

Profile Characteristics and Economic Performance of Byadagi Chilli Growers in Haveri District of Karnataka

VEENA BUSHETTI¹ AND B. KRISHNAMURTHY²

¹Department of Agricultural Extension, College of Agriculture, UAS, GKVK, Bengaluru - 560 065

²Associate Director of Extension, University of Agricultural Extension, Bangalore - 560 065

e-Mail : bushettiveena@gmail.com

AUTHORS CONTRIBUTION

VEENA BUSHETTI :
Conceptualization,
investigation, data collection
and original draft
preparation;

B. KRISHNAMURTHY :
Conceptualization, data
curation, draft correction
and data analysis

Corresponding Author :

VEENA BUSHETTI
Department of Agricultural
Extension,
College of Agriculture,
UAS, GKVK, Bengaluru

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ABSTRACT

The study was conducted in Haveri district of Karnataka to study the profile characteristics and economic performance of Byadagi chilli growers during the year 2021-22. Byadagi chilli is a famous variety of chilli, it is named after the town of Byadagi which is located in the Haveri district of Karnataka. The *Ex-post-facto* research design has been adopted in the present study. Haveri, Hangal and Byadagi talukas were selected based on high, medium and low productivity of Byadagi chilli, respectively. From each taluka five villages and from each village 12 farmers were selected, thus total sample size encompassed to 180 farmers from 15 villages. It was observed that more than one-third (38.33%) of the growers belonged to medium overall economic performance category, the linear multiple regression analysis done to test the effect of independent variables on economic performance, showed that all the significant independent variables together explained to the extent of 79.99 per cent of variation in the economic performance. Less than half of the Byadagi chilli growers (47.22%) belonged to middle age category, 30.55 per cent of them were educated up to PUC, more than half (56.67%) of the Byadagi chilli growers belongs to joint family system. Equal number (40.00%) and more than one third (37.78%) of the Byadagi chilli growers belonged to medium category of extension participation, social participation and mass media exposure, respectively and only 34.44 per cent of the farmers have undergone training programmes.

Keywords : Byadagi chilli, Profile characteristics, Economic performance, Training received

AGRICULTURE is indisputably India's major source of income, particularly in the rural areas. It also makes a substantial contribution to the Gross Domestic Product (GDP). Friendly agriculture is critical for holistic rural development in terms of food security, rural employment and environmentally sustainable technologies such as soil conservation, sustainable natural resource management and biodiversity protection. Green revolution, white revolution, yellow revolution and blue revolution have all occurred in Indian agriculture and related activities. Agriculture in India provides a living for the bulk of

the population and should never be overlooked. Despite the fact that its contribution to GDP has decreased to less than 20.00 per cent and that other sectors' contributions have expanded at a faster rate (Anonymous, 2011).

Byadagi chilli is a famous variety of chilli mainly grown in Karnataka. It is named after the town of Byadagi which is located in the Haveri district of Karnataka. The business pertaining to Byadagi chilli has the second largest turnover among all chilli varieties of India. An

oil, oleoresin extracted from these chillies is used in the preparation of nail polish and lipsticks. Byadagi chilli is also known for its deep red colour, less spiciness and used in many food preparations of South India. Byadagi chilli has been accorded Geographical Indication (GI) in February 2011. Its GI tag is 129.

There are Two Types of Byadagi : Chillies viz., dabbi and kaddi. Byadagi dabbi, which is small, plump and more popular for its colour, flavour and taste. Though it has more seeds, it is less spicy compared to the kaddi variety. This variety is best suited for masala preparation and oleoresin extraction. Many established food companies prefer this variety for their products. Among cosmetic products, it is mainly used in nail polish and lipstick. The kaddi type is gnarled, thin, long and has fewer seeds. Byadagi chilli is an important ingredient in spicy preparations like bisibele bath, sambar, chutney and other food items of South India and is widely used in the Udupi cuisine. It is also used in meat preparation because of the bright red colour that it imparts to the meat. 25 industries in and around Byadagi are involved in grinding these chillies into powder and selling them to masala manufacturers like MTR, ITC Food Products.

