

TO DETERMINE THE INFLUENCING FACTORS FOR ADOPTING IMPROVED FARM PRACTICES BY SCHEDULED CASTE FARMERS: A CASE STUDY OF KRISHNA DISTRICT IN ANDHRA PRADESH

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Abstract: The continued changing pattern of climate give rise the necessity of adopting improved farming practices as farming sector is more susceptible to this change. Climate change introduces uncertainties in the livelihoods of communities having higher dependence on weather and climate. It is becoming a threat towards world community through increasing temperatures, reduced precipitation, frequent droughts and scarcity of water. The basic elements of food production such as soil, water and biodiversity are negatively affected by climate change. Scheduled Caste farmers have therefore been modifying their farming practices to better adapt to the changing climate. But the traditional coping mechanisms are not sufficient for dealing with medium to long-term impacts of climate change. So, innovation of modern technologies is essential to mitigate the climate change adaptation. It is also important to understand how and when these technologies are used by Scheduled Caste farmers and with what impacts. An understanding of the factors that influence the adoption of an innovation is therefore important in the process of technology development and dissemination. As a low lying downstream riparian District, Krishna District is one of the most climate vulnerable District in the state. The Krishna District part is adversely affected by climate variable particularly drought. Improved farm practices in Krishna District are therefore needed to become more available to improve the livelihoods of Scheduled Caste farmers. Several technologies and practices are available for smallholder Scheduled Caste farmers in Krishna District to enable them better adapt to the effects of climate change.

Key Words: Adoption, Practices, Livelihoods, Farming, Technology, Climate.

Introduction

The continued changing pattern of climate give rise the necessity of adopting improved farming practices as farming sector is more susceptible to this change. Climate change introduces uncertainties in the livelihoods of communities having higher dependence on weather and climate. It is becoming a threat towards world community through increasing temperatures, reduced precipitation, frequent droughts and scarcity of water. The basic elements of food production such as soil, water and biodiversity are negatively affected by climate change. Scheduled Caste farmers have therefore been modifying their farming practices to better adapt to the changing climate. But the traditional coping mechanisms are not sufficient for dealing with medium to long-term impacts of climate change. So, innovation of modern technologies is essential to mitigate the climate change adaptation. It is also important to understand how and when these technologies are used by Scheduled Caste farmers and with what impacts. An understanding of the factors that influence the adoption of an innovation is therefore important in the process of technology development and dissemination. As a low lying downstream riparian District, Krishna District is one of the most climate vulnerable District in the state. The Krishna District part is adversely affected by climate variable particularly drought. Improved farm practices in Krishna District are therefore needed to become more available to improve the livelihoods of Scheduled Caste farmers. Several technologies and practices are available for smallholder Scheduled Caste farmers in Krishna District to enable them better adapt to the effects of climate change. It however appears these technologies and practices have not been comprehensively documented in the climate change and technology adoption literature in Krishna District. Technologies necessary to mitigate with climate shock in agriculture encompass a wide range of activities involve in agricultural practices that will need to be evaluated and prioritized. Examples include modifying planting times and switching to varieties resistant to heat and drought; developing and adopting new cultivars; changing the farm portfolio of crops and livestock; improving soil and water management; improving fertilizer use and increasing irrigation; increasing labour or livestock input per hectare to increase productivity increasing regional farm diversity; and shifting to non-farm livelihoods.

Besides ensuring smooth operation some practices may even have negative effect on variability in the short-run as Scheduled Caste farmers and agricultural systems adjust to the new practices that in the long run decrease vulnerability. So, linking Scheduled Caste farmers to new sources of information on technology will be important, but is equally important is deciding the potential factors of technology adoption at farm level that influence their decisions. Several factors may have influence on the extent of adoption of farm practices such as characteristics of farm practice; the adopters; the change agent (extension worker, professional, etc.); and the socio-economic, biological, and physical environment in which the technology take place. Socio-psychological trait of farmers also plays an important role in technology adoption. The age, education attainment, income, family size, tenure status, credit use, value system, and beliefs are usually positively related to adoption. From the existing literatures it is evident that adoption of technologies in farming practices is affected by certain. The farmer's attitude towards change, land, sources of information, membership of farmer's organizations, educational level, farm income, Scheduled Caste farmers exposure, are the important socio-economic factors influencing adoption of farm innovations. Factors that trigger adoption of new technologies comprise of young and educated Scheduled Caste farmers, higher income level, risk orientation and decision making ability of Scheduled Caste farmers. Factors limited adoption of technology includes conservative old men, illiterate, weak belief on ensure high yield of new technology etc. So, it is evident that Dalit farmer's use of technologies can be influenced by various socio-economic

factors. It can be concluded so far, though a number of studies have been conducted across the world on technology adoption, but there is dearth of literature on the specific factors that influence adoption of improved farming practices, especially among Scheduled Caste farmers in Krishna District. This is a gap that must be bridged if the problem of low technology adoption among Scheduled Caste farmers is to be addressed and agricultural productivity is to be improved. Therefore, there is a necessity to address the factors influencing technology adoption to face the adverse effects of climate properly.

Owing to this necessity this Study is aimed at examining the socio-economic issues of technology adoption among the Dalit farmers of the Krishna region of Andhra Pradesh, which is relatively vulnerable to climate change threat, especially to drought.

Review of Literature

Loevinsohn et al., 2013¹ define technology as the means and methods of producing goods and services, including methods of organization as well as physical technique. According to these authors new technology is new to a particular place or group of farmers, or represents a new use of technology that is already in use within a particular place or amongst a group of farmers.

Bonabana-Wabbi 2002² Technology itself is aimed at improving a given situation or changing the status quo to a more desirable level. It assists the applicant to do work easier than he would have in the absence of the technology hence it helps save time and labour.

