

“ONE DAY CONSULTATION WORKSHOP ON BUILDING NRAA AS KNOWLEDGE PLATFORM FOR THE RAINFED ECO-SYSTEM IN THE COUNTRY”



A one day consultation workshop on building NRAA as a knowledge platform for the rainfed eco-system in the country was organized on 25.10.2017, NASC Complex, New Delhi-110012 under the chairmanship of Dr. Ashok Dalwai, Chief Executive Officer (CEO), National Rainfed Area Authority (NRAA), Department of Agriculture, Cooperation and Farmer's Welfare.

The morning session began with Dr Ashok Dalwai, CEO, National Rainfed Area Authority (NRAA) welcoming all the participants to the workshop. The objectives and mandates of NRAA were shared in brief, which was followed by introduction of all the eminent speakers and participants from different institutes on the myriad subjects of rainfed agriculture coming from across the country. Thereafter, the CEO presented the contours of the workshop and emphasized that its specific mandate was to build NRAA as a knowledge platform for the rainfed eco-system in the country. He also assured that this participation and knowledge sharing will become a resource data base for such successive discussions in future, and also strengthen the Authority to work for betterment of rainfed farming in the country.

In Session I, Dr J S Samra, Ex CEO (NRAA) presented general overview of NRAA since its launch in 2006 highlighting its focus areas, approaches and achievements. The speaker raised three (3) very relevant issues under the present scenario of agriculture viz. (i) doubling of farmers' income; (ii) irrigating each and every field; and (iii) promoting climate resilient agriculture. He emphasized that NRAA should not be confined to 150 district of dryland agriculture in the country but play a larger role in addressing all forms of rainfed systems in the country. Later, the issue of incentives for the produce of dryland /arid areas was discussed as the produce from such area possess unique quality but faces inefficient marketing. The scope and potential of rainfed farming in terms of income were highlighted by citing the example of higher income from rainfed farming based on horticultural crops in Shimla (HP) compared to that of even irrigated areas of Punjab. At the end of his presentation, achievements and lessons learnt in building NRAA were also shared by the speaker comprehensively.

Session II was led by Dr RR Hanchinal, former Chairperson, PPV& FR and V.C., UAS, Dharwad presently working as Consultant, Biodiversity International. He presented elaborates on the topic of nature and dimensions of rainfed areas in the country. He benefited the house by sharing the statistics of Rainfed Farming Agriculture. He raised concerns w.r.t problems and constraints of crop production under rainfed agriculture namely- small land holdings, low input and unstable yield and low productivity. In addition to these, climatic, soil and socio-economic

constraints are also prevalent in these areas. The differences between dryland farming and rainfed farming, which are generally confused were clearly explained. He suggested that new and promising technologies should be disseminated to these areas instead of out dated technologies and farm implements. Rise in temperature is going to adversely affect the productivity of rice, wheat and most of the crops and hence there is an urgent need to promote the available new climate resilient technologies for sustainable development of rainfed farming areas. He emphasized to promote traditional/local varieties which were better suited even under adverse conditions, by bringing them into the seed chain as those are still performing better than the improved varieties.



Another session speaker Dr Man Singh, Professor and Project Director (Acting), WTC, ICAR-IARI, New Delhi made a presentation on rainfed agriculture in high rainfall areas and techno-
vision for transformation. He discussed the complexity of rainfall in rainfed farming areas and also stressed upon the idea of **'farmer first and water first' (FFWF)**. While highlighting the need of drainage in the high rainfall areas, he suggested the inter-basin transfer of water and also cited the directives of Hon'ble SC, 2014 for interlinking of rivers.

An open and vibrant discussion on drainage was initiated and useful information shared in the house. Various practices and location specific existing technologies are prevalent in areas of high rainfall viz. aquaculture in Odisha, padshekhran system of embankment in Kerala and flood management practices in Odisha and Bihar. The information on conflicts regarding drainage across the farming community and disposal of drainage water was also discussed. Finally, the need of drainage across the states and disposal of drainage water into sea were articulated. The CEO, NRAA expressed apprehension relating to ecosystem disturbance and other constraints in river linking and that these need to be studied before venturing out.

In session IV, Dr S. Hazarika, Principal Scientist (Soil), HoD, NRM, ICAR, NER, Umian, Meghalaya, provided information on alternative to shifting cultivation in North-Eastern, Central and Eastern regions of the country. He briefed about the status of agriculture in NE regions. He stated that the country has 0.94 m ha area under shifting cultivation out of which 80 % area comprised by the NE regions. While citing that shifting cultivation is an oldest system, the youth in the area now a days generally do not prefer this system and area is decreased by about 13%. He viewed that there is need of *Jhum* rehabilitation and discussed various rehabilitation models given by different agencies. He also presented the various approaches for sustainability of *Jhum* land while taking care of the constraints like soil acidity and Al toxicity. The important approaches include- use of good crop varieties for *Jhum* land, increase in cropping intensity, agro forestry and farming system, such as Agri-Hort.-Silvi pastoral systems which fit in SFS, soil and

water conservation, labeling produce for higher incentive as no fertilizers are used and inclusion of low volume high value crops like bell pepper and straw berry and fruit trees.

