved practice as compared to local practice in finger millet..
- At Dindori, the demonstrations in farmers field in 20.0 ha area in kodo millet indicated that there was an increase of 89.72% in improved practice over farmers practice. Demonstrations in farmers field in 10.0 ha area in little millet indicated that there was an increase of 102.16% increase in grain yield in improved practice over farmers practice.
- At Vizianagaram, the demonstrations in farmer's field in finger millet indicated that there was an increase of 79.30% increase in grain yield in improved practice against farmers practice.

Popularisation of small millets in NEH Region

- As of now, few varieties of millets are sporadically grown by the tribal farmers and consumed in parts of Assam and adjoining the North-Eastern states in limited quantity. The popularization of small millets in this region is important to uplift the economic level of the farmers.
- A total of Rs. 31.08 lakhs has been allocated three centres, viz. Gossaigaon in Assam, Agartala in Tripura and Namthumg, Sikkim to popularise the small millets in NEH region by way of conducting demonstration in farmers fields in Summer and kharif 2017.
- Besides, implements like thresher and de-husker have been provided to all the three centres.

Detailed report

Tribal Sub Plan

At present India has the record of largest tribal population in the world next only to Africa. Scheduled tribes account for 8.2 per cent of the Indian population (2011 census) living mostly in rural India particularly in the hilly region. Scheduled tribes are being known as "Adivasi". There are a total of 645 distinct tribes in India, majorly found in the states viz., U.P, Bihar, Orissa, M.P, Tamil Nadu, Maharashtra, Jammu and Kashmir, Tripura etc.. There is a wide range of variation in the socio-economic status as compare to the other sector of the population. Tribes as a whole are technologically and educationally backward though there are several schemes from the government to improve their status in the society.

It is universally accepted that despite considerable attention, the tribal areas and tribal people in our country lag woefully behind others in development and the tribals continue to be among the weakest and the most exploited section of the society. Various efforts were undertaken to close the development gap and provide opportunities for tribals in the areas of education, employment and entrepreneurship.

The Tribal Sub Plan was one such effort by the Government of India initiated during 5th five year plan for the socioeconomic amelioration of the tribal communities. Under the centrally sponsored Tribal Sub Plan project, agricultural schemes are being implemented by the All India Coordinated Research Project (Small millets) under ICAR in different tribal areas of the country for improving the livelihood of the tribal farmers by encouraging small millets cultivation and consumption. The basic objective of TSP is to channelize the flow of outlays and benefits from general sectors in the different departments of GOI for the development of scheduled tribes at least in proportion to their population. The programme resulted in introduction of finger millet in tribal populations for cultivation and also consumption. The tribal population in different small millets growing states are encouraged both in physical and financial terms by facilitating small millets cultivation and increasing production and consumption by providing them with improved varieties and also required inputs and implements.

The TSP was carried out in six centres viz., Jagdalpur, Athiyandal, Dindori, Mandya, Vizianagaram and P.C unit (Palakkad, Kerala) and the amount of Rs. 29.50 lakhs was released to different centres during the year 2016-17. The Centre-wise number of farmers and area covered during 2016-17 under TSP is presented in Table 1

Table 1: Centre-wise physical location of tribal farmers under TSP

| State | Crop (Variety) | Centre | District | No. of Farmers | Area covered (ha) |
|----------------|---|--------------|----------------------------------|----------------|-------------------|
| Karnataka | Finger millet (KMR 301) | Mandya | Chamrajnagar | 50 | 52 |
| | Finger millet (GPU 28) | P.C Unit | Palakkad | 65 | 10 |
| Chattisgarh | Kodo millet (JK 439) Little millet (JK 8) | Jagdalpur | Bastav Narayanpur DauteWda | 11 | 9.8 |
| | Finger millet (GPU 28) | Jagdalpur | Bastav Narayanpur DauteWda | 7 | 10 |
| Andhra Pradesh | Finger millet (VR 762) | Vizianagaram | Srikakulam | 162 | 195.64 |
| | Finger millet (VR 847) (VR 762) | Vizianagaram | Vizianagaram | 112 | 192.68 |
| Tamilnadu | Foxtail millet (Co(TE) 7) Proso millet (Co(PV) 5) Little millet (Co 4) Finger millet (Co 15) | Athiyandal | Tiruvannamalai | 55 | 40 |
| Madhya Pradesh | Little millet (JK 36) | Dindori | Dindori | 25 | 10 |
| | | | Total | 487 | 520.12 |

