

CONSTRAINTS FACED BY THE FARMERS IN ADOPTION OF RECOMMENDED SOIL RECLAMATION PRACTICES FOR SALT AFFECTED SOILS IN PURNA VALLEY

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ABSTRACT

Constraints Analysis is essential to induce knowledge and adoption of any growers. The study entitled “Knowledge and adoption of land care techniques by the farmers in salt affected track of Purna Valley” was purposefully conducted in Akola and Akot Panchayat Samities of Akola district in the Vidarbha region. For the present study, 100 farmers were selected from ten villages by using random sampling. The objective of the study is to know the constraints faced by the farmers in adoption of recommended soil reclamation practices for salt affected soil using exploratory design of social research. While studying the constraints, majority of the respondents reported the constraints like lack of knowledge about green manuring with Dhaincha / Sun hemp (100%), lack of knowledge about gypsum bed technique (98.00%), insufficient and irregular rainfall for salt tolerant crops (88.00%), high intensity of rainfall within few period damage the bunds (88.00%), absence of Vetiver grass (85.00%), lack of knowledge about zinc sulphate (86.00%) and low knowledge about opening of deep furrows (81.00%). Hence, for increasing the adoption of recommended reclamation practices, there is need to take care of these constraints.

KEYWORDS Constraint analysis, Reclamation practices, Salt affected soils in Purna Valley

INTRODUCTION

Soil, water and sunlight are three basic resources of the nation. Soil is the most important gift of the nation. It could have been impossible for us to stand, live and eat if there was no soil, but a much smaller number of people realize a great national importance of conserving and carefully utilizing the greatest gift of god. Fertile soil is a source of human subsistence and security. The prosperity of a country and its people essentially depends on the soil and water through on the proper use and treatment of soil.

The unique feature of salt affected soils of Purna Valley is that though the salinity and sodicity is widely reported in this tract, the presence of salt efflorescence on the surface is hardly seen. However, use of well water which is of poor quality makes the situation more problematic. The farmers in the valley are therefore compelled to forego the irrigation input.

The precipitation of calcium in the form of carbonate immobilizes calcium and magnesium in the Valley soils and dominance of sodium is increased which affects physical and chemical properties of soil dressily. Under such situation,

it may enhance clay dispersion, destabilization of soil structure and decking of the soil capillary network which ultimately affect water transmission characteristics of soil. Many researches working on *valley* soil and stated that Purna *Valley* soils are neither saline nor sodic in surface as per the criteria suggested by United States Salinity Laboratories. However, some areas do have salinity / sodicity problems in the subsoil zone. Moreover the criteria suggested from saline sodic soil by United States salinity Laboratory staff are mainly associated with non-swelling and non-shrinkage soil. The critical limit of exchangeable sodium percentage and sodium adsorption ratio 15 and 13 respectively, for deterioration in soil structure of non-swelling and non-shrinkage soils, however, considerable lower ESP of 6 has been suggested by some of the Australian workers for soil having an abundant quantity of clay. The Purna *Valley* soil has severe limitations for their sustainable use owing to the development of adverse physical condition, especially poor internal drainage system at 5 ESP and therefore the framers are not in a position to maintain sustainable crop production under rain situation and cannot irrigate these soils even with good quality of irrigation water.

MATERIALS AND METHODS

The study was conducted in Akola and Akot *Panchayat Samities* of Akola district in Vidarbha Region of Maharashtra state where farmers facing the problem of salinity and sodicity with the exploratory research design of social research. The list of villages selected for the present study is Mhaisang, Palsobadhe, Babhulgaon, Borgaon, Katepurna, Dhamni, Gopalkhed, Nirat, Gandhigram, Vairat. From these selected 10 villages 100 farmers were selected by using random sampling method.

Measurement of Constraints

The Oxford Dictionary meaning of the word constraints is confinement, restriction of liberty or compulsion of circumstances or compulsion put upon the behavior Reading (1971) defined constraints as use of force to influence or prevent an action or quality or state of being compelled to do or not to do something. In this study, constraint refers the problems faced by the farmers in adoption of recommended soil reclamation practices for salt affected soils in Purna *Valley*.

RESULTS AND DISCUSSION

Constraints

In the present study, constraints referred to problems or difficulties faced by individual respondents in adoption of recommended soil reclamation practices. The relevant data in this regard has been presented in Table-1 as below.