The extraction of oleoresin has also led to the creation of cold storage units in Byadagi since the chilli pods have to be maintained at a low temperature of 4 to 6 degree celsius to maintain the colour and purity. Storing in cold storage units also increases the amount of oleoresin extracted from chilli by about 30 - 40 per cent. About 50 litres of oleoresin can be extracted from about 1 tonne of Byadagi chillies. Companies have been set up in and around Byadagi that are involved in the extraction of oleoresin. This oleoresin is then sent to Kerala where it is further refined before being exported to countries like US, Japan and those in Europe (Anonymous, 2020).

Byadagi chillies are primarily sold at the Byadagi chilli market; annual sales are about Rs.3 billion (\$75 million). This market attracts traders from all over Karnataka and from neighbouring Andhra Pradesh because of favourable conditions for the business like a fair price, immediate payment and

accurate measurement of the chilli. The recent increase in sales of low-priced, more-pungent chilli varieties into the market has caused a decrease in the price of Byadagi chillies as well. Because of this, the farmers involved in its cultivation may not be able to make the required profits on their yield. The study was undertaken with the objective, to study the profile characteristics and economic performance of Byadagi chilli growers.

METHODOLOGY

The study was conducted in Haveri district of Karnataka during the year 2021-22. Haveri district has been purposively selected for the study, since it is the major export hub for Byadagi chilli. The *Ex-post-facto* research design was adopted for the study. Based on the statistical data of Byadagi chilli production and productivity in the year 2019-20, talukas having high, medium and low productivity of chilli were selected for the study. *i.e.* Haveri (high), Hangal (medium) and Byadagi (low). Simple random sampling technique was employed for selection of the respondents. From each taluka five villages selected based on availability of a greater number of Byadagi chilli growers after discussion with the Department of Agriculture and Horticulture officers. So total number of villages selected was 15 and from each village 12 farmers were selected. Thus, the total sample size for the study was 180.

Economic performance of Byadagi chilli growers is operationalized as the ratio of value of output to the total expenditure incurred for Byadagi chilli production in a year expressed in index value. The procedure developed by Shankaraiah and Crouch (1977) was used in the present investigation. To assess the total expenditure incurred for Byadagi chilli production, the expenditure on total inputs (*i.e.* seed/ seedlings, fertilizers, plant protection chemicals, manures, micro-nutrients, growth regulators, *etc.*), labour, electricity, repair, maintenance and miscellaneous were considered for a duration of one year. Further, to estimate the value of total output realized, the revenue gained from the marketing of Byadagi chilli for a period of one year was considered.

Economic Performance Index (EPI) value for Byadagi chilli growers was calculated by using the formula:

$$EPI = \frac{VTO}{TE} \times 100$$

Where,

EPI = Economic Performance Index

VTO= Value of Total Output for a period of one year,

TE = Total Expenditure incurred for a period of one year

Considering the value of Economic Performance Index (EPI), the Byadagi chilli growers were grouped into three classes with Mean and Standard Deviation as a measure of check.

For the present study relevant variables were selected after extensive review of the relevant literature and consultation with the experts considering the theoretical background and objectives of the study. Keeping the objective of the study in the mind, age, education, family type, size of land holding, farming experience, extent of chilli area, cropping pattern, annual income, livestock possession, farm implements, extension participation, mass media exposure, sources of information, social participation, deferred gratification, cosmopolitaness, training received and credit orientation were taken as profile characteristics of Byadagi chilli growers.

RESULTS AND DISCUSSION

It can be seen from the Table 1. that personal characteristics of Byadagi chilli growers. Less than half of the Byadagi chilli growers (47.22 %) belonged to middle age category, followed by old (33.33 %) and young (19.45 %) age categories respectively. The interest and attitude shown by the middle-aged Byadagi chilli growers towards farming might be the

TABLE 1

Personal characteristics of Byadagi chilli growers (n=180)

Characteristics	Category	Byadagi chilli growers	
		Frequency	Per cent
Age (years)	Young (up to 35)	35	19.45
	Middle (36-50)	85	47.22
	Old (> 50)	60	33.33
Education	Illiterate	2	1.11
	Primary school	10	5.56
	Middle school	40	22.22
	High school	45	25.00
	PUC	55	30.55
	Graduation	27	15.00
	Post-graduation and above	1	0.56
Family type	Nuclear	78	43.33
	Joint	102	56.67

