**To study the Awareness and Extent of Adoption of In-Situ Water Conservation (ISWC) Practices among Dryland Farmers**

**ABSTRACT**

*The study was conducted in dry land farmers of Pudukkottai district in Tamil Nadu state. By using random sampling method 80 respondents were selected and data was collected through pre tested interview schedule. Adoption index was used to quantify the selected In-Situ Water Conservation (ISWC) practices. The study examined the level of awareness and extent of adoption of In-Situ Water Conservation (ISWC) practices among dry land farmers. The results showed that among the eight selected practice, respondents had cent percent awareness about summer plough, land leveling and ridges & furrows. Majority of respondents had medium level (76.20%) of adoption of ISWC practices respectively. The study reveals that most of the respondents followed more than one ISWC practices on their farm to conserve the rainwater.*

**Key words:** ISWC, dryland, awareness, adoption index

**INTRODUCTION**

Agriculture has an indelible place in the Indian economy. In India, dry land cultivated area accounts 68 per cent of the total net sown area (136.8M.Ha) (Vision-2030 CRIDA). Tamil Nadu held nearly 2/3 of the cultivated area (66%) under dry land condition (Department of Economics and Statistics 2019). In which the crops like pulses, cotton, gingelly and minor millets are cultivated predominantly. Here the most important problem with dry land is water scarcity particularly at the time of dry spells. That’s why farmers are forced to adoption of In-Situ Water Conservation (ISWC) practices. Utilizing these ISWC practices to provide irrigation to crops and maintain the soil moisture (Relani *et al*., 2015 & Balasaheb Devidas Romade, 2016). In recent days the government has implemented the programs like Integrated Watershed Management Programme, National Agricultural Development Programme/Submission on Agricultural Mechanization, National Mission on Sustainable Agriculture and Tamil Nadu Mission on Sustainable Dry Land Agriculture in Pudukkottai district which are popularizing the ISWC practices (District Statistical Handbook 2017-2018). In this context, how far the dry land farmers aware and adopt ISWC practices was studied.

**MATERIALS AND METHODS**

***Description of study area***

The present study was conducted in Gandarvakotai and Thiruvarankulam blocks in Pudukkottai district of Tamil Nadu state. These blocks were selected purposively because these two blocks have major area under dry land farming. Using random sampling method 80 respondents were selected in the selected villages of the above mentioned blocks.

***Method of Data collection & Analysis***

By survey method, primary data was collected from the respondents through well constructed and pre tested interview schedule. The collected data were analyzed through descriptive statistics and Karl Pearson’s coefficient of correlation by using SPSS software.

***Adoption index***

Adoption Index was employed to quantify the selected dry land ISWC practices. The collected raw adoption scores were converted into adoption index through scoring procedure followed by Rajina Potsangbam (2018). Based on adoption index (AI), the respondent were categorized into three i.e. low (upto 33.33), medium (33.33-66.66) and high (66.66-100).

|  |
| --- |
| Number of in-situ water conservation practices adopted |
|  Total number of practices applicable |

|  |
| --- |
| × 100 |

 Adoption Index =

 **RESULTS AND DISCUSSION**

**Awareness and Adoption of ISWC practices among dry land farmers**

The figure 1, showed that cent percent of the dry land farming respondents aware of summer plough, land leveling and ridges & furrows followed by compartmental bunding (98.75%). Nearly two-third of the respondents aware of farm pond (68.75%) followed by broad bed furrows (58.75%). Very low level of awareness was observed related to practices like recharge pit (3.75%) and trench cum bund (2.50%). None of them aware of tied ridges.

**Figure 1. Distribution of respondents according to their awareness and adoption of ISWC practices**

From the Figure 1, it can be observed that cent percent of respondents pertaining dry land farming adopted summer plough followed by land leveling (87.50%), compartmental bunding (82.50%). Nearabout three- fourth of respondents adopted ridges & furrows (71.25%). Almost one- third of the respondents had adopted farm pond (32.50%) followed by broad bed furrows (28.75%). Recharge pit was adopted by only 3.75 per cent of the respondents. None of the respondents adopted trench cum bund and tied ridges.

Moreover it can be notes that there is less adoption of ISWC practices through they were well of those practices. In dry land respondents, prefer to go for direct sowing on the ploughed land, which create the advantages of conserve the rain water in the field is the reason that the adoption of land leveling was low. Fear of water logging in furrows during excess rainfall, additional cost involved in raising the furrows, unavailability of labours and lack of access to the farm machineries are the reasons lower adoption of ridges & furrows, broad bed furrows and compartmental bunding. Regarding farm pond, the respondents feared that such construction demand higher cost and they have to lose the portion of cultivable land at through many were cumbersome procedure involved in getting subsidy provided by government. Since, very few respondents aware trench cum bund, recharge pit and tied ridges of adoption also found to be low

**Figure 2. Distribution of respondents according to number of practices adopted in their farm**

From Figure 2, it clearly showed that majority of the dry land farmers adopted more than one In-Situ Water Conservation Practices in their own farming land to conserve the rain water. This result is in line with Anitha Pauline *et al*,(2020).

**Table 1. Distribution of respondents according to Adoption index**

|  |  |  |  |
| --- | --- | --- | --- |
| S.No | Category | Frequency | AI |
| 1 | Low (0-33.33) | 10 | 12.5 |
| 2 | Medium (33.33-66.66) | 61 | 76.2 |
| 3 | High (66.66-100.00) | 9 | 11.3 |

 Mean: 45.28 SD: 15.18

Table 1, revealed that majority of the respondents in dry land farming had medium level of adoption (76.20%) followed by low (12.50%) and high (11.30%) level of adoption. This trend revealed that respondents among dry land famers had inclination to practice the in-situ water conservation practices.

