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ESTIMATED STATUS OF QUANTUM LOSSES OTHER THAN CONSUMPTION UNDER SEED, FEED AND WASTAGE : A FARM LEVELS STUDY OF PADDY CROP (BIHAR)

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ABSTRACT

The study conducted in the state of Bihar has examined the quantity losses other than consumption for paddy crop amongst various farm size groups. It has been found that at overall level 59.83 per cent of the total paddy crop produced was available as marketable surplus. At the overall level study finds about 10.99 per cent of the total paddy produced goes losses as seed, feed and wastage, however only 90.01 per cent available for consumption purpose. In the state likes Bihar where a large number of population lives below poverty level and get hardly two times meals. If the wastage ratio is well managed, addition of cereal quantum in food basket may be increased. The government needs to develop appropriate strategies for reducing the wastages under seed, feed and wastage. The net availability of crop may be increased through proper management of losses under seed feed and wastage. As per latest statistics, it has been observed that growth in real value of food grains production has shown a declined trend. This is a matter of serious concern on the front of food security of our country as well as for the state. As per estimate made by Dr. Alam (1999) on post harvest losses, the total losses in food grains were estimated at 10.0 per cent. As per another estimate in value term, a monetary losses up to Rs. 100325 crores annually. Out of total losses about Rs. 21800crore constitute alone by cereals. These losses aimsfor estimating the seed, feed and wastage ratio for paddy crop which occupy a large proportion share in cereals and the subsequent availability of paddy for human consumption in the state of Bihar.

Key words : *Consumption, seed, feed, wastage, paddy, Bihar.*

India is a country with vast population crossed over 110 crores (2010-11) mark and growing at alarming rate. It is yet another fact of concern that there has not been a proportionate increase in the production level of food grains in the country. The gap between the rise in population and real availability of food grain has increase. If this trend persists for some time more, situation will go still worse. If the quantum of wastage at different levels *i.e.,* seed, feed and pre-post stages losses is reduced we can be able to fill the gap at the significant extent. The green revolution raised hopes that the new technology would bring about spectular increase in food production, no doubt it was increased but it is confined under favorable agricultural environments. Paddy, which is the most important crop still lagging behind the farmers expectations in case of its productivity particularly in the eastern region of the country. The state of Bihar falls under eastern region of the country and it recorded the lowest per hectare productivity below 20 quintal per hectare (2010) among the major paddy growing state of the country. The main factors responsible for the low paddy yield in state may be due to its diverse paddy growing environments. As per 2009-10 statistical data, rice crop occupied 25.00 lakh hectare and produced 35.15 lakh ton with an average productivity of 14.05 quintal per hectare. In the next year the area was reduces 33.23 lakh hectares, production was significantly goes high 81.87 lakh metic tones and also yield level increase 24.53 quintal per hectare. But still there is scope for enhancement in productivity. The another problems is that a huge amount of cereals crops wasted annually in the state. In the light of the above background, it is the need for estimate how much of paddy grains are available for human consumption and total quantum of wastage is the form of seed, feed & wastage. As per available information in Bihar total food grains production was 115.13 lakh tones against its total requirement of 135.44 lakh tones which showed a deficit of 20.31 lakh tones about 15 per cent. In the light of the above facts, it is important to estimate of seed, feed and wastage ratio for paddy crop which occupy a large proportion in the cropping pattern of the state and their net availability for human consumption as a broad objective. This paper is outcome of a pilot study carried on estimation of seed,

feed and wastage ratio for major food grains which was assigned by the ministry of agriculture government of India during the year 2005. The method for data collection was prepared by Dr. H.V.L. Bathla of Indian Institute of Agricultural Statistics Research, New Delhi and Co-ordinator of the study was ADRT unit Institute of Social and economic changes, Bangalore. Dr. R.S. DeshPande was national, Co-ordinatorof the study. Author was project leader of the study for Bihar state.

Status : The past studies for food grain production in the state of Bihar showed a marked deficit of 20.31 lakh tones. In the total gross cropped area 7020 thousand hectare, food grains production was 11,751 thousand tones (2008-09). Both area and production of food grains are either stagnant or very slight variation since past decade but the population of the state increases from 8.2 crores (2001 censes) to 9.4 crores (2007-08). This is indicating more requirements of food grains day by day. The seed rate of paddy crop during the same period was found varied from 50kg to 100kg across the various districts of state depending on variety and agro-climatic situation. In the state majority of the farmers were found using higher rate of seeds against recommended level. Hence it was difficult to estimate correct picture at the state level to estimate quantum of seed ratio of various variety of paddy crop. As per latest livestock census nearly 16 to 17 per cent increase in the population of livestock from previous survey. As per the data of department of animal husbandry, the recommended feed quantities for livestock estimated about 10 quintal per animal per annum. This lead to a requirement of about 25000 tonnes of feed and will gone up in future due to continuous increase in livestock population due to various ongoing programmes. As per one estimate minimum recommended requirement of poultry feed was estimated 5kg per annum per poultry. On an average every fifth year the poultry population increase and goes just double. Thus naturally demand of poultry feed will be double. As regard wastage of food both at pre-harvest to after harvest constitute a significant amount. There is no authentic data of losses due to from harvesting, storing, milling to consuming at the state level. However, a rough estimate reveals about 15 to 20 per cent losses in case of major cereals as per Dada Bhai Naroji (1868), Shah and Khambatta (1921), VKRV Rao (1925) and R.C Desai (1940), etc. They also suggested that increase in state income is possible by reducing wastage ratio of food grains in the state and national level.

