Measuring the Perceived Attributes of Simple but Worth Chaff Cutter Technology Adopted by Dairy Entrepreneurs

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ABSTRACT

The acute shortage of feeds and fodder is one of the major obstacles to dairy development in India.This study was conducted in Marathwada region of Maharashtra state by personally interviewing 120 dairy farmers. Perceived attributes of the technology in the study were relative advantage, compatibility, complexity and practicability or demonstrability. Here in relative advantage, the technology was perceived as more expensive, giving wider benefit, exorbitant in net profitability, consistency in profit and time saving. In spite of its dependency factor, technology was perceived as feasible, acceptable, and recognizable as compare to past experience of feeding unchaffed fodder because it helps to maintain animal health by proper utilization of fodder and environmental welfare by avoiding wastage of fodder. Though technology was perceived as more complex, its rate of adoption is still more because of factors like labour saving, abundant in resource complexity, adoptable in application complexity and easier in cognitive complexity. It is practicable as chaffing of fodder and its effect on production can be easily observed and trials can be taken. Hence being a proven technology, chaffing needs to be popularised, especially in those areas where it is not yet practised. Government intervention is needed in the form of incentives to promote the manufacturing of chaff cutters and subsidizes their distribution to farmers.

Keywords: *Chaffing, Feed utilization, Fodder, Perceived attributes;*

Fodder production is the foundation of a livestock production system and proper feeding is imperative for achieving high and sustained productivity which is depend on the cropping pattern, climate, socioeconomic conditions, type of livestock and feeding pattern. India is facing a net deficit of 35.6 per cent of green fodder, 26 per cent of dry-crop residues and half of the total losses in livestock productivity are contributed to by the inadequacy in supply of feed and fodder. (*NABCONS, 2011*). The livestock population is expected to grow at the rate of 0.55 per cent in the coming years, and the population is likely to be around 781 million by 2050. Due to improper fodder utilization and the lack of scientific feeding, productivity of our animals is 20-60 per cent lower than the global average, though India is among the leading producers of milk.

To meet current level of livestock production and their annual population growth, strategies are needed to include measures that improve availability of quality fodder as well as for designing suitable models for effective and proper utilization of fodder in livestock diets. General trend in rural area is to offer fodder without chopping where as in case of sorghum and maize they cut it by sickles into large pieces (50 cm length). In this kind of prevalent practice, wastage of the fodder is very high. In order to reduce the wastage of feed resources, the chaffing of fodder should be promoted. This can be achieved through selection of chaff cutter technology which is a key to cater to the challenges of fodder scarcity. There is very less awareness among the farmers about usage and benefits of simple but worth chaff cutter technology. Chaff cutter is an agricultural mechanical device which cuts the thick stemmed and un-chewable material into small pieces which becomes edible and palatable to the animals. It reduces selective feeding, increases the intake of animals, improves the digestibility

and conserves energy that they have to use in mastication (*Chander, 2011*). As wastage is reduced, surplus fodder available can be fed to more number of livestock.

When fodder cultivation was promoted and chaff cutters were introduced in Mahboobnagar district of Andhra Pradesh, fodder wastage was reduced by up to 30 per cent. It appears that use of chaff cutters and chaffing has positive associations with green fodder cultivation (*Misra et al., 2007*). This helps in easing the fodder scarcities during lean season and brings about an even distribution of available fodder throughout the year.

Hence the present study was carried by considering the cost of production, physiological need of animal, acceptance level of technology, role of feeding chaffed fodder and expectation of rural dairy farmer etc.The objective of this research was to explore the important attributes of chaff cutter technology on basis of dairy entrepreneur's perception and to identify whether there is requirement for improvement in features of the existing product or there is a need to develop a new product.

METHODOLOGY

The present study was conducted in Beed, Latur and Parbhani district of Maharashtra by selecting two villages from four talukas of each district. A list of dairy entrepreneurs who were using chaff cutter technology since last three years and having minimum five dairy animals was prepared and from each selected village, 05 respondents were selected purposively. Therefore total size for this study was 120 dairy farmers. An interview schedule based on the objectives of the study was prepared for data collection during 2015.The data collected was coded, classified and analysed. In order to make the finding meaningful, statistical methods frequency and percentage were used for interpretation and drawing references and for making simple comparisons.