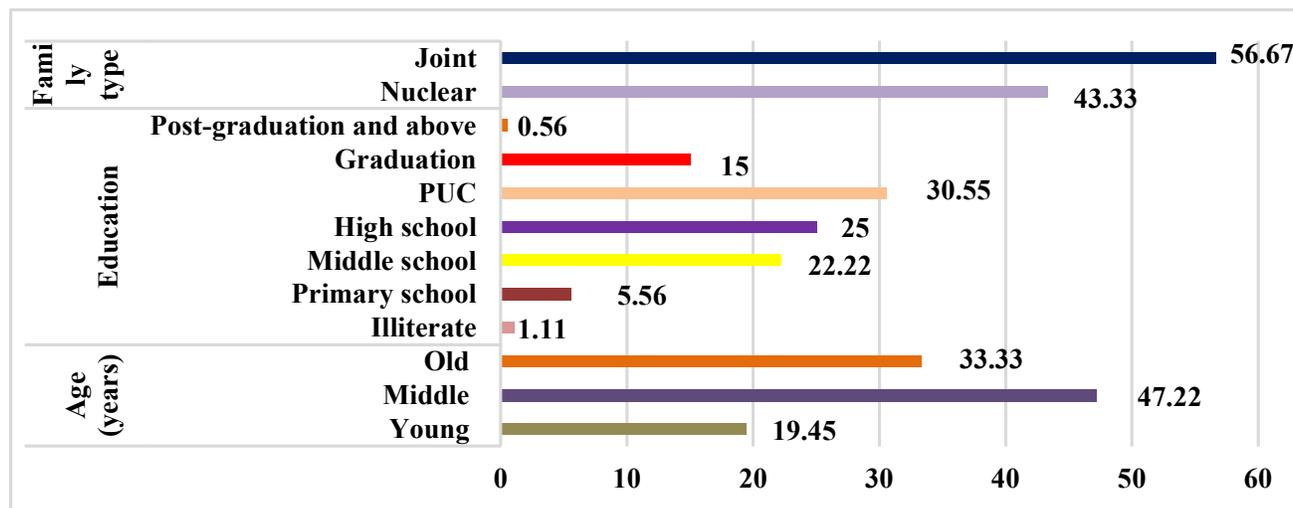


Fig. 1 : Personal characteristics of Byadagi chilli growers

apparent reason behind this trend. More than that, they were enthusiastic in nature and possess higher innovativeness towards profit gain. Middle aged Byadagi chilli growers hold more physical vigour and possess higher work efficiency. They can take independent decision in financial affairs to implement their ideas for farm progress. Education of the individual determines their knowledge level and the mental status of the individual. Results pertaining to the education level of Byadagi chilli growers depicted that 30.55 per cent of Byadagi chilli growers were educated up to PUC followed by 25.00, 22.22, 15.00, 05.56 and 1.11 per cent belonging to the category of high school, middle school, graduate, primary school level of education and illiterate, respectively. Only one respondent belonged to post-graduation and above (0.56%). The credible reason for nearly one-third number of Byadagi chilli growers to be educated up to PUC and one fourth (25.00%) up to high school level might be due to their medium income level, family conditions and lack of higher-level education facilities in their villages. They have to travel nearby towns to pursue their higher education. Data pertaining to the family type presented in the table indicates that more than half (56.67%) of the Byadagi chilli growers belongs to joint family system followed by 43.33 per cent nuclear family. The major reason Byadagi chilli growers belonging to joint family are probably due to the existence of ancestral customs like unity and togetherness in the villagers may help in solving the problems easily. The head of the family member encourages the younger generations to take up new innovations in farming activities. Comparable findings were ensued by Riza (2021).

It can be observed from the Table 2, that the socio-economic and psychological characteristics of Byadagi chilli growers were analysed based on size of land holding, farming experience, extent of chilli area, annual income, cosmopolitaness, deferred gratification, livestock possession, possession of farm implements and credit orientation.

Nearly half (49.44%) of the Byadagi chilli growers were marginal farmers, followed by small (28.34%) and big (22.22%) farmers. The possible reasons that

could be attributed are that, fragmentation of land from generation to generation, so the size of land holding has been declined. Thus, majority of the respondents belonged to marginal and small farmers. Data pertaining to the farming experience presented in the table indicates that more than one-third (41.67%) of the Byadagi chilli growers belonged to medium farming experience followed by 37.22 and 21.11 per cent of them belonged to low and high farming experience respectively. One of the reasons for the present finding could be that they might be from joint family system initially assigned with non-farming responsibilities. This could have reduced their number of experience in farming.