Table 2: Centre-wise details of physical and financial achievements of TSP during 2016-17

| Centre | Amount earmarked (in lakhs) | Financial achievements (in lakhs) | Area (in ha) | Physical and financial achievement during the year | | | |
|---------------------|-----------------------------|-----------------------------------|---------------|---|---|--|---|
| | | | | No. of individuals/ Families/ Colonies / Villages benefited | Physical asset created | Type of asset created | Any other information |
| Jagdapur | 3.00 | 3.00 | 19.80 | 18 farmers in 14 villages | Seeds | - | Front line demonstration |
| Athiyandal | 4.00 | 4.00 | 40.00 | 55 farmers in 6 villages | Seeds material, fertilizers and Bio-fertilizers | - | Two trainings and one field day |
| Dindori | 4.50 | 4.50 | 10.00 | 25 farmers in 2 villages | Seed materials | - | Filed demonstration |
| Mandya | 7.00 | 7.00 | 52.00 | 50 farmers in 1 colony | Seeds, fertilizers | Seed cum fertilizer drills, inter-cultivators, sieves, sickles, Bamboo baskets | Preliminary survey for the selection of farmers |
| Vizianagarm | 8.00 | 8.00 | 388.32 | 274 farmers in 23 villages | Seeds, Vermicom post, Bio-fertilizers | Sickles, Tarpalines, Millet dehulling machines | Three training programmes Millet Mela |
| P.C Unit (Palakkad) | 1.50 | 1.50 | 10.00 | 65 farmers in 1 hamlet | Seeds | - | Field visits & farmer-Scientist interaction. |
| Total | 28.00 | 28.00 | 520.12 | | | | |

Implementation of TSP programme at Mandya, Karnataka

The project was undertaken in tribal areas of Chamarajanagara district during 2016-17, which is predominantly inhabited by the tribal population called soliga tribes. Earlier they used to practice shifting cultivation, but now more or else they have given up the practice. They grow Ragi[Finger millet] (*Eleusine coracana*) for subsistence. Their main source of income is harvesting and selling of Non-timber Forest Produce (NTFP) like honey, bamboo and daily labour wages etc.

Preamble: The soliga tribal farmers have been practicing age-old practice of finger millet cultivation in a traditional method. The Finger millet varieties used by them are mainly old varieties/ local varieties (Giddaragi, madayyanagiri, karigidda etc.) which have very poor yield potential and succumbed to severe diseases. The cultivation practices were of traditional in nature like broadcasting of seeds in main lands. Usually the crop has been raised with very low or no fertilizer application and no inter cultivation practices were carried out which have negative impact on the yield.

Finger Millet (*Eleusine coracana* Gartn.) is an important food and fodder crop of dry lands in Karnataka. This crop has a high level of regional/local adoption and it is cultivated on marginal lands still providing an assured harvest thus making it indispensable in specific eco-systems. Although many varieties have been released for cultivation their adaptation by farmers is not impressive due to many factors.

Keeping this in view, the project has been undertaken to reach the un-reach with the following objectives.

- Introduce new high yielding ragi varieties along with improved crop production and management technologies to enhance the economic returns of the tribes.

- To create awareness among tribal populations about value addition of finger millet for better health and nutritional security.

Project area: In order to achieve the target the following project area was considered viz., kentukudi tribal colony which is a rehabilitation centre located in the Hondarabalu village of Chamarajanagara Taluk and Chamarajanagara district (662 meters above mean sea level).

Participation of tribal farmers in training programme: A Training programme was organized for introducing new variety KMR-301, crop production and management technologies in finger millet at kentukudi colony, Hondarabalu village, Chamarajanagara district. The programme was inaugurated by the Project Coordinator, AICRP on Small millets, Bengaluru.

The training was mainly oriented towards the role of a good seed material in enhancing the yields of finger millet. They were explained about the selection of varieties based on the duration and receipt of rains. Advantages of using a seed cum fertilizer drill like maintenance of optimum plant population, easy conduct of intercultural operations by use of intercultivators for weed management were explained to them by demonstrating the use of seed drill. Techniques like use of optimum seed rate and depth of sowing were also highlighted. The management practices for controlling the finger blast and neck blast diseases taught to them. In order to promote the farmers for going for improved technologies the inputs such as seeds, fertilizers and seed cum fertilizer drills were distributed to the farmers.