Dr T S Massodi, Associate Director (R&E), Sher-e-Kashmir University of Agricultural Science and Tech, Leh-Ladakh (J&K) briefed the house about statistics of agriculture sector in Ladakh. He reported about the major deficiency in agriculture sector, which he identified as dependency on foodgrain, vegetable and fruits to an extent of 73%, 67% and 85% respectively, prevailing in the area. The extreme biotic and abiotic stresses change from one area to another so blanket recommendation cannot be given for the entire region. Major constraints indentified are high seed rate with low crop yields, non availability of good quality seeds/ planting material and inputs, un standardized nurseries and orchard management practices. Frozen soil moisture during early spring and low relative humidity during growing season and fast blowing winds and high evapo-transpiration, poor storage facilities and lack of suitable energy trapping green house models and protected structures for cultivation of vegetables in winters are also major constraints.

The water harvesting technologies used in the region are i) **Traditional:** border and furrow irrigation and field leveling. ii) **Household-based** technologies include plastic sheeting, use of drought resistant varieties & retaining stubble /low till- which is a technique where the stubble from one crop is left on the field after it is harvested. The field is irrigated just before the winter to freeze the water in the rooting zone. iii) **Community-based** technologies include formation of artificial glaciers, ice stupas, lined canals and sprinkler systems. He also explained the importance of planting wind breakers, such as willow plantation all along the border to reduce the high wind velocity to main crop. In addition, Dr. Masoodi also presented the achievements of SKUAST-K, mainly capsicum cultivation during summer under mulch and drip irrigation system, cabbage production during summer with black polythene mulching and drip irrigation, spinach cultivation during winter and Cabbage cultivation during winters using various techniques and attained very high productivity.



Dr P K Ghosh, Ex-Director, IGFRI, Jhansi shared valuable information on the importance of small ruminants in rainfed regions and the importance of their promotion as livelihood support system. He elaborated that small ruminants constitutes around 40 % of country's total livestock and support 40% livelihood. He discussed various constraints viz. high mortality, shrinking grazing resources, grazing restricted to the forest areas, lack of infrastructure etc. which need to be addressed for sustainable growth of the farming community under Rainfed

Farming areas. He suggested that the regions having low resources should have low livestock density and vice-versa. There is a need of promotion of small ruminants production strategies including supplemental feeding, forage storage bank and breeding programme. Besides, climate resilient forage production technologies under Rainfed Farming situations, rehabilitation of grazing land by adopting location specific various models and interventions like clearing of bushes, introduction of improved grazing management and resting period etc. to enhance the productivity of grazing land and mitigate the deficit of green fodder is the need of the hour. Dr Neelesh Yadav, Scientist, FRI, Dehradun provided useful information on status of forest and their role in providing various services to the human being, live stock and environment.

Dr H Prabhakar, PI (NICRA), CRIDA, Hyderabad shared highly useful information on dryland farming in India and resilience in the context of climate change. In his presentation, he shared the experiences and lesson learnt from the NICRA project. It was informed that by minor modification in cultural practices like conservation furrow, paired row technique, crop residue incorporation, increment in nitrogen dose, short duration drought resistant varieties, resilient intercropping system and creation of farm pond for life saving irrigation, the productivity of crops and other interventions under dry land farming increased significantly. These technologies have been disseminated to 151 villages which are known as Climate Resilient Villages. Further, the inclusion of duck-cum-fish integrated farming has also been suggested to be a viable and profitable intervention.



In the last session of the workshop, Dr V S Arya, CSSO, SLUSI, New Delhi provided information on remote sensing, GIS and GPS based data collection with reference to water shed development and management. The coding of micro watershed through unique code has also been done using which the information of all the relevant aspects of agriculture of the specific area can be retrieved for further planning and policy making.

Open house discussions that can be referred to as solution generating session was initiated by Dr Ashok Dalwai after the completion of technical sessions. To achieve the target of doubling farmers' income by 2022, a long term and sustainable planning based on market led paradigm and agro-climate aligned production system was the need of the hour he stressed. For that, there is need to focus on biotic and abiotic stresses which are peculiar to Rainfed Farming ecosystem for long term direct and indirect benefits. A need was also felt to strengthen horticultural interventions instead of considering only millets in rainfed farming areas. Soil health with emphasis on organic carbon buildup in addition to nutrients, should also be taken care of. Dr S A Patil, suggested the need for revisiting the agricultural education system so as to produce agricultural graduates who are thoroughly professional, and are confident of practising self-cultivation and promoting it among others on profitable basis. He stressed that farming

should be more attractive. He further suggested to revise the content delivery in various agricultural courses for eg. a new course on IFS rainfed farming etc. and also felt the need for integration of different institutes and universities for setting up live examples of new technologies and their up scaling. Some of the important points and suggestions given by the eminent speaker are as follows:

