



BIO PHYSICAL AND TECHNOLOGICAL CONSTRAINTS EXPERIENCED BY MALAYALI TRIBAL IN THE ADOPTION OF MODERN AGRICULTURE PRACTICES IN PADDY CULTIVATION

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ABSTRACT

The world does not see modern agriculture to be moving in the direction necessary to meet the problem of food security. The climate is changing, there is a water scarcity, and our methods for producing food are no longer sustainable. Modern agriculture and allied technology were viewed from a completely new perspective that neglected the traditional indigenous agricultural and allied practices that were field-tested and developed by farmers. Traditional indigenous agriculture is a knowledge base and the result of farming practices being adapted to the local environment. Bio – Physical Constraints Occurrence of heavy weed growth, Heavy pest and disease incidence ,Complexity of new practices, High cost of high yielding variety seeds, Non - availability of suitable high yielding varieties. And Technological constraints. Lack of conviction in the new technology. Lack of awareness about improved rice technologies. Lack of technology guidance from extension personal. A sample size of three hundred was fixed for study considering the limitations of time and other resources. From the list of farmers in the selected five villages, farmers who had practiced both agriculture and dairy practices were identified. Proportionate random sampling method was used to select the 300 respondents from the selected five villages. A salient findings of the study bio physical constraints occurrence of heavy weed growth, heavy pest and disease incidence, complexity of new practices, high cost of high yielding variety seeds and non - availability of suitable high yielding varieties. Technological constraints lack of conviction in the new technology, lack of awareness about improved rice technologies and lack of technology guidance from extension personal.

Key words: Bio Physical Constraints and Technological Constraints Adoption of Modern Agriculture Practices

INTRODUCTION

The world does not see modern agriculture to be moving in the direction necessary to meet the problem of food security. The climate is changing, there is a water scarcity, and our methods for producing food are no longer sustainable. Modern agriculture and allied technology were viewed from a completely new perspective that neglected the traditional indigenous agricultural and allied practices that were field-tested and developed by farmers. Traditional indigenous agriculture is a knowledge base and the result of farming practices being adapted to the local environment. These practices must be compatible with modern agricultural and allied innovations and practices. With the aid of technologies, man has transitioned through the Stone Age, Steel Age, and Space Age. Based on his practical experience, logic, and judgement, man began creating technology to satisfy his wants and needs. Both human civilization and agriculture are ancient. Numerous food crops and animals were found by the tribes and domesticated. Investing in expensive inputs such as complicated fertilizers, insecticides, etc. allowed for the discovery of high yields in modern agricultural systems. Increased mechanization, the use of chemical inputs, and the creation of massive, specialized farm production units have all contributed to the development of modern agricultural and allied activities production. Intensive management and the constant availability of resources and energy are thus strongly related to increases in crop yield. In general, an increase in yield has been accompanied by a reduction in genetic diversity, natural soil fertility, biological pest control, increased soil erosion, Stalinization, and environmental pollution.

Hybrid seeds are used today together with mechanized irrigation, tilling, and harvesting equipment. While modern agriculture technology is mostly capital intensive, Indian agriculture technology is labor intensive. The limited size and dispersed ownership of the agricultural land in India make mechanization challenging.

On the other side, modern agricultural land is being combined into one big farm. Because the availability of access, hybrid seeds were used to enhance productivity and disease resistance. More subsidies provide for modern agriculture technology than toward traditional farming methods. Subsidies for seeds, fertilizer, irrigation, and electricity are beneficial for modern agriculture.

Modern agricultural technology is the term used to describe the technologies required to make farm equipment. For almost every step of the agricultural process, machines have been developed. They include tools for cultivating crops, protecting them from weeds and pests, harvesting, threshing grain, feeding cattle, and sorting and packaging the finished goods. They also include tools for tilling the soil and planting seeds. Agricultural technologies are individuals who have received training in the design of agricultural machinery, equipment, and structures.

A fundamental need for food and the necessity to feed a constantly expanding population have propelled agricultural technologies to become one of the most revolutionary and influential fields of contemporary technology. It has ushered in a time when powered machinery completes tasks that were previously completed by humans and animals. The output of farms has significantly grown thanks to these machines, which have also revolutionized how people are employed and food is produced globally. The tractor is a well-known example of agricultural equipment. agricultural technology that is currently mechanized.

RESEARCH METHODOLOGY

A sample size of three hundred was fixed for study considering the limitations of time and other resources. From the list of farmers in the selected five villages, farmers who had practiced both agriculture and dairy practices were identified. Proportionate random sampling method was used to select the 300 respondents from the selected five villages. In Kolli hills, there were sixteen revenue tribal villages namely Chithurnadu, Devanurnadu, Edappulinadu, Gundurnadu, Kunduninadu, Peraikkarainadu, Selurnadu, Thinnanurnadu, Thirupulinadu, Valappurnadu, Valavanthinadu, Alathurnadu, Ariyurnadu, Bail nadu, Pelappadinadu, and Kombai. These villages were located at distant places between each other. By considering the usual limitations of time, resources and other facilities that would normally be encountered by a single

student researcher, it was decided to choose top five villages from the above said sixteen villages based on the maximum tribal population as the criteria. The sixteen villages were chronologically arranged based upon its tribal population and the top most five villages were selected with respect to the tribal population viz., Ariyurnadu, Valappurnadu, Thiruppulinadu, Peraikkarainadu, and Gundurnadu were selected for the present Study.

