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RESEARCH PAPER

Socio-economic profile of *Stylosanthes* seed producing farmers and constraints faced by them in Anantapur district of Andhra Pradesh

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Abstract: A study was carried out to know the socio-economic profile of *Stylosanthes* seed producing farmers in Ananthapur district of Andhra Pradesh. Farmers were identified through snowball technique and were interviewed using standardized interview schedule. The study revealed that more than half of the Stylosanthes cultivating farmers belonged to middle age group, were illiterates, belonged to small family, semi medium land holding category and medium income group. Majority of the farmers belonged to nuclear type of family. Exactly half the seed growers possessed small herd size. Majority of the respondents (85%) belonged to medium economic motivation category. Medium risk orientation was observed with 96.67 per cent of the respondents and nearly 40 per cent of the respondents had medium extension participation. Non availability of improved implements for seed harvest and processing, very labour-intensive crop for seed collection and processing, drudgery involvement during seed collection/sweeping were the most severe constraints expressed by the respondents.

Key words: Age, Constraints, Extension, Family size, *Stylosanthes*

Introduction

Indian agriculture is characterized as rainfed small holder's production system. Mixed farming-mainly combination of crop and livestock- is practiced by almost all farmers. In this mixed farming system, livestock contributes 20 to 50 percent to household income. This share increases for underprivileged marginal and landless livestock owners. Livestock numbers in India as per 20th livestock census is 535.78 million showing a growth percentage of 4.6 per cent. Corresponding to this, fodder and feed requirements of livestock is 530.5 million tons of dry fodder and 851.3 million tons of green fodder, But the estimated supply is 467.6 million tons of dry and 590.4 million tons of green fodder (IGFRI, 2020). Thus, the estimated deficit was 62.85 million tons of dry fodder and 260.9 million tons of green fodder. In terms of percentage, country faces deficit of 11.85 per cent of dry fodder and 30.65 per cent of green fodder. Forage based economical feeding strategies are required to reduce the cost of quality livestock product as the feed alone constitutes 60-70% of the milk production cost. Seed is the most critical and important input to enhance the production potential of all agricultural crops, including fodder. In India, fodder is produced from 8.34 million hectare of cultivated and 10.39 million hectares of permanent pasture. Fodder yield from these lands is lower than the potential yield and the availability of good quality seeds are estimated to be around 15-25 per cent only for cultivated forages. Therefore, the need of the time is to adopt the practice of land use with multiple crops in a sustainable manner. Stylosanthes is a legume fodder crop rich in crude protein that can be cultivated as grassland or pasture. Animals can feed on it directly. The highly palatable *Stylosanthes hamata* species is preferred by animals. In India, Stylosanthes seed production started during the late 1970s. In the mid 1980s small farmers in the Rayalseema region, Ananthapur district in Andhra Pradesh, started Stylosanthes seed production to meet rising demand from government agencies for their wasteland development programs. Based on surveys and experimental evidence at four locations around the country, Singh *et al.* (1995) found the Ananthapur area as the most suitable for economic and efficient production of Stylosanthes seeds. Stylosanthes thus is one of the most important legume fodder crop. Seed demand for this crop is met majorly by farmers which is not so in other crops. Considering the importance of this crop, a study was taken up to know the socio-economic conditions of growers and to find out the constraints faced by them.

Material and methods

In the study, Ex-post facto research design was used. The Research study was conducted in Hindupur region of Anantapur district of Andhra Pradesh state, as Stylosanthes seed production is predominantly carried out in this region. Seed produced by the farmers of this region is supplied to all parts of India. Three mandals Gorantla, Chilamathur and Somandepalli were selected based on earlier studies conducted by ICAR-IGFRI, Jhansi where Stylosanthes seed production is practiced predominantly. The villages having maximum area under Stylosanthes cultivation in each mandal were listed. Four villages having maximum area under Stylosanthes cultivation were selected from each mandal. So totally 12 villages were selected. They were Gollapalle, Palasamudram, Vadigepalli and Mallapalle from Gorantlamandal, Settipalli, Kodikonda, Morasalapalli and Reddicheruvapalli from Chilamathurmandal and Bramhasamadram, Edulabalapuram, Chalakur and Julukunta from Samandepalle. From each village, ten respondents were selected randomly, constituting a total sample size of 120. Keeping the objectives of the study interview schedule was prepared to address the objectives of the study and it was pre-tested in non sample area to identify the ambiguities in questions if any. The final standardized interview schedule was used for data collection. Collected data was digitised and analysed using mean and standard deviation (Banerjee 2016)

