

## Original Research Article

# Adoption of Agromet-Advisory Services (AAS) Under Aicrpam-Nicra at Mahasamund District of Chhattisgarh for Improving Livelihood of Rural Farmers

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## ABSTRACT

Study was conducted during 2015 at Mahasamund district of Chhattisgarh to quantify economic benefits through adopting the agromet-advisory in their day to day agricultural operations. For this purpose, two groups of farmers were selected namely, a group adopting the agro met advisories regularly in their operation (AAS farmers) and other group of farmers not aware of agromet advisories (Non-AAS farmers). 100 farmers (both AAS and Non AAS) from 2 villages namely Malidih and Jhalkhamaria have been identified and AAS information issued for only 50 farmers in two villages during *Kharif* season and care was taken to implement the advisories by this group. Crop situation of these farmers was compared with nearby fields having the same crops where forecast is not adopted categorized as non AAS farmers. Further Expenditure incurred by the farmers from land preparation till the harvest at every stage has been worked out and crop growth and yields were monitored regularly in the farmer's field belonging to both the groups. The crop growth and yield was observed to be good and high in case of farmers who have adopted the AAS information regularly compared to the farmers who have not adopted the AAS information. The farmers who have adopted the Agromet-advisories in their day to day operation have realized an additional benefit of Rs. 5809.47. The growers were classified as marginal (up to 1 ha), small (up to 2 ha), medium (2.01-4 ha) and large (above 4 ha) categories. It was observed that cost of cultivation comes down by 6.61 per cent by the farmers who follow AAS. Net cost: benefit ratio of AAS and non AAS farmers was found 1:2.29 and 1:2.04 respectively.

### Keywords

Economic impact, Cost of cultivation, Agro-advisory services and yield

## Introduction

Agriculture in India is a gambling with monsoon. Under such circumstances, the farmers are unaware of the future behavior of monsoon for making decisions in their day to day agricultural operations. Farming community needs to be advised in time by producing custom-tailored weather forecasts to initiate suitable measures to increase the production and to minimize the impact of

unfavourable weather on agriculture. The major objective of AAS is to help the farmers in capitalizing prevailing weather conditions in order to optimize the resource use and to minimize the loss due to harsh/aberrant weather conditions (Venkataraman, 2004). Agromet-advisory services is a vital tool which provides the valuable information about all agricultural

operations from land preparation sowing to harvest based on weather forecasting. In this, weather is a key element which controls the success or failure of agricultural crop productivity. The main aim of Agromet-advisory services is to conserve the natural resources effectively and call for minimizing the weather hazards. It is a fact that AAS can be modified or may be the agricultural operations can be reoriented to the forthcoming weeks (3-10 days forecast).

Accurate and timely forecast of rainfall patterns and other weather variables continued to be a major challenge for scientific community. The emerging ability to provide timely, skillful weather forecasts offers the potential to reduce human vulnerability to weather vagaries (Hansen, 2002). Therefore, any forecast on weather would have tremendous benefits in terms of management of the negative impacts of vagaries of weather.

### **Materials and Methods**

The present study was purposely conducted in Mahasamund block of the same district under AICRPAM-NICRA project. It can be observed from Table 1 that out of 100 farmers were selected for study purpose. Among the selected farmers 50 farmers follow agro advisory services (AAS) and 50 farmers do not follow AAS provided by AICRPAM-NICRA project from two intentionally selected villages namely Malidih and Jhalkhamariya under this project NICRA-AICRP on agrometeorology. Primary data was collected from selected agro-advisory service (AAS) farmers of neighboring villages and non AAS farmers of neighboring villages. Data was collected through personal interview method with the help of pre-tested questionnaires. The growers were classified as marginal (up to 1 ha), small (up to 2 ha), medium (2.01-4 ha)

and large (above 4 ha) categories as per criterion followed by Marothia (1986). The detailed enquiry was done in the *kharif* season of 2015. To estimate the cost of cultivation of selected paddy crop of different categories of farmers, whole data is divided into two major parts, *i.e.*, variable cost and fixed cost. Variable cost includes land preparation, cost of seed and sowing, fertilizer and manuring, cost of intercultural operations, irrigation, plant protection materials, harvesting etc. Fixed cost carries rental value of land and interest on working capital. Different cost concept (cost A, cost B and cost C) analysis is made using these data to calculate the cost and returns of AAS and non AAS farmers of paddy crops as per standard procedure laid down by George *et al.*, (1972).