Perceived attributes i.e. relative advantage, compatibility, complexity and practicability were measured by scale developed by *Nithya Shree and Siddaramaiah (1996).* In each attribute, there were five statements, thus maximum obtainable score by an individual respondent was 25, whereas minimum could be 5. By using frequency and percentage, distribution of respondents made according to perceived attributes.

RESULTS AND DISCUSSION

Relative Advantage - It is the degree to which use of innovation (chaff cutter technology) was perceived by the respondent as better and superior over traditional feeding practice in terms of profitability, saving of time and multiple use potentiality. Table 1 reveals that the respondents expressed technology as more expensive in initial cost (65.00%), exorbitant in net profitability (72.50%), regular in consistency of profit (59.17 %), more time saving (60.84 %) and had more wider benefits in multiple use potential (72.50 %). Above finding are in line with *Chavan (2007)* and *Moran (2005).*Though technology perceived as more expensive, farmers are still using it because expectations of dairy farmers like more profit with minimum production cost and time saving might have fulfilled by it.

Compatibility: It is the degree to which an innovation (chaff cutter technology) is perceived as consistent with the existing values, past experiences, and needs of potential adopters. Table 2 reveals that in situational compatibility, cultural compatibility, physical compatibility, social compatibility, relational compatibility respondents expressed technology as feasible (58.34 per cent), more acceptable (68.33 per cent), more compatible with needs(44.16 per cent), recognizable (55.83 per cent) and dependent (81.67 per cent) respectively . These finding are similar with findings of McDowell, (1994). The Probable reason might be that technology needs regular electricity supply, servicing and maintenance. It is feasible, acceptable, and recognizable as compare to past experience of feeding unchaffed fodder as it helps to maintain animal health, environmental welfare by avoiding wastage of fodder.

Complexity: It is the degree to which an innovation is perceived as consistent with the existing values, past experiences, and needs of potential adopters. Operationally it is defined as the degree to which the chaff cutter technology was perceived as difficult for understanding and use by the respondents. Table 3 clearly shows that respondents perceived technology as complex in complex cognitive (57.50%), adoptable in application complexity (55.84%), scare in resource complexity (44.17%), irreversible in reversibility (90.00%) and more labour saving in labour efficiency (63.33%). These findings are similar with *Chander (2011)*. Complexity is necessary part of technological advancement, the increased complexity of the technology over traditional systems, increases the reliance on manufacturer maintenance services and

Table 1: Distribution of respondents according to relative advantage of chaff cutter technology (N=120)

Initial cost	More expensive	Expensive	Can't say	Cheap	More cheap
	78(65.00%)	28 (23.34%)	0(0%)	14 (11.66%)	0 (0%)
Net profitability	Very merge	Merge	Can't say	Exorbitant	Very exorbitant
	0(0%)	7(05.84%)	14(11.16%)	87(72.50%)	12 (10.00 %)
Consistency of profit	More irregular	Irregular	Can't say	Regular	More regular
	0(0%)	17(14.16%)	12(10.00 %)	71(59.17%)	20 (16.67 %)
Saving of time	More time consuming	Time consuming	Can't say	Time saving	More time saving
	0 (0%)	16(13.33%)	4(03.33%)	27(22.50%)	73 (60.84%)
Multiple use potential	No benefit	Single benefit	Can't say	Multiple benefit	More wider benefit
	0(0%)	4(03.33%)	9(07.50%)	20(16.66%)	87(72.50 %)

Table 2: Distribution of respondents according to compatibility of chaff cutter technology (N=120)

Situational compatibility	More unfeasible	Unfeasible	Can't say	Feasible	More feasible
	0 (0 %)	9(07.50 %)	7(5.83%)	64(53.33%)	40(33.33 %)
Cultural compatibility	More non-acceptable	Not acceptable	Can't say	Acceptable	More acceptable
	0 (0 %)	4(03.33%)	10(8.3%)	24 (20.00%)	82 (68.33%)
Physical compatibility	More incompatible with needs	Compatible with needs	Can't say	Compatible with needs	More compatible with needs
	6(05.00%)	12(10.00 %)	8(6.66%)	41(34.16%)	53(44.16 %)
Social compatibility	More non recognizable	None recognizable	Can't say	Recognizable	More recognizable
	0 (0 %)	10(8.33%)	11 (9.16 %)	67(55.83 %)	32(26.66 %)
Relational compatibility	More dependent	Dependent	Can't say	Independent	More independent
	15(12.50%)	98(81.67%)	4(3.33%)	3(2.50%)	0 (0.00 %)

