Indigenous ~~Traditional~~ Knowledge Collection in NICRA-AICRPAM domain districts for weather events

ABSTRACT

Indigenous Technical Knowledge (ITK) is the experience of local people gained from past generation and forefathers. Knowledge base is gained through tradition and culture. Prevailing knowledge is used in making farming operational management for gain in crop production. Crop and irrigation cycles are also being followed through traditional knowledge base and advanced techniques are available now. The study was~~,~~ conducted to identify indigenous ~~technical~~ knowledge prevailing among the village side in NICRA domain districts Mahasamund and Kanker (CG state). ~~This was done in the year 2021~~ The study was to ~~examine traditional~~examine traditional knowhow of farmers in Kanker and Mahasamund districts of Chhattisgarh during 2021. The objective of survey was to collect traditional knowledge base from the local farmers. ~~The main purpose of carrying out this work was collection and documenting the indigenous technical knowledge of farmers.~~ As rainfall is the main factor in rainfed agriculture, stress was on collection of knowledge regarding rainfall prediction. The study was conducted under CRIDA, Hyderabad sponsored NICRA-AICRPAM project entitled "National Innovations on Climate Resilient Agriculture". Project has been implemented in Department of Agrometeorology, Indira Gandhi Krishi Vishwavidyalaya, Raipur, (C.G.) since 2011. The main purpose of carrying out this work was collection and documenting the indigenous technical knowledge of farmers. This will help its utilization in agricultural operations and practices. Here in this paper~~,~~ the environmental and biological factors practiced by local masses in forecasting rainfall has been ~~collection~~, collected, ~~identification~~ identified and ~~examination~~ examined ~~has been done of the environmental and biological factors which are forecasting rainfall as per local masses~~. ~~The study was conducted under CRIDA, Hyderabad sponsored NICRA-AICRPAM project entitled "National Innovations on Climate Resilient Agriculture". Project has been implemented in Department of Agrometeorology, Indira Gandhi Krishi Vishwavidyalaya, Raipur, (C.G.) since 2011.~~ Interviews were conducted by Field Information Facilitators by contacting masses and peasants.

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~~contacting masses and peasants.~~ Experience of seasonal rainfall forecasting can be strengthened by using this knowledge base. ITK techniques of rainfall prediction may serve as supplemental knowledge base to advanced scientific technologies.

Key words: Indigenous technical knowledge (ITK), rainfall forecasting, abiotic factors, biotic factors, Climate patterns.

INTRODUCTION :

Under changing agricultural scenario and availability of improved weather information, it is ~~desireable~~desirable to utilize weather parameters as agricultural resource for input saving, pest disease management and yield improvement. Weather events can have profound and often have quite visible effects on economic activity. Farmers can take part in decision process within which information is to be used as appropriate means to investigate the potential for use of ~~improved climate~~improved climate information. Brown et al. (1986) results indicated that modest improvements in forecast accuracy would have potentially significant value. A detailed analysis of every cropping system is required for identification of the value of those weather/climate events which have a large impact on productivity. Availability of improved climate information would ameliorate (lessen) the negative aspects and exploit positive features of weather variability.

Indigenous Technical Knowledge (ITK) is the knowledge that people in given community have developed over ages. Indigenous knowledge is found to be socially desirable, economically affordable, sustainable and involves minimum ~~risk for~~risk ~~rural~~for rural farmers and producers. South West Monsoon rainfall is the main source of water supply for rainfed agriculture. This rainfall is the main source of water for agricultural activities in the region. Indian monsoon is a gamble with a food basket and impacting country's production to a significant extent. In ~~rainfed agriculture~~rainfed agriculture, production and productivity of crops is affected by rainfall amount and distribution. It has been emphasized that there is need of stepping up efforts to provide reliable data on weather to the farmers as climate is the most important parameter that determines the quality and quantity of agricultural production. ITKs can provide vast and supplemental knowledge over advanced forecasting knowledge available nowadays.

Weather forecast plays a vital role in agricultural production. The advance information of ~~weather helps~~weather helps to minimize crop losses to a considerable extent. Thus, development and improvement of the art of weather prediction has been essential since time immemorial. Presently, we have many improved technologies for weather forecasting as well as their dissemination to stake holders. Previously, when there was no such technology available, farmers used to predict weather phenomena based on their natural, cultural and social phenomena (Waiwai and Malsale, 2013). ~~Therefore this study was conducted to identify indigenous technical knowledge and to examine traditional knowledge of farmers in Kanker and Mahasamund district of Chhattisgarh.~~

Water availble in abundance in nature is perhaps the cheapest and of course the essential input for production of food and energy. Even in areas where rainfall is ample, it is unevenly distributed affecting the crop yields due to excessive water at one time and due to water stress at

the other. Therefore, natural occurrence of rainfall both in ~~time frame~~time frame and space has to be managed to correspond to agricultural needs. Local experience can help a lot in this way and therefore there was ~~the~~ a need of collection of ITKs. Among the several factors contributing to low productivity, lack of irrigation facilities is also important factor. This is also true ~~for Chhattisgarh~~for Chhattisgarh state as the onset of monsoon at the initial stage, break monsoon conditions among the crop growth stages and cessation of rainfall at the terminal stage determine the productivity of rice and other kharif crops. Increasing evidences over the past few decades indicate that significant changes in climate are taking place worldwide as a result of enhanced human activities. ITKs information also give information about seasonal rainfall and help plan cropping strategies. The collection of this knowledge may largely help plan cropping strategies. Therefore this study was conducted to identify indigenous technical knowledge and to examine traditional knowledge of farmers in Kanker and Mahasamund district of Chhattisgarh.