### **Economic analytical tool**

This includes the detailed analysis of costs and returns.

### **Total input**

It includes all the cash and kind expenses as detailed below:

- a-1 Wages of hired labour paid in cash or kind.
- a-2 Imputed wages for the farmer and his family used in crop and livestock production.
- a-3 Value of seed, manure and fertilizers and other cash expenses.
- a-4 Repairs to dead stock.
- a-5 Depreciation on deadstock and livestock.
- a-6 Interest on fixed and working capital.

a-7 Rent of land whether rented or owned

a-8 Irrigation charges.

### **Total output**

The quantity of product produced for different crops and livestock enterprises was treated as the total output. When the output is multiplied by its price then it is the output value (Banafar and Singh 1998).

### **Net income**

It is the difference between total receipts and total expenses. It includes the pay of the farm manager and interest on capital invested in the business. It will be calculated as:

Net income = Gross income – Total expenses

### **Input –output ratio**

It can be expressed as the ratio of output to input. The ratio is calculated as:

Input-output ratio =  $O/I$

Where,

I = Net cost of cultivation and

O = Net return

### **Cost of production per quintal (Rs.qt.<sup>-1</sup>)**

It refers to total input cost (in Rupees) divided by output (in Quintals) (Shrivastava, 1990).

### **Cost concept**

The cost of production of different crop has been presented in terms of cost A, cost A<sub>1</sub>, Cost B and cost C. The cost concepts are given below (Niharika, 2012).

### **Cost A**

Value of hired human labour (permanent and casual)

Value of owned bullock labour

Value of hired bullock labour

Value of owned machinery

Hired machinery charges

Value of fertilizers

Value of manure (owned and purchased)

Value of seed (farm produce and purchased)

Value of insecticide and pesticide

Irrigation charges (both owned and hired)

Canal water charges

Land revenue and other taxes

Miscellaneous expenses (artisans, ropes and repair to small farm implements).

Cost A<sub>1</sub>: Cost A<sub>1</sub> + Rent paid for leased in land.

Cost B: Cost A<sub>1</sub> + Imputed rental value of owned land + interest on fixed capital

Cost C: Cost B + imputed value of family labour.

### **Results and Discussion**

The economic benefit obtained by farmers following the Agro met has been evaluated for *Kharif* seasons for the period 2015. Total cost of cultivation, crop yield and net returns for rice crop grown by the AAS and non

AAS farmers during *Kharif* season are presented in Table 1 and 2. The total cost of cultivation was found to be lower in the case of AAS farmers who have effectively adopted the agro-advisory compared to non AAS farmers. From the Table 1 it is observed that the AAS farmers are realized good benefit than non-AAS farmers. Similarly, even here also the yield and other returns were lower in case of non-AAS farmers compared to the AAS farmers. Similar observations were also reported by Singh *et al.*, (2004) and Venkataraman (2004).

According to them the need for Agromet advisories and input requirements for Agromet advice on field operations, crop prospects and avoidance of pest and disease under adverse environment condition is essential. The economic benefit of the advisories for different Agromet field units that ranged between Rs. 330/ and 3750/ and 1410 to 1885/ hectare for maize, wheat and rice crop, respectively (Rana *et al.*, 2005). Fifty farmers who are aware of the agro advisory bulletins are utilizing AAB in operational farm management and all farm activities is 76% farmers rated the usefulness of forecast between good to excellent.

