

PERCEIVED ATTRIBUTES OF HYBRID CUMBU NAPIER GREEN FODDER INNOVATION AMONG SMALLHOLDER DAIRY FARMERS

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Abstract: The increasing livestock population of India is facing a challenge in the form of green fodder scarcity which forces the smallholders to adopt the cultivation practices of improved green fodder varieties such as hybrid Cumbu Napier to meet the demand. The adoption of any innovation by the farmers is highly influenced by their perception about its attributes. The present study focused on the perceived attributes of the commonly used hybrid Cumbu Napier green fodder innovation for livestock species in both irrigated and rainfed conditions of Namakkal District. The data were collected from a total of 120 smallholder dairy farmers belonging to 12 village panchayats across two irrigated and two rainfed blocks using a pre-tested interview schedule by personal interview method. The attribute of hybrid Cumbu Napier green fodder namely cost, profitability, compatibility, complexity, observability and trialability were studied. Also, overall perception about hybrid Cumbu Napier green fodder innovation was also calculated using cumulative square root frequency method. It was found that the farmers in both irrigated and rainfed farming situations were aware of the hybrid Cumbu Napier and it was perceived as profitable, most compatible, observable and trialable attributes by majority of the respondents in both farming situations. However, the hybrid Cumbu Napier green fodder innovation was perceived as complex. Majority of the farmers perceived the hybrid Cumbu Napier as favourable innovation that can be adopted in their farming system.

Keywords: Innovation, Cultivation, Cumbu Napier, Fodder, Awareness, Attribute.

INTRODUCTION

India is endowed with an amazing population of dairy animals with 122.9 million dairy cattle and 92.5 million buffaloes in India as per the 19th Livestock Census contributing to the first position in the milk production across the globe. As the livestock population increases in India, the gap between the requirement and availability of green fodder is also increasing primarily due to decreased area under fodder cultivation and reduced availability of crop residues as fodder. The average productivity of livestock is also low when compared to world average (National Livestock Policy, 2013). The cost effective perennial green fodder varieties will ensure green fodder availability throughout the year at cheaper cost, provide the

much needed nutrients for the production and health of dairy animals and also reduces the expenditure on concentrates.

India is facing scarcity of green fodder for their vast livestock population. By the year 2020, the supply of green fodder will be 590 million tons against the demand of 851 million tons resulting in 30.65% scarcity i.e., 261 million tons (Vision 2050, IGFRI, Jhansi). In order to bridge the gap between demand and supply of green fodder, it is highly imperative that cultivation of high yielding multi-cut perennial green fodder innovations like hybrid Cumbu Napier has to be recommended in the existing area of cultivation (Government of India, 2016). Further, the Government of Tamil Nadu is also promoting the cultivation of hybrid Cumbu Napier under State Fodder Development Scheme, a subsidized scheme for the small and marginal dairy farmers.

As a result, the smallholder dairy farmers are increasingly adopting the green fodder innovations. In this scenario, it is necessary to study the fodder innovation attributes that contribute to the adoption or rejection of the green fodder innovation like hybrid Cumbu Napier, Fodder Sorghum and Hedge Lucerne.

METHODOLOGY

The present study was undertaken in the Namakkal district of Tamil Nadu. Using cumulative square root frequency method, the irrigated and rainfed blocks were classified into high and low categories based on their cattle population and one block from each category was randomly selected for both irrigated and rainfed. Thus, a total of four blocks were selected for this study. Similarly, village panchayats of selected blocks were also classified using cumulative square root frequency method into low, medium and high categories based on cattle population and one village panchayat was randomly selected from three categories. Thus, a total of 12 village panchayats were selected and from each selected village, 10 smallholder dairy farmers were selected randomly. A total of 120 smallholder dairy farmers from 12 village panchayats constituted the respondents for this study. The data were collected from the respondents using a pre-tested interview schedule by personal interview method.

Initially nine attributes of innovations viz., cost, profitability, compatibility, cultural compatibility, communicability, complexity, observability, trialability and perceived risk were identified through literatures. These attributes were subjected to expert analysis with 50 judges for its importance as attribute of innovations influencing the adoption or rejection of fodder varieties. Based on their responses, the following attributes of innovation viz., cost,

profitability, compatibility, complexity, observability and trialability were selected and measured on five point continuum. The overall perception of green fodder innovations by the respondents was also calculated using cumulative square root frequency method.