Visit of monitoring team of AICRP (Small Millets) to tribal farmers plot and distribution of ragi sieves: Based on the preliminary survey, looking into the needs of tribal women the training programme was organized on preparation of value added products of finger millet. The nutritionist addressed the farm women and explained about the nutritional importance of the finger millet and role of the crop in achieving the nutritional security. Method demonstrations were conducted by involving the farm women to make them learn about the different value added products that can be prepared using the finger millet flour rather than using them alone for ragi ball and roti preparation. The finger millet malt mix powder packets were distributed to the tribal women for using it as a weaning food.

Due to deficit rains, received during the season, farmers lost the crop and harvested only for fodder in about 80 acres. But those farmers, who had taken up sowing in the early showers of July second fortnight in area of 50 acres using seed drill were possible to harvest a good crop and achieve higher yields as compared to farmers practice. There was 45 % improvement in yield in farmer's fields with improved practice as compared to local practice.

| Grain Yield (Kg/ha) | | Fodder Yield (kg /ha) | | % Increase in grain yield |
|--------------------------|-------------------|--------------------------|-------------------|---------------------------|
| Improved practice of TSP | Farmer's practice | Improved practice of TSP | Farmer's practice | |
| 3424 | 2359 | 6317 | 3326 | 45 % |

Implementation of TSP programme at Dindori, Madhya Pradesh

At Dindori, the demonstrations in farmers field in 20.0 ha area in kodo millet indicated that there was an increase of 89.72% increase in grain yield and the B: C ratio was 1.71 for improved practice, where as it was 1.51 for farmers practice. Demonstrations in farmers field in 10.0 ha area in little millet indicated that there was an increase of 102.16% increase in grain yield and the B:C ratio was 2.16 for improved practice, where as it was 1.79 for farmers practice.

Demonstration in Kodo millet at Dindori under TSP

| Area (ha) | Grain Yield (Kg/ha) | | % Increase over FP | GMR (/ha) | | Net Monetary Return (/ha) | | B:C Ratio | |
|-----------|---------------------|----|--------------------|-----------|----|---------------------------|----|-----------|----|
| | IP | FP | | IP | FP | IP | FP | IP | FP |
| | | | | | | | | | |

| | | | | | | | | | |
|----|------|-----|-------|-------|-------|-------|------|------|------|
| 20 | 1368 | 727 | 89.72 | 34211 | 18178 | 14211 | 6178 | 1.71 | 1.51 |
|----|------|-----|-------|-------|-------|-------|------|------|------|

Demonstration in little millet at Dindori under TSP

| Area (ha) | Grain Yield (Kg/ha) | | % Increase over FP | GMR (/ha) | | Net Monetary Return (/ha) | | B:C Ratio | |
|-----------|---------------------|-----|--------------------|-----------|-------|---------------------------|------|-----------|------|
| | IP | FP | | IP | FP | IP | FP | IP | FP |
| 10 | 1082 | 537 | 102.16 | 43291 | 21488 | 23291 | 9488 | 2.16 | 1.79 |

IP = Improved Practice, FP = Farmer's Practice, GMR = Gross Monetary Return

TSP programme at KrishiVignan Kendra, Attapadi, Kerala

Seed distribution of high yielding Ragi variety GPU -28: Ragi, finger millet plays major traditional food habits of tribal people of Attappady, Kerala. At present, they are cultivating local varieties which are low yielding. With the view of increasing productivity of ragi and attempt to ensure nutritional security of tribal people, a farmer scientist interaction was organized at Puthurpanchayath on 16.07.2016 jointly by KrishiVigyan Kendra, Palakkad, Kerala and Project Coordination Unit (Small Millets) All India Coordinated Improvement Project, ICAR Bengaluru and seeds of a high yielding variety of ragi GPU 28 were distributed to farmers of Moolakombu hamlet and Thekkuppana hamlet. Dr.Prabhakar, Project Coordinator, (Small Millets), Dr.Munirajappa, Senior scientist, Project Coordinating Unit (Small Millets)andDr.Israel Thomas, Programme Coordinator, KrishiVigyan Kendra-Palakkad participated in the interaction. Due to acute drought the demonstrations vitiated.

Implementation of TSP programme at Vizianagaram, Andhra Pradesh

Implementation of TSP programme at Vizianagaram, Andhra Pradesh

| Farmer practice | Demo plot |
|---|--|
| Direct sowing through broadcasting | Transplanting |
| Use of low yielding local varieties | Use of High Yielding Varieties like VR-708, VR-762,VR-847, VR-936(W) |
| No use of fertilizers or manures(Podu cultivation on hill slopes) | Use of organic fertilizers like Vermicompost and Neem cake |
| No weeding or hoeing | One or two intercultivations with in 45DAT by using hand operated implements |

Yield and Economics of Demonstrations Technologies demonstrated: At Vizianagaram, the demonstrations in farmers field in finger millet indicated that there was an increase of 79.30% increase in grain yield and the B:C ratio was 1.77 for improved practice, where as it was 0.74 for farmers practice.

