

Adoption Behaviour and Constraints in Wheat and Paddy Production Technologies

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ABSTRACT

The study was carried out to determine the farmers' adoption behavior on wheat and paddy production technologies. The farmers were selected from Samasripur, Darbhanga and Muzaffarpur districts who demonstrated wheat and paddy technologies during 2002-03 to 2004-05. Findings of the study revealed that 53.75 per cent respondents had adopted the wheat production technology at higher level followed by 31.25 per cent and 15.00 per cent respondents had adopted the wheat production technology at medium and low level respectively. Also in paddy, 60.00 per cent respondents had adopted the production technology at higher level followed by 21.25 per cent and 18.75 per cent respondents had adopted the paddy production technology at medium and low level respectively. The major technical, resource and market related constraints perceived by farmers in wheat and paddy were perceived by farmers were non-availability of quality seeds of wheat, non-availability of rubber milling facility in their locality for rice processing, breakage of grain during milling/ processing, lack of transportation facilities, and lack of market facility.

Key Words: Adoption; Behaviour; Production Technology;

Wheat and paddy are the most important food grain crops in India contribute about 82.00 per cent of total food grain production. During the year 2009-10, wheat was cultivated in an area of 28.52 million hectares in our country with a production of 80.71 million tonnes of grains and a productivity of 2.83 tonnes /hectare. During the same year, rice crop was cultivated in an area of 41.85 million hectares in India with a production of 89.13 million tonnes. But, the average productivity of wheat and rice is very less in Bihar in comparison to Punjab and Haryana. Keeping in view, Front Line Demonstrations on wheat and paddy were conducted at farmers' field. Hence, it was felt necessary to see the impact of demonstrated technology on the adoption behaviour of farmers on wheat and paddy production technologies and to identify the constraints perceived by the farmers in respect of aforesaid major cereal crops.

METHODOLOGY

The present investigation was carried out in one village each of Samastipur, Muzaffarpur and Darbhanga

districts. The data was collected with the structured interview schedule from randomly selected 120 farmers who were demonstrated 60 farmers each of wheat and paddy technology during 2002-03 to 2004-05. Frequency and percentage analysis were used to study the extent of adoption of the respondents on wheat and paddy production technology. The level of adoption of the respondent were classified into three categories viz, low, medium and high on the basis of mean \pm S.D.

RESULTS AND DISCUSSION

Adoption Behaviour : The farmers involved in the wheat and paddy demonstrations were asked questions to determine the extent of adoption of demonstrated package of practices. The distributions of farmers according to their level of adoption are reported in Table 1 & 2.

The data in Table 1 indicates that 80 per cent of the respondents had completely adopted the recommended seed rate and harvesting at proper time. Also, use of high yielding varieties of wheat suitable for

North Eastern Plain Zone and its use according to their sowing time adopted by the 76.66 per cent and 73.33 per cent respondents, respectively. Moreover, majority of the farmers (more than 60 %) fully adopted the recommended fertilizer doses and time of irrigation in wheat.

However, about 87 per cent of the respondents did not adopt line sowing method in wheat due to non-availability of seed drills in their locality, and about 82 per cent respondents did not adopt the seed treatment before sowing of wheat. This finding is identical to the finding of *Patel et. al., (2003)* and *Kher (1992)*.