MATERIALS AND METHODS

Sampling design : A multi-stage random sampling technique was followed to select the ultimate respondent for detailed survey. The paddy crop was taken into consideration due to its area of the crop amongst the cereals were very high in the state of Bihar. At first stage of sampling Saran district was selected on the basis of larger area of the crop. In the second stage of sampling four strata was formed in the district by suitably combining the contiguous blocks based on area under the crop. The four sampled blocks namely, Dighwara, Sonpur, Chapra and Dariyapur was selected. At the third stage of sampling five villages from each state/ block was selected randomly from amongst the prepared list of villages of respective block. In fourth stage prepared a list of farmers who grow paddy crop in the village as per holding size and in last stage of sampling all the enumerated farmers were categorized into three broad categories by using size of holding *i.e.,* small farm below 2.0ha, medium farm 2 to 4ha and large farm more than 4.0ha. In each village five farmers belonging to three categories was selected randomly. In this way total sample size 5 villages x 15 respondent x 4 blocks = 300 farmers selected for the study. The categories wise distribution of farmer was 185 small farm categories, 72 medium farm categories and 43 large farm categories.

RESULTS AND DISCUSSION

Profile of the selected district was showed that the geographical area 264100ha, GCA 379784ha, operational holidays 425902. Out of total holding marginal constitute 90.94 per cent, small 5.92 per cent, semi medium 2.89 per cent, medium 0.25 per cent and large (above 10ha) 0.01 per cent. Total population of the district was 3251474. Out of the total population 2953345 was rural population (2005-06). The total number of cultivator was 306067 and agricultural labourers 324876, literacy rate of the district was very low *i.e.,* 54.09 per cent (2001). Tube wells are the main source of irrigation constitute 63.95 per cent followed by tank (17.41%), canal (16.05%) in the total net irrigated area 109111ha. About 97466ha of land occupied by paddy crop in the season of autumn, winter and summer.

Production and productivity of paddy crop : The farm size wise analysis of data indicates that higher production were observed in case of large farmers 8.61 lakh kg followed by small farm 7.16 lakh kg and medium

Table-1 : Seed requirement for paddy crop.

Size of holding	Area (ha)	Quantity of seed (kg)		Production (kg)	Seed quantity of production percentage	
		Used	Kept		Used	Kept
Small categories	178.59	17142	28714	715840	2.39	4.01
Medium categories	158.03	15627	26008	632520	2.47	4.11
Large categories	224.91	23263	42442	861253	2.70	4.93
All categories	561.53	56032	97164	2209613	2.54	4.40

Table-2 : Production and disposal of paddy in the study area.

Size of holding	Area (ha)	Production (kg)	Previous year seed used (kg)	Kept seed for next year (kg)	Used as animal feed (kg)	Used as poultry feed
Small categories	178.59	715840	17142	28714	10740 (1.50)	4284
Medium categories	158.03	632520	15627	26008	9670 (1.53)	3755
Large categories	224.91	861253	23263	42442	12443 (1.44)	3346
All categories	561.53	2209613	56032	97164	32853 (1.48)	11385

Table-3 : Wastage of paddy crop at different harvest stage.

Size of holding	Production (kg)	Harvest-ing	Thres-hing	In straw grains left	Transportation	Storage	Left as animal/poultry feed (%)
Small categories	715840	4.99	0.83	1.26	2.49	1.15	0.03
Medium categories	632520	5.03	0.79	1.25	2.49	0.93	0.03
Large categories	861253	5.00	0.66	1.26	2.50	0.87	0.027
All categories	2209613	5.01	0.75	1.259	2.49	0.98	0.029

farm 6.33 lakh kg. The production level varied with the variation of farm size. As regard paddy productivity at overall level estimated 3935kg per hectare which is higher with compare to all India average productivity of 2763kg per hectare and state productivity 2018kg per hectare (2004-05). The productivity of crop varies with the variation of farm size. The productivity level of small farm was 4008.29kg per hectare followed by medium farm 4005.54kg per hectare and large farm 3829.33kg per hectare. The productivity was found higher in small farm due to proper management of crop by their own level however lower in large categories farm due to cultivation of crop by using hired labouers.