Average Yield and economics of TSP demonstrations during kharif 2016-17:

| Name of the district | Average grain yield(kg/ha) | | Average cost of cultivation(Rs/ha) | | B:C ratio | |
|----------------------|----------------------------|-----|------------------------------------|------|-----------|------|
| | Demo | FP | Demo | FP | Demo | FP |
| Srikakulam | 2750 | 680 | 20575 | 8425 | 1.94 | 0.78 |
| Vizianagaram | 2400 | 600 | 21000 | 8220 | 1.51 | 0.61 |

| | | | | | | |
|---------------|-------------|------------|--------------|-------------|-------------|-------------|
| Visakhapatnam | 2670 | 700 | 20600 | 8475 | 1.85 | 0.82 |
| Mean | 2606 | 687 | 20725 | 8373 | 1.77 | 0.74 |

Finger millet grain price:Rs.22/kg

Popularisation of Small Millets in North Eastern Hilly regions

As of now, few varieties of millets are sporadically grown and consumed in parts of Assam and adjoining the North-Eastern states in limited quantity. Millets are grown basically by the tribal farmers and there is less knowledge about millets in the North-Eastern regions. But, it has been cultivated traditionally and consumed. The popularization of small millets in this region is important to uplift the economic level of the farmers.

Details of amount utilized for NEH programme for the year 2016-17

| S. No. | Name of the Center | Area and no. of demonstration | Items supplied | Fund allotted in lakhs |
|--------------|--------------------|--|-------------------------|------------------------|
| 1. | Agartala (Tripura) | Training programme, FLDs in 50 ha. production of certified seed and breeder seed | De-husker RagiThresher | 13.37 |
| 2. | Gossaigaon (Assam) | FLDs in 30ha in finger millet and 25ha in foxtail millet. | De-husker Ragi Thresher | 8.87 |
| 3. | Namthang (Sikkim) | Supply of FYM organic bio fungicide and insecticide and nutrients in 20ha | De-husker Ragi Thresher | 8.84 |
| Total | | | | 31.08 |

A few varieties of millets are sporadically grown and consumed in some parts of Assam and adjoining North-Eastern states with limited utilization. Millets can bring value addition and adapt to climate change conditions when they come to the northeast, i. e. Nagaland, Arunachal Pradesh, Manipur, Mizoram, Meghalaya and Tripura. Relation between millets, shifting cultivation and biodiversity was brought out by community people. People recollected many varieties of millets that were traditionally grown. NE with its practice of *jhum* cultivation has traditionally promoted crop diversity and thus is well placed to send a message on food sovereignty on behalf of the country.

Popularisation of Small Millets in Assam

Millets are an upland area crop and millet based '*apong*' (local wine) brewing is common in the northeast. In Assam the area, production and productivity is very negligible. But if we see the statistic from 2008 to 2015 it has been seen that the production and productivity is in slowly increasing trend. In Assam Millets are grown basically by the tribal farmers and siaothali farmers for local wine preparation and pithas (chapatti) and laddu. Even muslim community farmers are also giving emphasis on millet cultivation in "char" areas of Assam for their home consumption and commercial purpose. The grains are to be dehusked with '*dhenki*', a locally used dehusking device.

It is used as substitute of rice by the farmers. It is also used for making porridge, *sattu*, *akhoi* and preparation of flour. There is less knowledge about millets in the region but it has been traditionally cultivated and consumed. In some part of hill areas of Assam their *Jhum* systems which involved knowledge of ecology, *jhum* systems were very complex (involving integrated multiple crop harvesting and biodiversity), but nowadays it has been extremely simplified and focus has shifted to mono cropping.

In Assam and other north eastern states generally during *kharif* season farmers grow Finger Millet (*Eleusinecoracana*) which is commonly known as "Marubadhan." One month old seedling transplanted in the month of 1st week of September and harvested in the month of November. During *rabi* season farmers grow Foxtail Millet (*Setariaitalica*), which is commonly known as "Cawn". Seed are sown during Middle of January to middle of February (the best time is last week of January).

