Research Paper Social Science

Farmer's Suggestion Measures to Changing Climate in Karnataka

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ABSTRACT

The study was conducted in Dharwad and Bijapur districts of Karnataka in 2011. Ex-Post-Facto research design was followed. The total sample for the present study was 150. The objectives of the study was to document farmers suggestion to climate change as felt by farmers. Appropriate statistical tools were employed. Exactly 90.00 per cent of the farmers changed their time of application of chemicals and fertilizers to evening hours and the same proportion of farmers changed number of intercultivation operations depending on the rainfall occurrence, and more than 80.00 per cent of the farmers used to apply more of FYM, chemical fertilizers and penning to reduce the loss of soil fertility. Nearly two third (65.33 %) of the farmers changed their cropping pattern from mono cropping to diversified cropping pattern. Farmers (42.00%) were practicing wider spacing in case of cotton, sorghum and soybean. In case of pest and disease infestation, farmers (24.67%) adapted to grow resistant varieties, applied neem and glyricedia leaves to overcome the frequency of damage. Farmers response are prime importance in analysis of extent of climate change.

KEYWORDS climate change, farmers, suggestions

INTRODUCTION

The effect of global climatic change on agriculture has recently become a subject of global importance. Climate constitutes complex inter-related variables such atemperature, rainfall, wind speed and sun shine, having varied role to play. Change in one variable triggers changes in other. According to the Inter Governmental Panel on Climate Change (IPCC, 2001), average world temperatures are likely to be between 1.4° C and 5.8^{0}C higher by 2100 than they were in 1990s. More specifically, global warming up by 0.74^{0}C over the past 100 years and 1998-2008 decade has been declared as the hottest decade since global surface temperatures are measured (since 1850). Sea level has increased at an average of 10.00 cm to 25.00 cm over the past 100 years (Sethi, 2007a). This rise was related to increase in surface temperature, which was caused by melting of glaciers and ice caps.The temperature induced evaporation leading to the higher moisture led to the cyclones. The World Trade Organization (2004) says that an extra 1, 50,000 people are dying each year due to global rise in temperature.

In Indian context, the rainfall is highly variable with greater spatial variability across regions and seasons. The trend analysis of rainfall data from 1140 meteorological stations carried out at CRIDA (Rao, D. G. and Sinha, S. K., 1994) showed negative trend among the stations situated in deep southern parts, southern peninsular, central India and parts of north Indian regions. In India the change in sowing season due to temperature variations is impacting the wheat yield in Haryana (Sethi, 2007b). For rice, wheat, maize, soyabean, sorghum and barley the net impact of climate trends on yield since 1980 was negative (Lobell and Field, 2007). Accounting of the adaptations to climate change is difficult but necessary in order to measure impacts at the farmer's level. To this end, individual farmer's adaptation to climate change on agriculture assume critical importance. With this back drop the farmers adaptation to changing climate was explored.

RESEARCH METHODOLOGY

The study was conducted during the year 2010-11 in Dharwad and Bijapur districts of Karnataka. Dharwad taluk from Dharwad district and Bijapur taluk from Bijapur district were selected based on the high variability in rainfall, temperature, relative humidity and sunshine in the last 2 decades. Meterological data for the same was collected from College of Agriculture, Bijapur and College of Agriculture, Dharwad. Study thus covered 10 villages. Fifteen farmers from different landholding categories from each village were randomly selected and also one of the criterions fixed for the study was that farmer should be minimum of 45 years old. This was followed to get better response towards change in climate over the years. In all, 150 farmers were selected for the study. The data were analyzed using simple statistics- frequency, percentage, mean and standard deviation

RESULT AND DISCUSSION

Suggestions of the farmers to mitigate the climate change effect

Farmers should be able to adapt in order to reduce negative impact of climate change. This section focuses on the various adjustments that farmers in the survey made in their farming activities to overcome changes in the climate. Different specific suggestions of the farmers to mitigate climatic effect on each farm practices followed are presented in Table.

In case of harvesting, all the farmers used to harvest crops at clear sunny days. Mulching, proper decomposing of FYM, frequent weeding and intercultivation are the practices followed

by 99.00 per cent of the farmers to control weed growth. Exactly 90.00 per cent of the farmers changed their time of application of chemicals and fertilizers to evening hours and the same proportion of farmers changed number of intercultivation operations depending on the rainfall occurrence.