Table 1: Distribution of Respondents According To Their Constraints Faced By Them in Adoption of Recommended Land Care Techniques for Salt Affected Soil

Techniques	Constraints in Adoption	Percentage (%)
Deep ploughing at every year/ alternate years	1.High cost of new bullock pair	17.00
	2.Heavy charges of bullock pair and tractor	23.00
	3.Incorporation of upper fertile layer	14.00
	4.Hardening of upper layer of soil in summer	29.00
	5.Lack of improved implements	32.00
	6.Lack of Money at proper time	62.00
Incorporation of Gypsum @ 50% G.R. i.e.2.5 t / ha in combination with FYM 5 t	1.Unavailability of gypsum	82.00
	2.Unavailability of FYM	78.00
	3.Lack of information	56.00
	5.Lack of Money at proper time	62.00

Table 1: Contd.,		
Techniques	Constraints in Adoption	Percentage (%)
Major and micronutrients on the basis of soil testing.	1.Unavailability of soil testing lab nearby places	83.00
	2.Unavailability of fertilizers at proper time	67.00
	3.High cost of fertilizers	41.00
	4.Low credit supply	36.00
	5.No enough capital for costly fertilizers	23.00
	6.Low response to fertilizers	63.00
	7.Lack of knowledge about the importance of micronutrients	37.00
Application of Zinc sulphate	1.Lack of knowledge	86.00
	2.High cost	81.00
	3.Unavailability of zinc sulphate in market	79.00
Opening of deep furrow (to enhance efficiency of amendments & fertilizers)	1. Low knowledge	81.00
	2. Unavailability of bullocks	71.00
	3. Water logging during excess rainfall	68.00
	4. Cracking of soil if no rain occurs	88.00
	5.Inconvenience to intercultural operation	73.00
Preparation of farm ponds to conserve excess moisture	1.High initial investment	60.00
	2.High evaporation and percolation	41.00
	3.High charges of maintaince	34.00
	4.Lack of technical guidance	78.00
	5.Deposition of clay & silt in farm pond	48.00
	6.Cracks on vertical sides of farm pond	24.00
Natural grass or vetiver bunds at field boundaries	1.Absence of vetiver grass or stones to construct bunds	85.00
	2.High intensity rainfall within few period damages the bunds	88.00
Planting of salt tolerant crops	1. Unavailability of improved seeds	58.00
Planting of salt tolerant trees	1. Lack of knowledge	71.00
	2.Unavailability of improved seeds/ planting material	62.00
	3.Insufficient and irregular rainfall for tree establishment	88.00
Application of alkali water through gypsum bed	1.Lack of knowledge	98.00
Green manuring with Dhaincha / Sun hemp	1.Lack of knowledge	100.00

Constraints encountered by the respondents in saline soil tract areas towards adoption of soil reclamation practices were identified and classified according to recommended soil reclamation practices or techniques.

Regarding the practice of deep ploughing at every / alternate years, it was observed that the major constraints encountered like high cost of new bullock pair (17.00%), heavy charges of bullock pair and tractor (23.00%), incorporation of upper fertile layer (14.00%), hardening of the upper layer in summer (29.00%), lack of improved implements (32.00%) and lack of money at the proper time (62.00%) by the respondents. In case of techniques like the incorporation of Gypsum @ 50% G.R. i.e.2.5 T / ha in combination with FYM 5 the constraints encountered by the respondents like unavailability of gypsum (82.00%), unavailability of FYM (78.00%), lack of information (56.00%) and lack of money at the proper time (62.00%).

Regarding the practice of opening of deep furrows (to enhance efficiency of amendments & fertilizers) major constraints reported by the respondents were low knowledge (81.00%) about this practice, unavailability of bullocks (71.00%), water logging during excess rainfall (68.00%), cracking of soil if no rain occurs (88.00%) and inconvenience to

intercultural operation (73.00%). The technique of preparation of farm ponds to conserve excess moisture the constraints observed like high initial investment (60.00%), high evaporation and percolation (41.00%), high charges of maintenance (34.00%), lack of technical guidance (78.00%), deposition of clay & silt in farm pond (48.00%) and cracks on vertical sides of farm pond (24.00%) by the respondents. The technique of natural grass or Vetiver bunds at field boundaries were not done due to absence of Vetiver grass or stones to construct bunds (85.00%) and high intensity rainfall within few period damages the bunds (88.00%). The practice of planting of salt tolerant crops is not done because 58.00 per cent respondents were facing the problem of unavailability of improved seeds. Regarding the planting of salt tolerant trees, the major constraints reported by the farmers were lack of knowledge (71.00%), unavailability of improved seeds / planting material (62.00%) and insufficient and irregular rainfall for tree establishment (88.00%) by the respondents. The technique like application of alkali water through gypsum bed was not done because 98.00 percent respondents had lack of knowledge about it. While no any respondents did the green manuring with *Dhaincha* or Sunhemp because cent per cent respondents had a lack of knowledge about it.

CONCLUSIONS

Summing up the constraints analysis, it is concluded that all these practices are not adopted because of unavailability of material, high cost and lack of knowledge about these practices. It is necessary to overcome these constraints to increase awareness and adoption of soil reclamation practices by the respondents in saline tract areas of the Purna Valley of Vidarbha.

The findings of the present study are corroborating to the findings of Anonymous (1994), Nikhade and Thakare (1985), Desai et. al. (1997), Deshmukh et.al. (1997), Chikale (1993), Ingle (1994), Jagdale and Nimbalkar (1993) and Kale et.al. (2011)

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