Results and discussion

Table 1 presents the socio-economic profile of Stylosanthes seed growers. More than half of the seed growers (66.00 %) belonged to old age group and 54.00 per cent belonged to middle age group. The mean age of the respondents was 53.96 ±10.70 years. The probable reason for this could be that old and middle-aged respondents had adequate experience of cultivation of this crop. Similar results were reported by Rajanikanth (2013). Less than one fourth (22.50 %) of the respondents were illiterates followed by 16.67 per cent of them had completed primary schooling, 20.00 per cent had obtained middle school education, 19.17 per cent of them had obtained high school education, 18.33 per cent of them had obtained pre university education and only 3.33 per cent of them had obtained education up to degree. The mean education level was 6.18±4.70 years of formal schooling. The probable reason for this could be lack of awareness about the importance of formal education among the respondents and poor economic status as study area faces frequent droughts; poor infrastructure of education facilities might have restricted the education level of majority of respondents to middle school or high school. Similar results were reported by Khadda *et al*. (2012). More than half of the total respondents (64.17 %) belonged to small family size. Less than one fourth (23.33 %) of the respondents belonged to medium size family and 12.50 per cent of respondents belonged to large size family. The average family size was 4.87±2.81 members. The reason for this might be that majority of the respondents had nuclear families. Similar results were obtained by Banerjee (2016). Majority (84.16 %) of the respondents belonged to nuclear family and 15.83 per cent of the respondents had joint family. The reason might be respondent's preference to have better quality of life as nuclear family has less sharing of facilities or resources as in joint families. This might also be due to changing value of family system and modernization. Similar results were reported by Akshatha (2014). Nearly three-fourth of the Stylosanthes seed growers (69.17 %) belonged to other backward class category followed by 27.50 per cent of them belonged to scheduled caste, 2.50 per cent general category and 0.83 per cent scheduled tribe. Prevalence of social group depends upon social roles like one's profession which become hereditary resulting in fixed status hierarchies. Pamecha and Sharma (2015) reported similar findings. Exactly half of the respondents (50 %) belonged to semi-medium category of land holding. Among remaining, small and medium category was equally shared by the respondents with 20 per cent each, remaining 10 per cent of the respondents belonged to marginal category and none of the respondents belonged to large category. The reason for majority of the respondents in small and semi medium category was because of fragmentation of land upon separation or division of families. Similar results were obtained by Nataraju (2013). More than half (69.17%) of the Stylosanthes seed growers belonged to medium annual income group (₹ 60,000 - ₹ 1,20,000), 17.50 per cent of the respondents belonged to low (₹ 60,000) and 13.33 per cent of the respondents belonged to high annual income groups (₹ 1,20,001). The mean annual income of the respondents was ₹ 86833.33±27652.81. Reasons for many in low- and medium-income categories might