The findings of the study are similar to those of Jaganathan *et al,*(2009) and Deepak Benat *et al, (2010)*  but contrast with Rajna potsangbam *(2018)*.

**Relationship between the characteristics of dry land farmers and adoption of ISWC practices**

**Table 2. Relationship between the predictors of dry land farmers and adoption of ISWC practices**

|  |  |  |
| --- | --- | --- |
| **S.NO** | **Predictors** | **Coefficient of correlation ( r )** |
| **Awareness** | **Adoption** |
|  | Age | -.297\*\* | -.255\* |
|  | Educational Status | .526\*\* | .325\*\* |
|  | Family Size | .001NS | .024NS |
|  | Land Holding | .514\*\* | .461\*\* |
|  | Cropping Intensity | .258\* | .370\*\* |
|  | Occupation | .022NS | -.138NS |
|  | Annual Income | .255\* | .197NS |
|  | Innovativeness | .251\* | .270\* |
|  | Social Participation | .173NS | 0.177NS |
|  | Information Seeking Behaviour | .409\*\* | .431\*\* |
|  | Cosmopoliteness | .422\*\* | .269\* |
|  | Risk Orientation | .249\* | .268\* |
|  | Economic Motivation | .261\* | .283\* |
|  | Scientific Orientation | .235\* | .210NS |
|  | Awareness of Soil Erosion problem | .364\*\* | .318\*\* |
|  | Accessibility to Farm Implement | .293\*\* | .383\*\* |

|  |
| --- |
| \*\*. Correlation is significant at the 0.01 level NS- Non Significance  |
| \*. Correlation is significant at the 0.05 level |

From the Table 2, it can be infer that among the socio- personal variables age had negative and educational status had positive association with the awareness and adoption of ISWC practices. These indicate that the farmers belong to young aged groups are eager in accepting and adopting ISWC practices because of their innovative and venturesomeattitude. As education makes the farmers to be open minded for new ideas, positive association was observed. Among the situational variables land holding and cropping intensity had positive and significant association with the ISWC practices. When an individual possessed with larger land holding he could able to devote some portion of land for ISWC practices like construction of farm pond, compartmental bunding, Broad bed furrows etc., this positive association was observed. It is inevitable that farmers who are raising number of crops in the same field during an agricultural year have to conserve the water to carry out the cultural practices in the ensuing dry season. Hence, cropping intensity has established positive association with the ISWC practices.

 The psychological traits like innovativeness, information seeking behaviour, cosmopoliteness, risk orientation and economic motivation had significant and positive relationship with awareness and adoption of ISWC practices. It is natural that the farmer who is having mental frame of trying to follow recent technologies used to seeks lot of information not only from local but also from cosmopolite sources which could have resulted the positive association of these variables with awareness and adoption. Similarly, an individual who focused upon earning more income necessarily takes some risk in adopting scientific innovation might be the reason that these variables have positive association with awareness and adoption of ISWC practices. Those farmers who were very well aware of damage caused by soil erosion and accessible to the farm implements could able to adopt the ISWC practices.

**CONCLUSION**

From the above results, the majority of the dry land farmers had medium level of adoption shows respondents have the inclination to practice ISWC practices. Hence, dry land farmers need to be educated and have to be exposed to various dry land water conservation practices by the officials of state department of agriculture and engineering.

Adoption of ISWC practices had positively associated with education, land holding, information seeking behavoiur, cropping intensity, awareness of soil erosion problems, accessibility to farm implements, innovativeness, cosmopoliteness, risk orientation and economic motivation. Age have significant but negatively associated with the adoption. These variables should be taken into account to dominate a strategy to reach the farmers.

In general, farmers in the study area were not well aware of recent soil and water conservation programs like Tamil Nadu Mission on Sustainable Dry land Agriculture (TNMSDA), National Mission on Sustainable Agriculture (NMSA), Kudimaramathu scheme etc. To rectify this defect intensive campaign through mobile van depicting the particulars related to the scheme may be arranged.

REFERENCES

Anitha Pauline, A., Mahandrakumar, K and Karthikeyan, C. 2020. Adoption of Rain Water Harvesting Structures in DryLand Areas of Tamil Nadu, India. *Int.J.Curr.Microbiol.App.Sci*. 9(3):3271-3278.

Balasaheb Devidas Romade. 2016. Constraints in adoption of dryland technologies. MSc Thesis. Mahatma phule krishi vidyapeeth, Rahuri- Maharashrtra state(India).

Deepak Benal., Patel, MM., Jain, MP and Singh, VB. 2010. Adoption of Dryland Technology. *Indian Journal of Dryland Agricultural Research and Development.* 25(1): 111-116.

Jaganathan, D., Padmanabham, V.B., Bhaskaran., Chandru, A and Johnson, B. 2009. Adoption of Organic Farming Pactices by vegetable growers. *Indian Journal of Extension Education*. 45: 21-24.

Rajina Potsangbam., Kale, N.M and Jangwad, N.P.2018. Knowledge and adoption of Brinjal growers about recommended cultivation practices in Akola district. *International Journal of Humanities and Social Sciences*.7(4):183-188.

Rejani, R., Rao, K.V., Osman, M., Chary, G.R., Pushpanjali, Sammi Reddy, K and Srinivasa Rao, CH.2015. Location specific insitu soil and water conservation interventions for sustainable management of drylands. *Journal of Agrometeorology*. 17 (1):55-60.