Majority (90.00%) of the farmers replaced traditional varieties like white sorghum, javari redgram, bengal gram and jaidhar cotton varieties (high pest incidence) with the high yielding varieties having characteristics of short duration, resistant to pests and diseases and climate resilient technologies and more than 80.00 per cent of the farmers used to apply more of FYM, chemical fertilizers and penning to reduce the loss of soil fertility.

Nearly three-fourth of the farmers kept land ready for sowing as soon as onset of rainfall and they are practicing summer deep ploughing in recent past and the same proportion of respondents applying FYM one month prior to the sowing date. Nearly two third (65.33 %) of the farmers changed their cropping pattern from mono cropping to diversified cropping pattern.

Half of the respondents used to apply fertilizers and FYM at proper moisture condition in case of lean rain fall period and make a solution of sheep pellet and cow dung, then sprayed it on the field. Compared to past two decades farmers were using higher quantity of chemical fertilizers.Less than half (44.00%) of the farmers practicing nursery preparation to cope with altered sowing dates. Farmers (42.00%) were practicing wider spacing in case of cotton, sorghum and soybean. In case of pest and disease infestation, farmers (24.67%) adapted to grow resistant varieties, applied neem and glyricedia leaves to overcome the frequency of damage. Twenty per cent of the respondents followed number of adaption strategies like pot irrigation method, sprinkler irrigation, drip irrigation and frequency of irrigation is also increased by the farmers and they used to irrigate during morning and evening hours.

CONCLUSION

Climate constitutes complex inter-related variables such as temperature, rainfall, wind speed and sun shine, having varied role to play. Change in one variable triggers changes in other. The rise in average annual temperature by 1.3° C in the state of Karnataka during 1950 to 1990 has been observed (Rajegowda et al., 2009). Agriculture and food security are among the major casualties of climate change in India. However,very limited studies have been done to understand farmer's perspectives and experiences of climate change in crop cultivation. It was felt very essential to understand their perspectives also, so that better holistic policy decisions could be made.

Table: Distribution of respondents on the basis specific suggestions to mitigate climatic effect on each farm practices

Farming practices	Farmers Suggestions	F (%)
Soil fertility	Applying more of FYM, Penning and use of More chemical fertilizer	127 (84.67)
Variety selection	Changing from traditional varieties (white sorghum, Javari red gram, Bengal gram And Jaidhar cotton variety) to HYV	138 (92.00)
Cropping pattern	More diversified cropping pattern like Mixed cropping, inter cropping and alternate cropping	98 (65.33)
Land preparation	Keeping ready, as soon as rainfall occurs for sowing, summer deep ploughing. Digging of soil by spade or plough.	108 (72.00)
Sowing time	Crops grown in nursery, depending on rain fall occurrence.	66 (44.00)
Spacing	Wider spacing in cotton, sorgam and soyabean	63 (42.00)
FYM application	Applying one month early, spreading evenly, long term decaying. More use chemical fertilizers comparatively	114 (76.00)
Use of Chemical fertilizer	More use chemical fertilizers comparatively. Application of liquid fertilizer. Farmers used to make a solution of sheep, cow dung etc., and then sprayed it in the field	78 (52.00)
Time of application	Applying after rain fall stops or spraying during evening	135 (90.00)
Intercultural operation	Number depending on rain fall distribution	135 (90.00)
Weed growth	Frequent weeding, inter cultivation and proper sun burning of FYM and soil	99 (66.00)
Insect, Pest infestation	Growing resistant varieties	37 (24.67)
Disease infestation	Growing resistant varieties	37 (24.67)
Pesticide use	Applying after rain fall stops or spraying during evening and irrigating after spray if rain fall to occur.	45 (30.00)
No. of Irrigation	Increased no. of irrigation. Pot irrigation- keep the pot near the base of the plant making a whole at the bottom so that water can penetrate directly to root zone.	30 (20.00)
Harvesting	Harvesting at clear sunny day	150 (100.00)
Grain Yield qty	Growing HYV along with resistant variety to climatic variations	22 (14.67)
Storage pests and diseases	Smearing by red soil, neem and pongamia leaves application, foaming by burning of waste	105 (70.00)
Taste of the produce	Harvesting at appropriate time	33 (22.00)

Acknowledgements:
I (Main Author) acknowledge the JRF fellowship received from ICAR. I thanks to University of Agricultural Sciences-Darwad and NDRI for providing research facilities.

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