Table 1: Extent of adoption of wheat production technology

S. No.	Wheat technology	Extent of Adoption (n = 60)		
		Full Adoption	Partial Adoption	No Adoption
1.	High yielding varieties (HYVs)	46 (76.66)	10 (16.66)	04 (6.66)
2.	Seed treatment	05 (8.33)	06 (10.00)	49 (81.66)
3.	HYVs according to their sowing time	44 (73.33)	12 (20.00)	04 (6.33)
4.	Recommended seed rate	48 (80.00)	09 (15.00)	03 (5.00)
5.	Line sowing method	00 (00)	10(16.66)	52 (86.66)
6.	Biofertilizer use (<i>Azotobacter</i> +PSB)	10 (16.66)	08 (13.33)	35 (58.33)
7.	Recommended fertilizer doses	40 (66.66)	15 (25.00)	08 (13.33)
8.	Time of irrigation	36 (60.00)	12 (20.00)	06 (10.00)
9.	Proper and effective weed control	14 (23.33)	18 (30.00)	26 (43.33)
10.	Plant protection measures	15 (25.00)	20 (33.33)	27 (45.00)
11.	Harvesting at proper time	48 (80.00)	18 (30.00)	00 (00)

Table 2: Extent of adoption of paddy production technology

S. No.	Paddy technology	Extent of Adoption (n = 60)		
		Full Adoption	Partial Adoption	No Adoption
1.	High yielding varieties (HYVs)	48 (80.66)	08 (13.33)	4 (6.66)
2.	Seed treatment	10 (16.66)	15 (25.00)	35 (58.33)
3.	Sowing time	52 (86.66)	08 (13.33)	00 (00)
4.	Recommended seed rate	30 (50.00)	15 (25.00)	15 (25.00)
5.	Recommended spacing	39 (65.00)	12 (20.00)	09 (15.00)
6.	Biofertilizer use (<i>Azotobacter</i> +PSB)	05 (8.33)	10 (16.66)	45 (75.00)
7.	Recommended fertilizer dose	08 (13.33)	12 (20.00)	40 (66.66)
8.	Time of irrigation	27 (45.00)	18 (30.00)	15 (25.00)
9.	Proper and effective weed control	41 (68.33)	14 (23.33)	05 (8.33)
10.	Plant protection measures	28 (46.66)	18 (30.00)	14 (23.33)
11.	Harvesting at proper time	46 (76.66)	12 (20.00)	02 (3.33)

Figures in parenthesis indicate percentage

It is clear from the Table 2 that 86.66 per cent respondents had fully adopted sowing time followed by high yielding varieties of paddy (80.66 %), harvesting at proper time (76.66 %), proper and effective weed control (68.33 %), and recommended spacing (65.00%) to maintain optimum plant population. But majority of the respondents not adopted the demonstrated technologies like use of biofertilizer (*Azotobacter* +PSB)(75.00 %), recommended fertilizer dose (66.66 %) and the seed treatment before sowing (58.33%).

Overall adoption level : A glance at the Table 3 revealed that 53.75 per cent respondents had adopted the wheat production technology at higher level followed by 31.25 per cent and 15.00 per cent respondents had adopted the wheat production technology at medium and low level respectively. Similar findings stated by *Akhilesh Kumar and Srivastava (2007)*.

It is revealed from the Table 4 that 60.00 per cent respondents had adopted the paddy production technology at higher level followed by 21.25 per cent

and 18.per cent respondents had adopted the paddy production technology at medium and low level respectively.

Perceived constraints : The perceived constraints expressed by the wheat and paddy growers have been indicated in following Table 5 & 6.

Table 3. Distribution of wheat farmers as per extent of adoption

S.No.	Categories	Score Range	No.	%
1.	Low (Mean-SD)	<5.74	12	15.00
2.	Medium (Mean ± SD)	5.75-9.68	25	31.25
3.	High (Mean +SD)	>9.68	43	53.75
		Mean 7.71		
		S.D. = 1.97		

Table 4. Distribution of paddy farmers as per extent of adoption

S. No.	Categories	Score Range	No.	%
1.	Low	<8.77	15	18.75
2.	Medium	8.78 -15	17	21.25
3.	High	> 15.01	48	60.00

Mean =11.89

S.D. =3.12

Table 5. Distribution of respondents according to the perceived constraints in wheat cultivation (N= 60)