Similarly, Ravindrababu *et al.*, (2007), reported that the forecasts were found to be encouraging and of benefit to the AAS farmers compared to non AAS farmers sampled. It was observed that farmers who follow NICRA- AAS have average saving of 16.82% in manures and fertilizers, about 16.15% in weeding, about 17.43% in plant protection, 23.77% in irrigation and the overall saving during crop growing season is 6.61%. Manures and fertilizers saving could be done by AAS farmers as by following advice, saving in top dressing of urea was there. In plant protection also, a saving of

Rs. 630/hectare was made mainly focusing on the cost saving in spraying of herbicides/insecticides. However harvesting, thrashing, winnowing and transportation costs are coming out to be almost same under both the systems. Linear equation has been drawn and it can be observed from the Figure 1 that cost towards various operations goes on decreasing during later part of the growing season. Major cost of production in rice crop is during initial stages.

Gross returns have been shown; therefore impact of agro-advisory services is clear with gross returns and net returns significantly higher (Table 3). One term Cost of production (Rs./quintal) has been calculated for the main product grain and the production cost comes down with AAS services farmers by Rs. 79.54 per quintal mainly because of better management and efficient practices followed by AAS farmers. Net cost: benefit ratio of AAS and non AAS farmers was found 1:2.29 and 1:2.04 respectively.

The study has revealed that the information gathered through agro-advisory service has been very useful and helpful to the farmers. The farmers have started taking interest in accessing information on the management of crops. The rainfall and crops management have been the major aspects on which farmers interested to get information. Since the initial stage of the programme, sufficient numbers of farmers have been found to be benefitted through the agro-advisory service.

Hence, to provide the agro-advisory in a sustainable manner, convergence of such types of programmes with state department are technical help from Indira Gandhi Agricultural University along with KVKs personnel is recommended as it will help uplift livelihoods of the rural people in a rapid way.

**Table.1** Number of households under different categories of selected villages in Mahasamund district

| S.No | Size Group | AAS Farmers        |    | Total | non-AAS farmers    |    | Total | Grand Total |
|------|------------|--------------------|----|-------|--------------------|----|-------|-------------|
|      |            | Numbers of Farmers |    |       | Numbers of Farmers |    |       |             |
|      |            | M                  | J  |       | M                  | J  |       |             |
| 1    | Marginal   | 4                  | 5  | 9     | 10                 | 6  | 16    | 25          |
| 2    | Small      | 6                  | 11 | 17    | 7                  | 9  | 16    | 33          |
| 3    | Medium     | 7                  | 5  | 12    | 5                  | 7  | 12    | 24          |
| 4    | Large      | 8                  | 4  | 12    | 3                  | 3  | 6     | 18          |
|      | Total      | 25                 | 25 | 50    | 25                 | 25 | 50    | 100         |

