

RESEARCH-EXTENSION LINKAGES IN THE TRANSFER OF TECHNOLOGY OF IMPROVED RICE VARIETIES - A FACTOR ANALYSIS

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Abstract: A study was conducted to explore the extent of functional linkages between the research and extension subsystems in the transfer of technology of improved rice varieties. The factors associated with the linkage of research subsystem with the extension subsystem were mainly, providing consultancy services and training to extension personnel, supervising trials and demonstrations, facilitating as well as guiding in field level extension activities and providing information support on new varieties by the researchers. The linking factors of extension subsystem with the researchers were mainly, participation in workshops and joint field visits, seeking help of researchers in trials and demonstrations laid out by the extension personnel.

INTRODUCTION

The effectiveness of transfer of technology (TOT) in agriculture is greatly influenced by the extent of functional linkages between and among those who involved in the generation of technology (research subsystem), those engaged in the TOT (extension subsystem), those who actually use these technology (client subsystem) and those who act as catalysts in the adoption of technology (input subsystem). Jaiswal and Arya (1981) reported that there was no effective linkage between the research and extension subsystems, a situation detrimental to both. The present investigation was designed to analyse the factors associated with the linkages between the research and extension subsystems in the TOT of improved rice varieties released by the Kerala Agricultural University (KAU).

MATERIALS AND METHODS

The study was conducted in the districts of Alleppey, Ernakulam and Palghat of Kerala which formed the service area of the four rice research stations viz., Moncompu, Kayamkulam, Vyttila and Pattambi. The respondents of the research subsystem consisted of

the scientists who had been associated with the evolving and releasing of improved rice varieties from the four research stations. The officers of the department of agriculture from the subdivision to the village level in the three districts, who are mainly responsible for the TOT of these varieties formed the extension subsystem. The total number of respondents consisted of 52 scientists of the research subsystem and 134 extension personnel drawn based on probability proportionate to size from the extension subsystem, making an aggregate of 186. Twenty four activities that could possibly establish a linkage between the research and extension subsystems and 21 activities between the extension and research subsystems were selected based on relevancy rating by judges. The respondents were asked to indicate the extent of performance of each of these activities on a five point continuum always, most frequently, frequently, some times and never with scores 5, 4, 3, 2 and 1 respectively.

To find out the factors associated with the linkages between the two subsystems, the principal-factor analysis as described by Harman (1960) was used. Kaiser's (1958) varimax rotation was also incorporated in the programme. If a

linkage activity has no significant correlation with a factor, then that activity is not contributing significantly to the variance of the factor. Characters with a minimum factor loading of 0.45 and above were selected (Walton, 1972) for interpretation.

RESULTS AND DISCUSSION

1. Linkages of research with extension subsystem

The factor solutions for the extent of linkage of research subsystem with extension subsystem are given in Table 1.

Seven factors had been extracted from the 24 activities for effective linkage between research with extension system in the TOT of improved rice varieties and 66 per cent of the variability was accounted for by the seven factors (Table 1).

Eight activities under factor I were found to have relatively high positive loadings well above 0.45. The linkage activities under this factor come under the broad characteristics of 'consultant' and 'trainer' and therefore, with reasonable conviction factor I could be labelled as 'consultancy-training'. Only three linkage activities under factor II were found to have significant loadings and these are essentially facilitating functions. Therefore, this factor could be reasonably termed as 'facilitating'. There were only two activities under factor III and these were performed for reinforcing the results obtained in research stations and to supervise their performance in field situations. Hence, factor III has been labelled as 'reinforced supervising'. Factor IV had four linkage activities with significant loading. Besides the facilitating function identified under factor II, the function of guiding

extension workshop and farmers' day are involved and it is labelled as 'facilitating-guiding'.

There were four activities under factor V, though negatively correlated, significantly loaded. Since the linkage functions are mainly communication, factor V is labelled as 'information support'. Factor VI had only two activities with significant loading and these relate to training. Hence this factor is labelled as 'training'. Factor VII also had only two activities with significant loading, though negatively correlated. In the Package of Practices Workshop the researchers are expected to defend the technologies recommended and hence factor VII has been labelled as 'defending'.