Table 1. Socio-economic profile of respondents n=120

Particulars	Categories	Respondents	
Age (Years)		Number	%
Young	18-30	0	
Middle	30-50	54	45.00
Old	>50	66	55.00
Mean	53.96		
SD	10.70		
Education (Standard)			
Illiterate	Cannot read and write	27	22.50
Primary	(1^{st} to 4^{th})	20	16.6
Middle school	(5^{th} to 7^{th})	24	20.00
High school	(8^{th} 10^{th})	23	19.17
College	(11^{th} to 12^{th})	22	18.33
Graduation and above	(above12^{th})	4	3.33
Mean	6.18		
SD	4.70		
Family size (No)			
Small	(Up to 4)	77	64.17
Medium	(5-8)	28	23.33
Large	(>8)	15	12.50
Mean	4.87		
SD	2.81		
Family type			
	Nuclear	101	84.16
	Joint	19	15.83
Social group			
	General	03	2.50
	Other backward class	83	69.17
	Scheduled Caste	33	27.50
	Scheduled Tribe	01	0.83
Land holding (ha)			
Marginal	(<1)	12	10
Small	(1.01 to 2)	24	20
Semi medium	(2.01 to 4)	60	50
Medium	(4.01 to 10)	24	20
Large	(>10.01)	00	00
Mean	2.66		
Annual income (Rs.)			
Low	(Up to 60000)	21	17.50
Medium	(60001 to 120000)	83	69.17
High	(>120001)	16	13.33
Mean	86833.33		
SD	27652.81		
Herd size (No of ACU)			
Small	(1-2)	60	50.00
Medium	(3-4)	28	23.33
Large	(5-6)	17	14.17
Economic motivation			
Low	(<14.31)	15	12.50
Medium	(16.36-14.32)	102	85.00
High	(>16.37)	3	2.50
Mean	15.34		
SD	1.02		
Risk orientation			
Low	(<8.05)	4	3.33
Medium	(8.06-9.81)	116	96.67
High	(>9.82)	0	0.00
Mean	8.94		
SD	0.88		
Extension participation			
Low	(<0.29)	30	25.00
Medium	(0.30-2.10)	47	39.17
High	(>2.11)	43	35.83
Mean	1.20		
SD	0.90		

be due to cultivation of only one crop in a year and possibility of failure of crop due to frequent droughts. Similar results were reported by Akshatha (2014). Exactly half of the Stylosanthes seed growers (50.00 %) possessed small herd size (1-2adult cattle units), 23.33 per cent of the respondents possessed medium herd size (3-4 ACU) and 22.11 per cent of the respondents possessed small herd size (5-6 ACU). Reason for half of the respondents having small herd size could be inadequate space to house more number of animals, less labour for livestock rearing and many of them preferred to restrict livestock size in accordance with the availability of feed and fodder and selling of animals to meet the family expenditure. Similar results were produced by Mohanakumar (2018). Majority of the respondents (85%) belonged to medium economic motivation category followed by 12.50 per cent of them belonged to low and 2.50 per cent to high economic motivation categories. The probable reason might be small size of land holding, inadequate irrigation facilities, investment inadequacy, inadequate non-farm work opportunities etc. Similar results were reported by Ghuge *et al.* (2015). Medium risk orientation was observed with 96.67 per cent of the respondents, low with 3.33 per cent beneficiary respondents and none of the respondents had high risk orientation. Medium risk bearing ability might be due to medium level of economic condition to overcome likely indebtedness by accepting only those technologies having assured income generation. Among the respondents, 39.17 per cent of the respondents had medium extension participation, 35.83 per cent of them had high extension participation and 25.00 per cent of them had low extension participation. Lack of awareness about different programmes, medium education level and lack of time to contact extension agencies as many of them have nuclear families could be the reasons. Similar results observed by Mahesh *et al* 2020, little over half (55.00 %) of the respondents had medium extension participation followed by low (28.00 %) and high (17.00 %) extension participation.

Totally three types of constraints were identified (Table 2), they are technical constraints, production constraints and financial constraints. Among technical constraints, non-availability of improved implements for seed harvesting and processing was the most severe constraint with 2.68 Weighted Average Index (WAI) as there are no improved implements for seed collection, it is done manually. Stylosanthes seeds are very small and fall on the ground. It is very difficult to collect the seed. Seed processing is done using two size meshes, first mesh to separate big stones and large inert materials and second mesh is sand sewing mesh which separates small inert materials. Winnowing is done to separate dust/light weight particles from the seeds, followed by non-availability of technical knowledge about improved cultivation methods (WAI 1.83) and lack of knowledge about physiological maturity of crop (WAI 1.68). Among six production constraints, very labor intensive crop for seed collection and processing, drudgery involvement during seed collection/sweeping, difficult to remove inert material from seeds were the most acute constraints with 2.99, 2.98 and 2.98 weighted average indices, respectively, Stylosanthes seed harvesting and processing is very lengthy and tedious process, it requires more labour for the process and due to development of metropolitan cities nearby like Bangalore, many people in this region migrate to cities in search of jobs and daily wage works. This caused lack of availability of labour and the other reason is that majority of the young people are not inclined to work as agricultural labours. Collection and processing takes more time as the seed fallen on