NEH programme at Regional Agricultural Research Station (RARS), Gossaigaon: The Lower Brahmaputra Valley Zone of Assam has been facing the ramification of chronic problems of low crop productivity, food & nutritional insecurity, population explosion, poverty and resource shrinkage and degradation. Being the largest zone of the state it enshrines wide array of agro-ecological situations, socio-economic conditions, ethnicity, flood and drought proneness, soil conditions and microclimate variations. The RARS, AAU, Gossaigaon is meant for conducting research for the Lower Brahmaputra Valley Zone of Assam comprising of 10 no of districts viz. Kamrup, Nalbari, Baksa, Barpeta, Chirang, Bongaigaon, Goalpara, Dhubri, Kokrajhar (Urban) and Kamrup (Rural).

Presently this station has giving emphasis on small millet research work and trying to popularizing the small millet among the farming community. The station, among its main dealing crops, is working in small millets, the poor man's cereal. 'Gossaigaon Local' is a promising finger millet variety from the station, which emerged as the best variety among a cohort of 24 different selections of the country as a whole, tested in the station provided by the AICRP on SM. Besides, the station is also working in Foxtail millet, proso millet (little millet) and pearl millet (Bajra) etc. The participatory millet testing center was started at RARS, Gossaigaon, and Kokrajhar, Assam in the year 2015. The mandates of the station are chiefly to conduct need based location specific and problem oriented applied research for the region.

Activities of the station for popularizing the Millets: Presently this station has giving emphasis on popularizing the millets cultivation among the farming community of the Central Brahmaputra Velly Zone (CBVZ) and Lower Brahmaputra Velly Zone (LBVZ) of state by taking Frontline demonstration with prominent local varieties of Finger millet and foxtail millet. For conducting FLD on finger and foxtail millet, fund has been provided from Project Coordinator (Small Millets), AICRP on SM, Bengaluru. During the *rabi* 2016-17, FLD on Foxtail millet has been conducted in four district for popularizing the millets among the farming community in Assam by covering and areas about 10 ha.

Demonstrations in Foxtail millet

| Sl. No. | District | Area Covered | Total No of Beneficiaries |
|---------|------------|--------------|---------------------------|
| 1 | Kokrajhar | 6 ha | 37 |
| 2 | Bongaogaon | 3 ha | 18 |
| 3 | Nagaon | 1 ha | 07 |

But due to the lately received of fund during the *kharif*, 2016, the center could not able to conduct the finger millet demonstration. The demonstration on Finger millet will be conduct next *kharif*, 2017 along with the newly allotted demonstration for the financial year 2017-18, where fund has been allotted to conduct the FLD on millet 20 ha area on Finger millet during *kharif* 2017 and 15 ha area on Foxtail millet during *rabi* 2017-18. These demonstrations will surely change the millets area, production and productivity of Assam and will become the popular among farming community.

Prospect and Promotion of Millets in Rain-fed Eco system of Tripura

Millets are adapted to a wide range of ecological conditions often growing on skeletal soils that are less than 15 cm deep. It does not demand rich soils for their survival and growth. Hence, for the vast dry land area, they are a boon. Rice is the major staple food of our State Tripura & it is contributing 97 % of the total food grains. Due to urbanization, farming lands are decreasing day by day. Therefore, to feed the entire population of the state, The

Department of Agriculture, Government of Tripura is trying to utilize all the cultivable land by increasing cropping intensity & productivity with best natural resources & diversified farming. In our State, the tribal community are cultivating Foxtail millets as one of the component of their mixed cropping system since very earlier era.

Among the various possible approaches to achieve this target, cultivation of crops like Foxtail millets, Finger millets, sorghum may be one to fulfil our dream to attain self-sufficiency. Cultivation of crops like Foxtail millets, Finger millets, sorghum may add to our food grains basket an additional production per annum. Moreover, millets are all-season crops cultivated round the year whereas wheat is season specific. While wheat and rice might provide only food security, millets produce multiple securities(food, fodder, health, nutrition, livelihood and ecological) making them the crops of agricultural security.

Foxtail millets, Finger millets, sorghum may be the best suitable alternatives to wheat flour from the point of view of nutritional value as well as the tremendous national gain especially in the ensuing decades of climate crisis/water scarcity.

Programme for popularization on cultivation of Finger millets during kharif 2017-18:

A project on small millets (Finger Millets) of AICRP on Small Millets, ICAR has been received under which 50 ha demonstration on Finger millets will be taken up in 8 no districts along with 3 nos. KVKs under Tripura. The cost involve for 1 ha of demonstration is Rs. 10000/- only. The sections of farmers in all the districts along with KVKs are in progress.