M= Malidih J=Jhalkhamaria

**Table.2** Average cost of cultivation of paddy in different category of farms (Rs./ha)

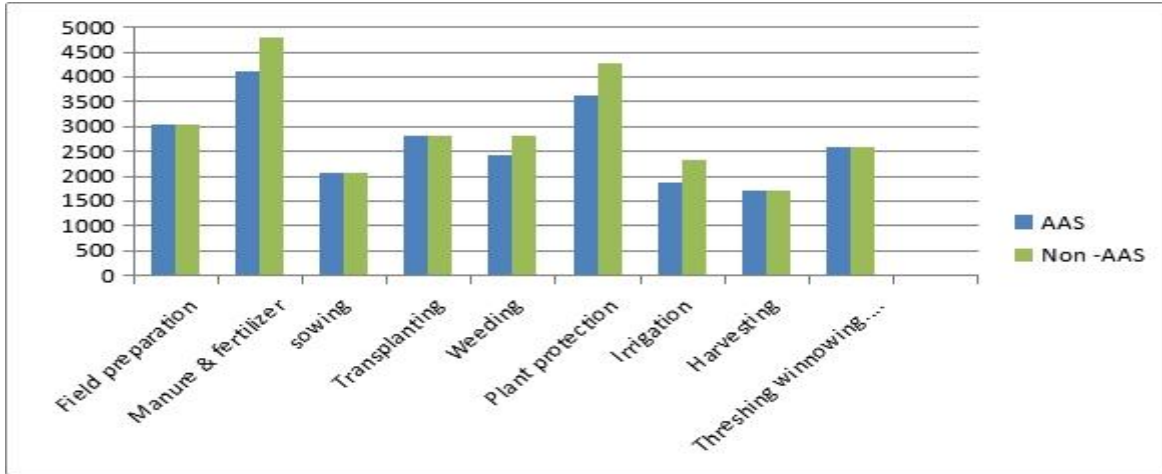
| S.No              | Particulars                             | Average cost with-AAS | Average cost with Non –AAS | Average saving with AAS | Percentage saving with AAS* |
|-------------------|---|-----------------------|----------------------------|-------------------------|-----------------------------|
| (A) Variable cost |   |                       |                            |                         |                             |
| 1                 | Field preparation                       | 3019                  | 3019                       | 0                       | 0                           |
| 2                 | Manure and fertilizer                   | 4100                  | 4790                       | 690                     | 16.82                       |
| 3                 | Sowing                                  | 2039.75               | 2039.75                    | 0                       | 0                           |
| 4                 | Transplanting                           | 2798.5                | 2798.5                     | 0                       | 0                           |
| 5                 | Weeding                                 | 2413.75               | 2803.75                    | 390                     | 16.15                       |
| 6                 | Plant protection                        | 3613                  | 4243                       | 630                     | 17.43                       |
| 7                 | Irrigation                              | 1859                  | 2301                       | 442                     | 23.77                       |
| 8                 | Harvesting                              | 1700                  | 1700                       | 0                       | 0                           |
| 9                 | Threshing, winnowing and transportation | 2571                  | 2571                       | 0                       | 0                           |
|                   | Sub Total                               | 24114                 | 26266                      | 2152                    | 8.92                        |
| (B) Fixed cost    |   |                       |                            |                         |                             |
| 1                 | Land rent                               | 8500                  | 8500                       | 0                       | 0                           |
| 2                 | Interest on working capital             | 241.14                | 262.66                     | 21.52                   |                             |
|                   | Total fixed cost                        |                       |                            |                         |                             |
| (C) A+B           |   |                       |                            |                         |                             |
| 1                 | Total cost (A+B)                        | 32855.14              | 35028.66                   | 2173.52                 | 6.61                        |

\* Percentage was calculated from with AAS data

**Table.3** Cost of cultivation, product values and bi-product values

| S.No. | Particulars                | AAS farmers | Non- AAS farmers | Gross benefits with AAS |
|-------|----------------------------|-------------|------------------|-------------------------|
| 1     | Input cost (Rs)            | 32,855.14   | 35,028.66        | 2173.52                 |
| 2     | Production (Qt./ha)        |             |                  |                         |
|       | a.Main product             | 51.62       | 48.95            | 6.25                    |
|       | b.By-product               | 64.25       | 65.62            | -1.37                   |
| 3     | Price (Rs)                 |             |                  |                         |
|       | a. Main product            | 1390        | 1390             | 0                       |
|       | b. By-product              | 55          | 55               | 0                       |
| 4     | Cost of production (Rs/qt) |             |                  |                         |
|       | a. Main product            | 636.48      | 716.02           | 79.54                   |
|       | Return (Rs./ha)            |             |                  |                         |
| 5     | a.Main product             | 71751.80    | 68040.50         | 3711.30                 |
|       | b. By-product              | 3533.75     | 3609.10          | -121                    |
| 6     | Gross return (Rs./ha)      | 75285.55    | 71649.60         | 3635.95                 |
| 7     | Net Return                 | 42430.41    | 36620.94         | 5809.47                 |
| 8     | Net cost benefit ratio     | 1:2.29      | 1:2.04           |                         |

**Fig.1** Cost of cultivation with AAS and non-AAS farmers for various cropping operations



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