Table 3: Distribution of respondents according to complexity of chaff cutter technology (N=120)

Cognitive Complexity	More complex	Complex	Can't say	Easy	More easy
	5(4.17%)	69(57.50%)	7 (5.84 %)	26(21.66 %)	13 (10.83 %)
Application Complexity	More unadoptable	Unadoptable	Can't say	Adoptable	More adoptable
	7(5.83%)	15 (12.50 %)	6 (5.00 %)	67 (55.84 %)	25(20.83%)
Resource complexity	More scare	Scare	Can't say	Abundant	More abundant
	11(9.17%)	53 (44.17 %)	9(7.50%)	37(30.83%)	10(8.33%)
Reversibility	More irreversible	Irreversible	Can't say	Reversible	More reversible
	5(4.17%)	108(90.0 %)	3 (2.50 %)	4(3.33 %)	0 (0.00 %)
Labour efficiency	More labour consuming	Labour consuming	Can't say	Labour saving	More labour saving
	2 (1.67 %)	12 (10.00 %)	8(6.67%)	22(18.33 %)	76(63.33%)

Table 4: Distribution of respondents according to practicability of chaff cutter technology (N=120)

Communicability / Observability	More uncommunicable	Un communicable	Can't say	Communicable	More Communicable
	0(0.00%)	5(4.16%)	7(5.84%)	79(65.83%)	29 (24.17 %)
Visibility	More invisible	Invisible	Can't say	Visible	More visible
	0 (0 %)	0(0%)	5(4.16%)	46(38.33%)	69 (57.5%)
Demonstrability	More non-demonstrable	Non demonstrable	Can't say	Demonstrable	More demonstrable
	0 (0.00 %)	13(10.84%)	7(5.83%)	32(26.66%)	68 (56.67 %)
Trialability	More non triable	Non triable	Can't say	Trialable	More triable
	0(0%)	3 (2.5%)	5(4.16%)	39(32.50%)	73 (60.84%)
Point of origin	More reliable	Unreliable	Can't say	Reliable	More reliable
	0(0.00%)	19(15.83%)	14(11.66%)	80(66.68%)	7(5.83 %)

possibly increasing operating costs. This technology is more adoptable because it is simple to maintain and repair by local technicians and production factor i.e. man, money and material, labour can be used efficiently.

Practicability: It is the degree to which an innovation may be tried on a limited basis, while communicability is the degree to which the results of innovation may be diffused to others. Table 3 points out that majority of respondents expressed technology as communicable or observable (65.83%), more visible (57.50%), more demonstrable (56.67%), more triable (60.84%) and reliable (66.68 per cent). These findings are similar with *Chander (2011), Seth et.al. (2013), Whitney (2011).* Reason could be that dairy farmer can be easily exposed to the advantages of the technology as they can see other farmers practicing technology successfully.

CONCLUSION

Thus, it can be concluded from the study that chaff cutter technology was perceived as relatively more advantageous though it was expensive. Regarding compatibility, it is feasible, acceptable, and recognizable as compare to past experience of feeding unchaffed fodder. In spite of complexity factor, it is more adoptable and labour saving. It can be adopted easily after taking trials and observing its effect on production. To increase rate adoption; technology should be commercially diffused by assessing perceived attributes and production factor (man, money and material, labour).

The technology needs to be refined further, technically and made simpler for the farmer so that larger farmers may come forward and adopt this technology. Government intervention is needed in the form of incentives to promote the manufacturing of chaff cutters and subsidizes their distribution to farmers. It appears that extension efforts to highlight the importance of chaff cutting have not been made in the Marathwada region of Maharashtra. Hence it is recommended to concentrate on the factors that enhance aspects of each one of the attributes. Besides giving all the financial, technical and infrastructure facilities, it is also very much important to motivate the farmers to become a successful dairy entrepreneur.

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