Utilization of paddy crop grain

Seed : It was reported by the farmers that improved or quality seed of paddy have been deteriorating their yield level because the production of crop was depends upon previous years seed was used continuously for several times. There is un-availability of required improved variety of paddy seeds in the area and the tendency of the farmers to use the seeds from the produced quantum repeatedly out of the once sown hybrid seeds. A majority of farmers were reported that the lack of trust on the hybrid seeds provided by the institutional source or agricultural departments agencies. Many farmers reported most of the seeds supplied by government agencies were adulterated which caused deterioration and adversely affect the productivity and production. In general a large number of farmers were used previous years kept seeds and very few farmers purchased HYVs seeds in the season.

The farmers were share the experience of HYV seed used and home saved seeds used in terms of productivity or income. They realized higher productivity by using HYVs seeds with replacement every year however farmers who not replace or uses kept home retained seed obtained low yield. Due to non-availability of quality seed most of the economically poor farmers were used local or home saved seeds of previous year. As per the statistical data of quantum of HYV paddy seeds 1.94 lakh quintals were available at the state level which is much lower than that of requirement level. In the study area method of sowing paddy seeds was reported two methods transplanting and broadcasting method. In transplanting method nursery was raise and transplanted however broadcasting method seeds sown directly. In both cases seed rate found varied between transplanting 50-60kg per hectare and broadcasting method 80-100kg per hectare. The most common varieties of paddy used by the farmers

reportedPusa 2-21, Ratna, Bala, Jaya, Mahsari, BR-1, Sita, BR-34, Pankaj, etc. in the sampled area. Seed requirement for paddy crop in the sampled district presented in Table-1.

The table-1 showed quantities of seeds of paddy being kept for next sowing purpose and already used for the current year's farm- size wise in sampled area. At the overall level 4.40 per cent of the total produced quantity of paddy kept for meeting the future requirement of seed however, 2.54 per cent used in current production year. The different farm size-wise analysis indicates the quantities of seed in total quantum of production found varied between 4.01 per cent to 4.93 per cent in case of seed kept and seed used 2.39 per cent to 2.70 per cent mainly due to traditional production behavior of the farmers. Production and disposal of paddy crop in the study area is presented in table-2.

It can be seed from table-2 that at overall level, the percentage quantities of paddy grain used as animal feed indicates that small farms used 10740 kg (1.50%), medium farm used 9670 kg (1.53%) and large farm 12443 kg (1.44%) of the produced grains. At the overall level out of the total production 2209613 kg of paddy by all categories of farm about 1.48 per cent used as animal feed by the sampled respondents. In the study area farmers were feeding the cattle generally chaff, green grasses, dry fodder by mixing concentrates of grains. The feed prepared by cooking. Farmers were also found used paddy grains as poultry feed (birds, hens, duck, pigeon, etc.) It was estimated for small farm 4284kg, medium farm 3755kg and large 3346kg. At the overall level about 11385kg used as poultry feed which constitutes 0.51 per cent of the total production. The consumption of feed was found varied with variation of types of animals and birds. Wastage in food grain occurs at various stages from production to consumption. It may observed from the study that the process of wastage in food grains can be seen before harvesting to after harvesting *i.e.,* bundling, carrying, threshing, cleaning and storage levels of the crop. The storage loss occurs mainly because of the storage structures used by farmers and damage caused by insect and pests. The standing crop also destroyed by birds and rats. At the marketing process wastage occurs due to careless cleaning and handling of crop at the market yard. The storage wind and rains also destroyed the standing crop and lead to wastages of grain at the ripening time. In this way five major stages of wastages *i.e.,* harvesting, threshing, transportation, storage and marketing were identified during study. The table-3 showed wastage of paddy grains at different stages of production.

Above table-3 showed that maximum wastage at overall level was in case of harvesting 5.01 per cent followed by transplantation 2.49 per cent grains left in straw 1.259 per cent, threshing 0.75 per cent, storage 0.98 per cent and left as animal/poultry feed 0.029 per cent. As regarding farm class-wise more or less similar picture of wastage were observed from the table.

The above estimates showed that the consumption of seed, feed and wastage at overall level were about 10.99 per cent and out of the total production 89.01 per cent available for human consumption. The analysis showed harvesting, transplanting constitute higher wastage in sampled area as reported by all categories of farms.

CONCLUSIONS

The study showed 1.48 per cent of paddy grain used as animal feed. The wastage level at the harvesting stage was 5.01 per cent followed by transportation 2.49 per cent, storage 0.98 per cent grain and left at feed 0.029 per cent. After wastages deduction in paddy crop grains, 89.01 per cent production of the crop was available for human consumption in the sampled area. Across the farm size same trend were observed. It was suggested that proper management of wastage of paddy grain required for increase in food grain for human consumption in the future.

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