

## Yield Gap in Paddy - A Study

K.NAGABHUSHANAM AND P. SRIDHARA HERLE

Directorate of Extension  
University of Agricultural Sciences, Dharwad - 580 005

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**Abstract:** A study conducted in selected villages of Kundapur taluk revealed that the gap between the yield levels of the research station and the progressive farmers was narrow while the average farmers to that of progressive farmers was wide. It clearly showed that the adoption gap was more when compared to technological gap.

### Introduction

Paddy crop has a wider adaptability. It is grown in India in an area of 41.1 m ha with production of 111.1 m tonnes. It is grown in almost all the states. In Karnataka, the area covered by paddy is 12,37,700 hectares both in *kharif* and summer (Anonymous, 1991). It is predominantly grown in Dakshina Kannada district. Taking advantage of the modern technology evolved on regional basis and evolving need based, production oriented and location specific technology, the research activities have resulted in a standard package of practices, applicable to different zones. Dakshina Kannada district situated in coastal zone in Karnataka which has a specific production problems mainly during *kharif* where the rains receive mostly during the month of June to October which restricts the adaptability of practices like fertilizer application, plant protection practices. Besides this, the labour problem during the season is most acute with a high cost which in turn increases the cost of cultivation of crop.

It is well known fact that there is a difference in the yields of paddy between the research station and the farmers' fields (Jayaram, 1988). These differences in the

yields are referred as yield gap. Keeping this in view, a study was undertaken to find out the yield gap between the research station and that obtained by the farmers of Kundapur taluk in Dakshina Kannada district. Further, the effect of cultivation practices followed by the farmers on yield of paddy and the relationship of personal and socio-economic characteristics of farmers with their adoption level of practices of paddy were studied.

### Material and Methods

The study was conducted in seven villages of Kundapur taluk of Dakshina Kannada district. The sampling size consisting of 120 respondents were randomly selected with purposive proportional allocation method. The interview schedule was developed by including the practices followed for the paddy crop and the yield obtained by the farmers as well as their characteristics. The data were collected by personal interview method. The same were analyzed by working out the average yields obtained by the progressive farmers, the average farmers and the yields of general seed production plots of the research station which were used to find out the gap between the average paddy yield levels of the

research station and the potential yield levels of progressive farmers, on one hand (Gap-I) and that between the yield levels of progressive farmers and those of the average farmers on the other (Gap-II). Further, correlation studies were employed to ascertain the association of selected cultivation practices for paddy with the yield levels of the crop and between the socio-economic characteristics of the farmers with their adoption level of practices for paddy.

### Results and Discussion

The findings of the investigation have been furnished here under. The results pertaining to the yield gap of paddy is presented in Table 1.

Table 1. Yield gap of high yielding varieties of paddy

| Research station | Yield level (q/ac)  |                 | Per cent of yield gap |        |           |
|------------------|---------------------|-----------------|-----------------------|--------|-----------|
|                  | Progressive farmers | Average farmers | Gap-I                 | Gap-II | Total gap |
| 19.00            | 17.36               | 12.40           | 8.63                  | 26.11  | 34.74     |

It was observed from the table 1 that the average yield level of research station was 19.00 q/ac and yield level of the progressive farmers' fields was 17.36 q/ac. The difference between these two levels was narrow which works out the yield gap of 8.63 per cent (Gap-I). The difference might be due to the environmental differences and also management factors relating to the soil fertility. Further, the yield obtained by the average farmers was found to be only 12.40 q/ac, which shows the wider gap of 26.11 per cent when compared to the progressive farmers. This gap-II was the main gap found which restricts the productivity of the area. This might be due to non-exposure of the technologies to the average farmers as well as the non-participation in the educational activities conducted in the area. The factors that prevented farmers from achieving the

full potential of the new technology might be physical, institutional, economic or social. As it could be observed that out of total gap of 34.74 per cent, the gap-II between progressive farmers and the average farmers constituted more i.e., 26.11 per cent when compared to the gap-I of only 8.63 per cent. This alarms the extension agency to take up the educational activities to reduce the gap-II. These results were in confirmation with the results of Fele *et al.* (1985) wherein he reported the paddy yield gap-I and gap-II of 8.83 per cent and 52 per cent respectively. Similar results were also reported by Panghal *et al.* (1985) and Yadva and Gangwar (1986).

Further, the relationship between the selected cultivation practices and the yield was analysed under different adoption levels of practices presented in table 2.

Table 2. Relationship of cultivation practices followed by farmers with yield of paddy

| Sl.No. | Cultivation practices                      | 'r' value           |
|--------|--|---------------------|
| 1.     | Seed rate                                  | -0.342**            |
| 2.     | Age of seedlings                           | -0.472**            |
| 3.     | FYM application                            | 0.252**             |
| 4.     | Green leaf application                     | 0.094 <sup>NS</sup> |
| 5.     | N-application                              | 0.686**             |
| 6.     | P <sub>2</sub> O <sub>5</sub> -application | 0.701**             |
| 7.     | K <sub>2</sub> O-application               | 0.335*              |
| 8.     | Weeding                                    | 0.142 <sup>NS</sup> |

NS - Non significant.

\* Significant at 0.05 level.

\*\* Significant at 0.01 level.

The cultivation practices followed by the farmers for paddy like seed rate, age of seedlings used, level of application of FYM,

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N,  $P_2O_5$  and  $K_2O$  were found to have highly significant relation with yields of paddy. However, the application of green leaf manure and weeding were not found significant with the yields harvested by the farmers. It may be mentioned here that it has been a tradition with the farmers to use higher seed rate for obtaining more seedlings as stand-by arrangement. With respect to age of seedlings, in the coastal region the farmers are in the habit of using the older seedlings for transplanting with an intention of better establishment of seedlings in the main field and to withstand in heavy rainfall. These resulted in negative relation with the yields of paddy in the area. As far as the practices like application of FYM and other chemical fertilizers are concerned, the restriction of adoption of these practices was mainly due to heavy rainfall. Further, the majority of the farmers strongly feel that the applied fertilizers are being washed out in the run-off water which resulted in reduction in paddy yield. The results were in confirmation with the results of Jayaram (1988).

The data regarding relationship of characteristics with adoption level of farmers are presented in table 3.

Table 1. Relationship of characteristics with recommended practices adoption level of paddy farmers

| Sl.No. | Characteristics        | 'r' value           |
|--------|------------------------|---------------------|
| 1.     | Seed rate              | -0.342**            |
| 2.     | Age of seedlings       | -0.472**            |
| 3.     | FYM application        | 0.252**             |
| 4.     | Green leaf application | 0.094 <sup>NS</sup> |
| 5.     | N-application          | 0.686**             |
| 6.     | $P_2O_5$ -application  | 0.701**             |
| 7.     | $K_2O$ -application    | 0.335*              |
| 8.     | Weeding                | 0.142 <sup>NS</sup> |

NS - Non significant.

\*\* Significant at 0.01 level, \* Significant at 0.05 level.

Table 3 revealed that the characteristics like social participation, extension participation, mechanization of the farms and yield were highly significant with their adoption level. But others like age, size of the family, land holdings, education and irrigation facilities were found non-significant. It was quite obvious that the farmers who had wider exposure, extension participation and higher farm mechanization could adopt recommended practices and achieve better yields.

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