2. Linkage of extension subsystem with research subsystem

Factor solutions for extension with research subsystem are presented in Table 2. Varimax rotation extracted five factors from the 21 linkage activities. All the five factors put together, the total contribution to the variability was 50.80 per cent.

Factor I contributing 14.78 per cent to the total variability had four linkage activities with significant loading. The activities were mainly of participation in workshops and interacting with researchers. Hence this factor has been labelled as 'knowledge building and communicating'. There were only two linkage activities under factor II with significant loading but negatively correlated. Considering the nature of the activities the factor could be labelled as 'help seeking'.

Factor III had three linkage activities with significant and positive loading. The activities were mainly on

Table 1. Principal factor solutions for linkage of research with extension subsystem

Name of linkage activity	Factor loading	Proportionate variance accounted by each factor
Factor I		0.1663
X ₅ Serving as resource person for diagnosing field problems	0.8008	
X ₆ Participation in joint field visits	0.7222	
X ₃ Serving as resource person for training	0.6814	
X ₁₇ Participation in extension seminar	0.5536	
X ₉ Serving as resource person in monthly workshops	0.5484	
X ₄ Serving as a consultant for organising training	0.5279	
X ₇ Serving as resource person on field days	0.4609	
X ₁ Involving in training extension personnel	0.4606	
Factor II		0.0724
X ₂ Involvement in village adoption programme	-0.6944	
X ₁₁ Involvement in lab-to-land programme	-0.5572	
X ₇ Serving as resource person on field days	0.4733	
Factor III		0.1075
X ₁₄ Visits to result demonstrations	0.9674	
X ₁₅ Visits to minikit trials	0.7286	
Factor IV		0.0835
X ₁₈ Participation in extension workshops	0.5872	
X ₁₂ Involvement in village adoption programme	0.5779	
X ₁₁ Involvement in lab-to-land programme	0.5559	
X ₉ Serving as resource person on farmers' days	0.4504	
Factor V		0.0974
X ₁₉ Writing in popular publications		
X ₂₄ Serving as member in State Rice Variety Releasing Committee	-0.5930	
X ₂₀ Writing in newspaper column	-0.5295	
X ₂₃ Serving as member, KAU Rice Variety Release Committee	-0.5257	
Factor VI		0.0476
X ₂ Serving as Course Director of training	0.6494	
X ₁ Involvement in training extension personnel	0.5020	
Factor VII		0.0908
X ₂₁ Attending Package of Practices Workshop	-0.8457	
X ₂₂ Attending Mini-package of Practices Workshop	-0.7564	

Table 2. Principal factor solutions for the extent of linkage between extension and research subsystems

Name of linkage activity	Factor loading	Proportionate variance accounted by each factor
Factor I		0.1478
X4 Participation in monthly workshops of T & V system	0.8997	
X5 Participation in zonal workshops of NARP & T & V system	0.7361	
X3 Participation in pre-monthly workshops	0.5493	
X7 Participation in joint field visit	0.4728	
Factor II		0.0980
X12 Taking help of researchers in laying out minikit trials	-0.7760	
X13 Taking help of researchers in laying out demonstrations	-0.7731	
Factor III		0.1249
X18 Participation in special training on rice	0.6984	
X17 Participation in rice production technology training	0.6812	
X16 Participation in workshops of researchers	0.4755	
Factor IV		0.0460
X2 Participation in laying out farm trials	0.5033	
Factor V		0.0920
X21 Cooperating with researchers in lab-to-land programme	0.6084	
X20 Giving suggestions on new areas of research on rice	0.5785	

participation in training and hence the factor could be called as 'knowledge updating'. Factor IV had only one linkage activity with loading above the limit of 0.45, viz., participation in laying out farm trials. Factor V had only two linkage activities with significant factor loadings. Considering the nature of the activities, this factor could be reasonably called as 'research facilitating'.

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