- NRAA should be strengthened by creating suitable staff positions and allocating appropriate size of funds.
- Water availability is must to achieve an average of 15 % annual growth for doubling farmers income by 2022. Dr Man Singh informed that only 12 % of rain water is stored in Eastern and NER which should be enhanced and diverted to deficit area.
- Another suggestion was to replace IFS with Integrated Production System (IPS) which also includes new dimension like post production management, post-harvest processing and value addition etc. For this private partnership for investment, knowledge sharing and networking should be encouraged. A shift from IFS to IPS will make the practice of agriculture more wholesome.
- Success stories of progressive farmers of Rainfed Farming areas with methodologies they have adopted should be published for adoption by others.
- There is also need to demonstrate successful models emphasizing traditional knowledge of the farming community in different agro-climatic zones to enhance the productivity of the concerned areas.
- Integration of institutes with NRAA is needed and creation of entrepreneurship for unemployed rural youth is the need of hour. KVK should also play important role to demonstrate promising dry land technologies.
- There should be some incentives and recognition for the innovative farmer to promote and make Rainfed Farming more attractive.

In his concluding remarks, Dr Ashok Dalwai indicated the necessity to create an IT platform to which ICAR, SAUs and other institute/organizations can contribute and upload all the available improved technologies & practices: and that this can serve as a single window source for the farmers. At the end CEO, NRAA presented vote of thank and assured that deliberations in the workshop will be fully made use of, and that such deliberations shall be held from time to time. He requested all participants to spare their time and share their knowledge and offer guidance and advice to build NRAA in the service of all the farmers across the country in general, and rainfed farmers in particular.

List of Participants

S.No.	Name & Designation	Department
1.	Shri A.K.Sinha, Vice President, BAIF	BAIF
2.	Shri Praveen Kumar	CAZRI, Jodhpur
3.	Dr. J.S. Samra. Ex CEO	Retired
4.	Dr. A.L. Rathore	IGKV, Raipur (C.G)
5.	Dr. D.L. Maheswar, Vice Chancellor	University of Horticultural Sciences, Baglkot, Karnataka
6.	Dr. Rajendra Poddar, Head, PPMC	UAS, Dharwad
7.	Dr. M.S. Shrirahatti, Chief Scientist	RARS, Vijaypura
8.	Dr. C. Jayanthi	Tamil Nadu Agriculture University, Coimbatore
9.	Dr. S. A. Patil, Ex VC	IARI, New Delhi
10.	Dr. Rahul Tribath	ICAR-NRRI-CTC, Odisha
11.	Dr. S.V. Nagachan	ICAR-RC NEH, Umiam
12.	Dr. S. Hazarika	ICAR-RC NEH, Umiam
13.	Dr. T.H. Masoodi	HMAARI, SKUAST-K,Leh Ladakh (J&K)
14.	Shri B. Rath, ADC	DAC & FW
15.	Shri N.K. Gupta, Consultant	NRAA
16.	Dr. M. Prabhakar, PI, NICRA	ICAR-CRIDA, Hyderabad
17.	Prof. Man Singh	PD, WTC, IARI, New Delhi
18.	Dr. Rajender Kumar, Senior Scientist	WTC, IARI, New Delhi
19.	Shri Sudarshan Suryawanshi,	ISAP, Delhi
20.	Shri P.K. Ghosh	ICAR, IARI, New Delhi
21.	Shri Sunil Londhe	ICRAF, N. Delhi
22.	Dr.D. Bhaskar, ADG (Agronomy)	ICAR, N. Delhi
23.	Dr. Krishan Kumar	-
24.	Shri M.T. Sam Bandam	-
25.	Dr. S.K. Khurana	-
26.	Dr. Subash Kumar	-
27.	Ms. Raka Saxena	ICAR, NIAP, N.Delhi
28.	Dr. V.S. Arya	SLUSI, N. Delhi
29.	Prof. R.R. Hanchinal	Bioversity International, N.Delhi
30.	Shri Suresh Pal, Director	ICAR, NIAP
31.	Dr. Nagrathna Vijay	PPV & FRA
32.	Dr. Ravi Prakash	PPV & FRA
33.	Shri R.A.S. Patel, AC, NRM	DAC & FW
34.	Dr. Suhas P. Wani	ICRISAT, N. Delhi
35.	Dr. Neelesh Yadav	FRI, Dehradun
36.	Ms. A. Neeraja, JS, NRM	DAC & FW
37.	Shri B. Rajender, JS, Crop	DAC & FW
38.	Dr. V.S. Patil, National Consultant	DAC & FW
39.	Shri S.S. Ray, Director	MNCFC
40.	Dr. A. K. Padhee	ICRISAT, N. Delhi
41.	Dr. A.K. Sikka	IWMI, N. Delhi
42.	Dr. Ravinder Kaur, Ex Director	IARI, N. Delhi