RESULTS AND DISCUSSION

Awareness among the farmers regarding green fodder innovations

The perceived attributes were studied among the respondents who were aware and adopted the green fodder innovations viz. Cumbu Napier, Fodder Sorghum and Hedge Lucerne. It is evident from Table 1 that majority of the farmers in both irrigated (76.67 per cent) and rainfed (61.67 per cent) farming situations were well aware of Cumbu Napier when compared to Fodder Sorghum and Hedge Lucerne.

Table 1: Awareness on green fodder innovations

Category	Cumbu Napier		Fodder Sorghum		Hedge Lucerne	
	Irrigated No. (%)	Rainfed No. (%)	Irrigated No. (%)	Rainfed No. (%)	Irrigated No. (%)	Rainfed No. (%)
Aware	46 (76.67)	37 (61.67)	20 (33.33)	6 (10.00)	15 (25.00)	2 (3.33)
Not Aware	14 (23.33)	23 (38.33)	40 (66.67)	54 (90.00)	45 (75.00)	58 (96.67)

Irrigated = 60 respondents

Rainfed = 60 respondents

Perceived attributes of Cumbu Napier hybrid green fodder innovation among small holder dairy farmers

In irrigated region, 86.96 per cent of the respondents perceived the hybrid Cumbu Napier green fodder as profitable innovation. The adoption of hybrid Cumbu Napier green fodder has ensured the availability of adequate nutrient rich green fodder throughout the year which substantially reduces the dependency on concentrate for milk production resulting in profitable dairy enterprise. This might be the reason for perceiving the hybrid Cumbu Napier as a profitable innovation.

Table 2: Distribution of respondents according to the perception of individual attributes of hybrid Cumbu Napier green fodder innovation

1. Cost					
n = 46+37	High cost	Costly	Somewhat costly	Less cost	Least cost
Irrigated No. (%)	0 (0.00)	0 (0.00)	1 (2.17)	18 (39.13)	27 (58.70)
Rainfed No. (%)	0 (0.00)	2 (5.41)	2 (5.41)	16 (43.23)	17 (45.95)
2. Profitability					
n=46+37	Most	Profitable	Somewhat	Least	Not at all

	profitable		profitable	profitable	profitable
Irrigated No. (%)	3 (6.52)	40 (86.96)	3 (6.52)	0 (0.00)	0 (0.00)
Rainfed No. (%)	2 (5.41)	33 (89.18)	2 (5.41)	0 (0.00)	0 (0.00)
3. Compatibility					
n=46+37	Most compatible	Compatible	Somewhat compatible	Least compatible	Not at all compatible
Irrigated No. (%)	26 (56.52)	6 (13.04)	5 (10.87)	3 (6.53)	6 (13.04)
Rainfed No. (%)	18 (48.65)	6 (16.22)	5 (13.51)	3 (8.11)	5 (13.51)
4. Complexity					
n=46+37	Very simple	Simple	Undecided	Complex	Very complex
Irrigated No. (%)	0 (0.00)	1 (2.17)	4 (8.70)	22 (47.83)	19 (41.30)
Rainfed No. (%)	1 (2.70)	2 (5.40)	3 (8.11)	18 (48.65)	13 (35.14)
5. Observability					
n=46+37	Most observable	Observable	Somewhat observable	Least observable	Not at all observable
Irrigated No. (%)	4 (8.70)	38 (82.60)	4 (8.70)	0 (0.00)	0 (0.00)
Rainfed No. (%)	2 (5.41)	29 (78.38)	5 (13.51)	1 (2.70)	0 (0.00)
6. Trialability					
n=46+37	Most trialable	Trialable	Somewhat trialable	Least trialable	Not at all trialable
Irrigated No. (%)	9 (19.57)	35 (76.09)	2 (4.34)	0 (0.00)	0 (0.00)
Rainfed No. (%)	7 (18.92)	29 (78.38)	1 (2.70)	0 (0.00)	0 (0.00)

Hybrid Cumbu Napier green fodder was perceived as an observable innovation by majority (82.61 per cent) of the respondents in irrigated region. The Cumbu Napier grass is ready for harvest within 75 days of planting and hence the impact of green fodder on milk yield can be appreciated in a short period of time after feeding it to the dairy animals owing to its high nutrient density and palatability. Hence, observable attribute of hybrid Cumbu Napier was perceived by majority of the smallholders.

In irrigated farming conditions, 58.70 per cent and 56.52 per cent of the respondents felt that the hybrid Cumbu Napier green fodder was a least cost and most compatible

innovation respectively. Hybrid Cumbu Napier green fodder is a perennial multicut variety crop which requires one time investment. With regular quartering and top dressing the crop can be maintained for many years without any additional expenses.