Further, it was decided to contact 300 tribal peoples for this study as samples based on the discussion with advisory committee members. Proportionate random sampling method was adopted to select the 300 tribal peoples from the five selected villages. The number of respondents from each of the selected tribal village was fixed based on proportionate random sampling technique.

FINDINGS AND DISCUSSION

The finding on the constraints experienced by the respondents in adoption of modern agriculture practices are presented in this section. The constraints were ranked according to their number of respondents who mentioned the constraints and the salient finding are given in (Table 1& Table 2).

Table 1 Bio physical constraints

Sl. No	Constraints	Number	Percent	Rank
I	Bio – Physical Constraints			
1	Occurrence of heavy weed growth.	243	81.00	I
2	Heavy pest and disease incidence.	225	75.00	II
3	Complexity of new practices.	198	66.00	III
4	High cost of high yielding variety seeds.	150	50.00	IV
5	Non - availability of suitable high yielding varieties.	120	46.00	V

It could be seen from Table 1 that occurrence of heavy weed growth was ranked first and the foremost bio-physical constraint (81.00 per cent) by more than Eighty percent of the respondents. There is always shortage of weedicide application due to lack of awareness of weedicide technologies. Hence majority of the respondents would have perceived the above constraint.

Heavy pest and disease incidence was ranked as the second important constraint by more than Seventy per cent (75.00 per cent) of the respondents. Some of the respondents faced heavy damage due to the pests viz., stem borer, gall midge, leaf folder, brown plant hopper etc., in their cultivation and this resulted in poor yield. Many of the farmers were not adopting the recommended plant protection measures due to the lack of complete knowledge, non – availability of plant protection equipment's and lack of trained labour. These might be the probable reason for the above given constraint. Similar findings were also reported by Singh *et al* (2010)

Complexity of new practices was ranked as the third important constraint reported by above sixty per cent (66.00 per cent) of the respondents. Most of the respondents revealed that the adoption of new practices would require specialized skills and require trained labour. This complexity may lead to either over adoption or under adoption of practices. Hence they might have reported this as a constraint. This finding is in line with the findings of Muhammad *et al* (2017)

High cost of high yielding variety seeds was expressed as a constraint by half the proportion (50.00 per cent) of the respondents. It was ascertained from the extension workers of the department of agriculture that the high yielding variety seeds produced and marketed by the state government and other agencies are

priced higher due to high production cost. Hence the farmers might have reported this constraint. This is in accordance with the findings of sudha rani *et al* (2012)

Non - availability of suitable high yielding varieties was the least important constraint reported by one-third (40.00 per cent) of the respondents. During data collection, most of the respondents reported that the seeds of high yielding varieties were not available in time either in local markets or in agriculture office. They further had revealed that the high yielding variety seeds were not available in adequate quantity to fulfil their needs during many of the cropping seasons. The cost was also very high due to high production cost and non - availability of subsidy. This finding is in line with the findings of Mullaivendan (2012).

Table 2 Technological constraints

Sl. No.	Technological constraints	Number	Per cent	Rank
1.	Lack of technical knowledge in modern technologies recommended by State department of Agriculture	210	70.00	I
2.	Lack of technical guidance from extension officials	195	65.00	II
3.	Lack of convection in new technologies	165	55.00	III

From the Table 2, it could be seen that majority of them (70.00 per cent) expressed lack of technical knowledge in modern technologies recommended by state Department of Agriculture as the serious technological constraints. Lack of technical guidance from extension officials (65.00 per cent) was the next major technological constraints expressed by tribal farmers and lack of convection in new technologies (55.00 per cent) as their third technological constraints in the adoption of modern agricultural technologies by tribal farmers. Thus, it can be concluded that most of the technological constraints were related to lack of knowledge and scarcity of extension services in timely as expressed by tribal farmers. This finding is in line with the findings of Jermykonsam (2014)

SUMMARY AND CONCLUSION

On the basis of salient findings of the study bio physical constraints occurrence of heavy weed growth, heavy pest and disease incidence, complexity of new practices, high cost of high yielding variety seeds and non - availability of suitable high yielding varieties. Technological constraints lack of conviction in the new technology, lack of awareness about improved rice technologies and lack of technology guidance from extension personal.

REFERENCES

1. Jeremy Konsam, 2014. A Study of Knowledge and Adoption Behaviour of Paddy Growers, **Unpublished M.Sc., (Ag.) Thesis**, Annamalai University, Annamalai Nagar.
2. Muhammad M.B. Abubakar B.Z, Umar B.F and Yakubu D.H 2017. Factors Influencing Adoption of Improved Rice Production Technologies by Rice. Sokoto State, Nigeria. **Journal of Agriculture and Environment** Vol 13, No1, 77-86.
3. Mullaivendan,S.2012. A study on yield and constraints to high yields in rice at farm level in srikali taluk, Nagapattinam District. **Unpublished M.sc (Ag.)Thesis**. Annamalai University, Annamalai Nagar.
4. Singh P.K and Jay Varshney G.2010. Adoption level and constraints in rice production technology. **Indian Research Journal Extension Education** 10(1)
5. Sudha rani .Y, Jayasree.G, Nataraja K.C ,Jayalakshmi.M and Supriya.K 2012. Adoption pattern and constraints analysis for achieving potential productivity of irrigated and rainfed rice ecosystem in Andhra Pradesh. **Journal of Progressive Agriculture** Vol.3 No. 2,