Table 2. Constraints experienced by respondents in production of Stylosanthes seeds n=120

Constraints	Respondents			WAI	Average WAI
	Very severe	Moderately severe	Less severe		
Technical constraints					
Non availability of improved implements for seed harvest and processing	84	34	2	2.68	2.06
Non availability of technical know how about improved cultivation methods	16	67	37	1.83	
Lack of knowledge about physiological maturity of crop	10	62	48	1.68	
Production level constraints					
Very labour-intensive crop for seed collection and processing	119	1	0	2.99	2.44
Drudgery involvement during seed collection/sweeping	117	3	0	2.98	
Difficult to remove inert material from seed	118	2	0	2.98	
Poor seed yield over the years	49	52	19	2.25	
Loss of top soil due to seed collection by sweeping	9	83	28	1.84	
No improved cultivar is available	7	55	58	1.58	
Financial and market constraints					
Lack of credit facilities for the crop from formal financial institutions	117	3	0	2.98	2.72
Lack of demand for seed over the years	105	15	0	2.88	
Seed has to be sold only through middlemen	104	15	1	2.86	
Fluctuation in market prices	103	17	0	2.86	
Low price for Stylosanthes seed	94	21	5	2.74	
Lack of market intelligence about seed buyers and demand	88	22	10	2.65	
Non availability of seed standards	22	88	10	2.10	

Table 3. Suggestions given by respondents to improve Stylosanthes seed production n=120

Suggestions	Frequency	Percentage
Develop improved implements for seed collection and processing	78	65.00
More number of marketing channels required	66	55.00
Reduce involvement of middlemen in marketing	52	43.33
Provide training on seed processing	43	35.83
Provide credit/subsidies for the crop	40	33.3

the ground are collected which contains stones, inert materials, mud and dust particles and it is very difficult to separate the seeds from the inert substances. Other production related constraints were poor seed yield over the years (WAI 2.25) and non availability of improved cultivars (WAI 1.58). Seven financial and market constraints were listed. Among them, lack of credit facilities for the crop from the formal financial institutions, lack of demand for Stylosanthes seed over the years, fluctuations in market price, sale of seeds only through middle men were considered as the most critical constraints with weighted average indices of 2.98, 2.88, 2.86 and 2.86, respectively. Low price for seeds (WAI 2.74), lack of market intelligence about seed buyers and demand (WAI 2.65) and non-availability of seed standards (WAI 2.10) were other constraints expressed by the respondents.

Among three categories of constraints, financial constraint was observed to be the most critical constraint as it had maximum average WAI (2.74) followed by production level constraints with average WAI of 2.44 and technical constraints with an average WAI of 2.06. Lack of demand for Stylosanthes seed over the years was another constraint because almost from last one and half to two years the demand for the seed has been reduced due to covid-19 pandemic, many seed dealers from other states haven't come to purchase the produce and poor quality of the seeds is also one of the reason for reduced demand. Since there are no any proper marketing channels, selling the produce through middlemen is another constraint faced by the farmers because their involvement cuts the profit level of the farmers by taking commissions. The price of the seed has reduced almost by 50-60 per cent from last two years. The results are in line with the findings of Joshi (2006).

It is clear from the Table 3 that 65 per cent of the respondents suggested developing improved implements for seed collection and processing, 55 per cent expressed for the requirement to have more number of marketing channels, 43.33 per cent suggested to reduce the involvement of middlemen, provide training on seed processing (35.83%) and provide credit/subsidies for Stylosanthes crop (33.33%). There is an imperative need to develop small implements for seed collection and processing of Stylosanthes. Department of Agriculture of Hindupur must look into the matter and facilitate in developing such tools to help the seed producers and to reduce the drudgery level. Similarly, it should look for the possibility of purchasing seed directly from farmers to avoid exploitation by middlemen.

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