Further, the innovation is suitable for the existing agro-climatic conditions and will not affect their regular cropping pattern. Also, the innovation will serve as a potential solution for the green fodder crisis faced by the smallholder dairy farmers. All these factors together contributed to the situational and cultural compatibility of the innovation among the farmers.

Hybrid Cumbu Napier green fodder was perceived as a trialable innovation in irrigated region by 76.09 per cent of the respondents. Since the innovation is situationally and culturally compatible with the existing environment and requires least cost as investment, the farmers believed that the hybrid Cumbu Napier green fodder can be experimented by cultivating in a limited area to see the potential benefits by adopting the innovation.

However, 47.83 per cent of the respondents perceived it as complex innovation because of the non availability of quality fodder slips round the year and difficulty in understanding the package of practices in cultivation which is in concurrence with the findings of Kumar *et al.* (2015) and Rathod (2017).

Similar results were also observed in the rainfed farming situations. The respondents perceived the hybrid Cumbu Napier as profitable (89.18 per cent), trialable (78.38 per cent) and most compatible innovation (48.65 per cent) with observable results (78.38 per cent), involving least cost (45.95 per cent) and 48.65 per cent of the respondents perceived it as complex technology.

Overall perception of hybrid Cumbu Napier green fodder innovation among smallholder dairy farmers

Table 3 shows that in irrigated farming, 52.17 per cent of the respondents perceived the hybrid Cumbu Napier innovation was favourable for adoption followed by highly favourable (39.13 per cent) and less favourable (8.70 per cent) for adoption. More than half (56.76 per cent) of the respondents in rainfed farming perceived the hybrid Cumbu Napier innovation was favourable for adoption followed by highly favourable (24.32 per cent) and less favourable (18.92 per cent) for adoption.

Majority of the farmers perceived the hybrid Cumbu Napier as favourable innovation that can be adopted in their farming system because of its compatibility with existing cropping pattern, observability and relative advantage traits such as increased milk

production, availability of green fodder throughout the year, least cost for cultivation and increased profit on feeding of hybrid Cumbu Napier.

Table 3: Overall perception of hybrid Cumbu Napier green fodder innovation among smallholder dairy farmers

S. No	Fodder innovations	Category	Irrigated No. (%)	Rainfed No. (%)	Chi square
1	Cumbu Napier (Irrigated n=46) (Rainfed n=37)	Less favourable innovation (up to 33)	4 (8.70)	7 (18.92)	3.078 ^{NS}
		Favourable innovation (33-37)	24 (52.17)	21 (56.76)	
		Highly favourable innovation (more than 37)	18 (39.13)	9 (24.32)	

^{NS} - Non Significant

Conclusion

It could be concluded that the farmers in both irrigated and rainfed farming situations were well aware of the hybrid Cumbu Napier rather than Fodder Sorghum and Hedge Lucerne. Hybrid Cumbu Napier green fodder was perceived as profitable, most compatible, observable and triable by majority of the respondents in both farming situations. However, the hybrid Cumbu Napier green fodder innovation was perceived as complex. The hybrid Cumbu Napier was perceived as favourable innovation among the respondents in both farming conditions which could be adopted for green fodder production in order to meet the demand by the ever increasing livestock population.

References

- [1] Government of India. (2016). Steps taken to bridge the gap between the demand and availability of fodder through sub-mission on fodder and feed development. 34th report of standing committee on agriculture, Ministry of Agriculture and Farmers Welfare, New Delhi, India.
- [2] Kumar, M., Singh, R.P. and Misra, A.K. (2015). Adoption level of green fodder production practices and constraints faced by the farmers of Rajasthan. *Range Management and Agroforestry*. 36(2): 217-220.
- [3] Nineteenth Livestock Census. (2012). Department of Animal Husbandry Dairying and Fisheries, Ministry of Agriculture, Government of India, New Delhi, India.
- [4] National Livestock Policy. (2013). Department of Animal Husbandry Dairying and Fisheries, Ministry of Agriculture, Government of India, New Delhi, India.

- [5] Rathod, P. (2017). Attitude of dairy farmers towards cultivation of green fodder crops in Bidar district of Karnataka. *The Indian Journal of Veterinary Sciences & Biotechnology*. 12(3): 152-156.
- [6] Vision 2050 (2015). Indian Grassland and Fodder Research Institute-Indian Council of Agricultural Research, Jhansi - 284 003. Available at <http://krishi.icar.gov.in/jspui/handle/123456789/877>