Objectives of the Study:

- To determine the status of adoption of improved farm practices by the farmers, and
- To determine the influencing factors for adopting improved farm practices by the farmers
- To determine the Socio –Economic status of adoption of modern and improved practices by Scheduled Caste Farmers

Hypotheses

The central hypothesis of the research reported in this study is that appropriate strategies for sustainable rural development and land management depend on the comparative advantages that exist for Scheduled Caste farmers in a particular location. For example, opportunities for development of high-value perishable commodities, such as horticultural crops or dairy, are likely to be greatest in areas with relatively high market access and favourable agricultural potential. In such areas, investments in appropriate forms of market infrastructure and institutions may yield high social returns and facilitate a process of sustainable development. In areas more remote from markets or having lower agricultural potential, alternative income strategies, such as extensive livestock production or forestry, may have a greater comparative advantage, and development strategies addressing these livelihoods for Scheduled Caste farmers (e.g., promotion of improved institutions of common property resource management) are more likely to be effective.

Scope and Methodology

This study was carried out in Krishna District where crop production is adversely affected by climate change variables such as rainfall and temperature. In Krishna district were selected purposively for field investigation as selected sites fall under Krishna District of Andhra Pradesh and vulnerable to climate change particularly affected by. Then, one Division from each village was selected randomly. This Division are Nuzvid and Vijayawada Rural. Then, four villages from each Division, that is, total 8 villages namely Nuzvid, Reddy Gudem, Musunuru and Agiripalli from Nuzvid Division and Kankipadu, Ibrahimpatnam, Nunna and Jakampudi from Vijayawada Rural Division were selected randomly. All the Scheduled Caste farmers of these eight villages are the population of the present study from which a total of 200 sample farmers, 100 from Nuzvid and 100 from Vijayawada Rural., were selected randomly taking approximately 10% and 15% of the population from each village, respectively. Data collection was carried out through interview survey based on a semi-structured interview schedule. A first draft of the interview schedule was designed according to the research objectives. Then, this interview schedule was pre-tested during pilot survey organized in the study area. Four focus group discussions with farmers and local key informants were also organized to get insights on the main driving forces determining the adoption of improved farm practices in the study area. The interview schedule was up-dated based on pilot survey and later on, used for primary data collection from the Scheduled Caste farmers. Various descriptive and inferential statistical techniques i.e. percentage, mean, cross-tabulation, Chi-square, regression analysis, logistic regression etc. were applied for getting meaningful results by using Statistical Packages for the Social Sciences (SPSS).

Results and Discussions

Table-1

Status of adopting Improved Farm Practices adoption of modern and improved practices by Scheduled Caste Farmers

S.No	Implements	Adopters of Scheduled Caste Farmers	
		Sampling	Percentage
1	Use of Chemical Fertilizer	45	22.5%
2	Use of Improved seeds	36	18%
3	Electric Pump	15	7.5%
4	Diesel Engine	26	13%
5	Iron Plough	15	7.5%
6	Tractors	36	18%
7	sprinkler	10	5%

¹. Loevinsohn M, Sumberg J, Diagne A (2012) under what circumstances and conditions does adoption of technology result in increased agricultural productivity? Protocol. London: EPPI Centre, Social Science Research Unit, Institute of Education, University of London

². Bonabana-Wabbi J. (2002). Assessing Factors Affecting Adoption of Agricultural Technologies: The Case of Integrated Pest Management (IPM) in Kumi District, Msc. Thesis Eastern Uganda

8	Plant protection	09	4.5%
9	Spraying machine	08	4%
Total		200	100%

Source of Data: Primary

The adoption of modern agricultural implements is directly related to the socio-economic condition and awareness of farmers. Awareness about modern agricultural implements promotes demands and spread of agricultural innovations. In order to determine the level of adoption of modern agricultural practices, 9 indicators (Table 1) were considered and adoption score have been calculated as the number of implements adopted by particular Scheduled Caste Farmers. On the basis of adoption quotient of particular farmers, adoption level is classified into three categories.

Table-2
Adoption score of Farmers in the Krishna Region

S.No	Adoption level	Adopters	
		Adopters of Scheduled Caste Farmers	Percentage
1	Low adopter	147	73.5%
2	Moderate adopter	34	17%
3	High Adopter	19	9.5%
Total		200	100%

Source of Data: Primary

The socio-economic condition of farmers is directly related to the use of modern agricultural implements. For this purpose, the estimation of relationship between the level of adoption of improved technology by the farmers and their increase of socio-economic status of Krishna Region.

Conclusion

Krishna District is adversely affected by climate change and drought has become inevitable in Krishna District part of the Andhra Pradesh. The Scheduled Caste farmers have been using traditional and modern technologies in order to cope with the challenges of climate induced drought. Various practices were used by the Scheduled Caste farmers in response to altered farming resulting from experienced environmental degradation due to events associated with climate change. Power tiller was ranked as the first among adoption practices in order by percentage, while line showing was ranked as least adopted. This study sought to determine the factors that influence the adoption of climate related improved farm practices by the Scheduled Caste farmers. The empirical results explore that some of the indicators have either positive or negative impact on the adoption of improved farm practices. Several factors such as communication score and total cultivable land have positive effect on adoption of the Scheduled Caste farmers and total land area affected due to drought has negative effect on adoption of the Scheduled Caste farmers. Proper evaluation of these factors will help to further dissemination of technology in Krishna District. This study represents a preliminary insight into understanding the factors influencing farmer's adoption of improved farm practices related to climate change. It widens the space for further in-depth research on socio-economic influences which can inform policy makers of Krishna District how to shift in farming for ensuring agricultural development under increasingly adverse climatic conditions.

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