It can be noticed from the Table 2, that 41.11 per cent of the Byadagi chilli growers were small farmers, followed by marginal (37.78%) and big (26.11%) farmers, respectively with respect to extent of chilli area. The probable reason for this might be majority of the farmers are marginal, so they are growing chilli in part of their land, not as a major monocrop. It can be observed that, more than one-third (36.11%) of Byadagi chilli growers belonged to medium level of annual income followed by low (32.78%) and high (31.11%). The probable reason for varied income categories of Byadagi chilli growers might be due to their farm holding size, cropping pattern, type of soil and practice of subsidiary occupations. It can be found out from the data that, 41.67 per cent of Byadagi chilli growers possessed medium level of cosmopolitaness, while 36.11 per cent had low and 22.22 per cent had high level of cosmopolitaness. The tendency exhibited by a farmer to seek farm information from outside his social circle is defined by his cosmopolitaness. Most of the respondents exhibit medium level of cosmopolitaness due to their involvement in several social activities, optimum economic status and contact with extension officials. Hence, leading to their vital participation in extension activities such as farm visit, exhibitions, krishimela, demonstrations *etc.*

It can be observed that, 40.00 per cent of the Byadagi chilli growers had medium level of deferred gratification followed by low (36.67%) and high

TABLE 2
Socio economic and psychological characteristics of Byadagi chilli growers

(n=180)

Characteristics	Category	Byadagi chilli growers	
		Frequency	Per cent
Size of land holdings	Marginal (< 2.5 acres)	89	49.44
	Small (2.51 – 5.0 acres)	51	28.34
	Big (>5.0 acres)	40	22.22
Farming experience (years)	Low (<10.54)	67	37.22
	Medium (10.54-13.66)	75	41.67
	High (>13.66)	38	21.11
	Mean=12.10	S.D=3.12	
Extent of chilli area	Marginal (< 2.5 acres)	68	37.78
	Small (2.51 – 5.0 acres)	83	41.11
	Big (>5.0 acres)	29	26.11
Annual income (Rs.)	Low (<3,66,753.2)	59	32.78
	Medium (3,66,753.2-473791.2)	74	36.11
	High (>4,73,791.2)	47	31.11
	Mean= 4,20,272.2	S.D=1,07,038.1	
Cosmopolitaness	Low (<10.20)	65	36.11
	Medium (10.20-13.38)	75	41.67
	High (>13.38)	40	22.22
	Mean=11.79	S.D=3.18	
Deferred gratification	Low (<36.67)	66	36.67
	Medium (36.67-42.65)	72	40.00
	High (>42.65)	42	23.33
	Mean= 39.66	S.D=5.98	
Livestock possession	Low (<1.67)	60	33.33
	Medium (1.67-2.88)	93	51.67
	High (>2.88)	27	15.00
	Mean=2.77	S.D=1.21	
Possession of farm implements	Low (<2.72)	43	23.88
	Medium (2.72-3.81)	91	50.56
	High (>3.81)	46	25.56
	Mean=3.26	S.D=1.09	
Credit orientation	Low (<11.01)	53	29.44
	Medium (11.01-12.48)	82	45.56
	High (>12.99)	45	25.00
	Mean= 12.00	S.D=1.98	

(23.33%) level. The apparent reason could be that, most of the Byadagi chilli growers are prepared for future uncertainties with their economic savings and they believe in their ability to foreseen and manage the uncertainties. Entrepreneurs are required to invest on farm facilities, inputs, *etc.* and needs to wait for the returns. This finding is expected by the Byadagi chilli growers, who normally save money by resorting to postponement of immediate needs and use the same for future investment. More than half (51.67%) of the Byadagi chilli growers belonged to medium livestock possession category followed by low (33.33%) and high (15.00%), respectively. The reason might be majority of the farmers having one or two cow/buffalo for milk purpose for their home consumption. They are not practicing dairy activity or selling milk to milk cooperatives/ KMF/ anywhere. If they have a greater number of livestock, they may face the problem of feed / fodder and it may add extra cost. It is evident that more than half (50.56%) of the Byadagi chilli growers possessed medium level of farm implements followed by high (25.56%) and low (23.88%) level of assets respectively. The results could be attributed to their family annual income, size of the land holding and requirement of farm implements. Capital is the life blood of any farming activity / enterprise and adoption of agricultural innovation in particular, substantial amount of investment is required. Considering this fact, 45.56 per cent of the Byadagi chilli growers belonged to medium category followed by low (29.44%) and high (25.00%) categories of credit orientation. Here many of the farmers taken crop loan from formal sources and also from non-formal sources. Because of the complications / procedure to avail loan from the banks and lack of information about it made them to have medium level of credit orientation. The findings are in proportion with Savitha (2007), Shirur (2015) and Sumana (2017).