METHODOLGY :

~~Based on the objective of the study, personal Interview was adopted for the study.~~ The study was conducted in Kanker and Mahasamund districts of Chhattisgarh state. Kapsi and Albeda villages from Kanker block and Shirgidi and Jhalkhamaria villages from Mahasamund block were selected purposely in the year 2021-22. These villages are NICRA-AICRPAM domain villages. First hand information is collected from the respondents through well-structured ~~schedule~~questionnaire. The data were collected through personal interview technique with the help of an interview schedule.

RESULTS AND ~~DISCUSSIONS :~~DISCUSSIONS:

Effective extension techniques play a significant role ~~not only~~ in simulating the transfer of technology ~~but also~~and in accelerating the pace of economic development of state. However extension ~~mechansim~~mechanism is based on perception and deep knowledge of the local farmers. To meet these requirements, farmers need to have current deviations like new technology of agriculture, new crops, seeds, insecticides, nutrient and water management and marketing of agricultural produces. Further this kind of ready hand information on contingencies and weather aberrations and on-field-technology can help the developing dominated region. Through feedback received from the local farmers, it has been observed that farmers ~~can gain~~can have significantly gain in saving their precious weather sensitive inputs like fertilizers, pesticides and irrigation water and also in epidemic-disease management. Further utility of the collecting ~~ITKs has~~ITKs has been found in helping farmers regarding adjustment in routine production and post-harvest operations for achieving maximum productivity and economy of different cropping systems.

ITK Technologies identified:

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Indigenous Technical knowledge for weather events has been compiled for two districts as per survey **(Table- 1).**

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Indigenous knowledge related to weather and climate forecasting :

Farmers use a combination of ~~informations~~information or individual information. ~~These~~This information are of plants, animals~~, insects~~, insects, meteorological and astrological indicators to predict local weather (Egeru, 2012). This technique commonly practices indigenous knowledge of weather and seasonal climate forecasting in many regions of the world (Shoko, 2012; Risiro et al., 2012). In this paper, we ~~generalized indigenous~~generalized indigenous knowledge based indicators into biological, non biological and meteorological indicators. The ITK technologies compiled under NICRA-AICRPAM project are shown in Table-1

Table-1 : ITK technologies compiled under NICRA-AICRPAM project

S.No.	NICRA District	Farmer Name/ village	ITK	Remarks and Indicator
01	Kanker	(i)Sukhlal Jain, kapsi	Ants carry eggs from one place to another (safer places)	Forecasting of rains
		ii) Dev Parsad Jain, Kapsi		
		(i)Bhavsingh Jain, Kapsi	Digging of earth by bear at many places and cumulation at one place	Forecasting of rain
		(ii) Sukhpal Kawde, Kapsi		
		(iii) Dayalu Ram Kawde, Albeda		
		(i)Chamar Singh Kemro, kapsi	Winged termites appearing	No rain in immediate future
		(ii) Devlal Nishad, Kapsi		
		(iii) Lokeshwari Hidko, Kapsi		
		(iv)Ishwar Sinha, Kapsi		
		v)Manrakhan Netam, Albeda		
		(vi) Moti Ram Salam, Kapsi		
		(i)Santosh Jain , Kapsi	Caves in trees are there and frogs living there make sound some times	There is forecasting of rainfall
		(ii) Lekhram Salam, Albeda		
		(iii) RamSingh Salam, Albeda		
		(iv)Radheram Teta, Albeda		
		(v)Sudhimarin Darpeti, Albeda		
		(vi) Jai Ram Nareti, Kapsi		
		(i)Bisan Bai Jain, Kapsi	Red ants appear in swarms	Forecasting of rainfall
		(ii) Shivcharan Salam, Albeda		
		(i)Bir Singh Sahu, Kapsi	There is round circle	Forecasting of

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		(ii) Bindabai Jain, Kapsi	around moon	rain
		(iii)Rohit Salam, Kapsi		
		(iv)Rameshwar Baghel, Kapsi		
		(v)Bashram Hichami, Albeda		
		(vi) Mehruram Yadav, Albeda		
		(vii) Fagnubai Salam, Albeda		
		(viii) Shivram Koreti, Albeda		
		(ix)Raghunath Mandavi, Albeda		
		(x) Banshi Ram, Kapsi		
		Amar Prasad Baghel, Albeda	Winged termites and round circle around moon	Forecasting of rain possible accordingly
		Asmo Bai, Kapsi	Red ants in high population are appearing	Forecasting of rains

02	**Mahasamund**	Lakhan Lal Sahu, Shirgidi	Ants entering in holes / caves is indication	Rain forecasting
		Pokhan Dhruw, Jhalkhamharia	Termites flying at low altitudes	Immediate rain forecasting

CONCLUSION :

~~It is obvious that low~~ Low and fluctuating rainfall during crop growing season is a constraint for improving crop production in rainfed regions. In rainfed agriculture, the importance of rainfall over-rides all other climatic factors which determine the yields. With almost negligible irrigation facilities in rainfed regions, rain water shortages often lead to moisture stress causing substantial reduction in crop yields. Collection of ITKs has been done based on some astromical, environmental and biotic factors. Validation of ~~the ITKs~~the ITKs is also required and can be future course of study. ~~Presently this~~Presently this ~~information can~~information can be used. Integration ~~of data~~of data from modern techniques of weather forecasting ~~with biological~~with biological evidence from traditional knowledge can be done. All available abiotic and biotic indigenous rainfall forecasting techniques collected as ITKs may serve as a supplemental ~~information to~~information to advanced ~~scientific technologies~~scientific technologies.

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