Perceived constraints in wheat	No.	%	Rank
<i>Technical constraints</i>			
Non-availability of quality seeds	35	58.33	I
High weed infestation (Phalaris minor & Bathua)	25	41.66	V
Terminal heat (High temperature at maturity)	15	25.00	VII
<i>Resource constraints</i>			
High cost of fertilizers	30	50.00	II
High cost of diesel	25	41.66	V
Inadequate availability of electricity	27	45.00	IV
Non-availability of zero-tillage machine locally	22	36.66	VI
<i>Market constraints</i>			
Lack of market facilities	28	46.66	III

The data in respect of perceived constraints indicated in Table 5 revealed that in technical constraints 58.33 per cent respondents expressed the non-availability of quality seeds of wheat followed by high weed (*Phalaris minor & Bathua*) infestation (41.66 %). In resource constraints, majority of the respondents expressed constraints like high cost of fertilizers (50.00

%), high cost of diesel (41.66 %), inadequate availability of electricity (45.00%) and non-availability of zero-tillage machine locally (36.66 %). The constraint like, lack of market facilities also expressed by about 47.00 per cent of the wheat growers. Similar constraints reported by *Sriram and Chauhan (2005)*.

Table 6. Distribution of respondents according to the perceived constraints in paddy cultivation (N= 60)

Perceived constraints in paddy	No.	%	Rank
<i>Technical Constraints</i>			
Lack of information about pest and diseases	22	36.66	VI
Breakage of grains during milling /processing	37	61.66	II
Low cooking quality due to breakage of grains	26	43.33	IV
Problem of weed infestation	18	30.00	IX
<i>Resource Constraints</i>			
Non-availability of seed at proper time	20	33.33	VIII
Non-availability of rubber milling facility	40	66.66	I
Lack of irrigation facility	21	35.00	VII
High cost of fertilizers	15	25.00	X
High cost of pesticides	10	16.66	XI
<i>Market Constraints</i>			
Low market price due to breakage of grain	26	43.33	IV
Lack of transportation facilities	35	58.33	III
Lack of market facility	25	41.66	V

Table 7. Suggestions given by the respondents to overcome the constraints both in paddy and wheat (N=60)

Suggestions	No.	%	Rank
Ensuring availability of HYV seeds at proper time	40	66.66	I
Low cost of inputs (seeds, fertilizers, weedicide, pesticides, diesel etc	35	58.33	II
Adequate extension support including FLDs	28	46.66	III
Rubber milling facility for paddy	27	45.00	IV
Adequate availability of electricity	23	38.33	V
Good market facility	19	31.66	VI

It is observed from data depicted in Table 6 that the major constraints perceived by the respondents in paddy were non-availability of rubber milling facility in their locality for rice processing was a major constraint in paddy (66.66 %). This was followed by breakage of

grain during milling/ processing (61.66 %)), lack of transportation facilities (58.33 %) and low market price and low cooking quality due to breakage of grains (43.33 %), and lack of market facility (41.66%).

CONCLUSION

The findings of the study lead to conclude that 53.75 per cent respondents had adopted wheat production technology at higher level followed by 31.25 per cent and 15.00 per cent at medium and low level. Also in paddy, 60.00 per cent respondents had adopted the production technology at higher level followed by 21.25 per cent and 18.75 per cent at medium and low level. The major constraints perceived by farmers in paddy were non-availability of rubber milling facility in their locality for rice processing, breakage of grain during milling/ processing, lack of transportation facilities, low

cooking quality due to breakage of grains, lack of irrigation facility and lack of market facility. Also in wheat the major constraints perceived by farmers were non-availability of quality seeds of wheat, high weed (*Phalaris minor & Bathua*) infestation and terminal heat, high cost of fertilizers, high cost of diesel, inadequate availability of electricity, and non-availability of zero-tillage machine locally. The government agencies and commercial units like input supply and processing agencies do have an important role to provide the needed support and facilitation to the farmers to overcome the constraints and thereby promote adoption of high yielding varieties to augment the production, productivity and profitability.

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