Table 3 depicts the cropping pattern of Byadagi chilli growers. In the study area, multiple crops were cultivated by the respondents. In *kharif* season, main crops cultivated by the respondents were groundnut, maize, cotton, jowar, onion and vegetables *i.e.*, coriander, cucumber, tomato, *etc.* Nearly three-fourth

TABLE 3
Cropping pattern of Byadagi chilli growers
(n=180)

Crops cultivated	Byadagi chilli growers	
	Frequency	Per cent
<i>Kharif crops</i>		
Groundnut	48	26.67
Maize	96	53.33
Cotton	39	21.67
Jowar	53	29.44
Onion	116	64.44
Vegetables (Coriander, cucumber, tomato)	129	71.67
<i>Rabi crops</i>		
Jowar	74	41.11
Bengal gram	67	37.22
Cowpea	49	27.22
Urd	79	43.89
Wheat	31	17.22
<i>Summer crops</i>		
Groundnut	29	16.11
Maize	41	22.78

*Multiple responses are possible

(71.67%) of them growing vegetables in *kharif* season. Nearly two-third (64.44%) of the Byadagi chilli growers growing onion, followed by 53.33, 29.44, 26.67 and 21.67 per cent of farmers growing maize, jowar, groundnut and cotton respectively. In *rabi* season, main crops cultivated by the respondents were jowar, bengal gram, cowpea, urd and wheat. 43.89 per cent of them growing urd in *rabi* season. 41.11 per cent of the Byadagi chilli growers growing jowar, followed by 37.33, 27.22 and 17.22 per cent of farmers growing bengal gram, cowpea and wheat respectively. In summer only those who are having irrigation facility they grow crops. 22.78 per cent of them growing maize followed by 16.11 per cent growing groundnut. The probable reason might be these all crops are suitable to this region, since from their ancestors they are practicing / cultivating same crops.

Results depicted in Table 4 explains that extension characteristics of Byadagi chilli growers. It can be observed that more than one-third of the Byadagi chilli growers belonged to medium (37.78%) and low (35.56%) level of mass media exposure category followed by more than one-fourth (26.67%) of them belonged to high category. The reason for above trend might be due to the exposure of farmers towards mass media channels such as cell phone, television, radio, newspaper, farm magazine *etc.* Hence, the mental horizon of farmers gets widen and then later on, they tend to accept and trial various practices. Mass media acts as quickest source for dissemination of information to a large category of audience within a limited period. And also, they are highly useful for gaining information on market prices, weather and

success stories. 40.00 per cent of Byadagi chilli growers had medium level of extension participation followed by low (37.22%) and high (22.78%) level. The reason for most of Byadagi chilli growers possessing medium level of extension participation might be due to their willingness and interest towards various extension activities such as training programme, demonstration, field days / field visit, extension group meeting, exhibitions, krishimela, conducted tour, campaign, FFS / FS and frequency of their visit to successful farmer fields to gather information on recent farm technologies and trial those in their farm.

It is clearly seen from the Table 4 that 40.00 per cent of the Byadagi chilli growers had medium level of

TABLE 4
Extension characteristics of Byadagi chilli growers

Characteristics	Category	Byadagi chilli growers (n=180)	
		Frequency	Per cent
Mass media exposure	Low (<31.59)	64	35.56
	Medium (31.59-38.24)	68	37.78
	High (>38.24)	48	26.67
Mean=34.91		S.D=6.65	
Extension participation	Low (<19.85)	67	37.22
	Medium (19.85-.21.37)	72	40.00
	High (>21.37)	41	22.78
Mean=20.61		S.D=1.78	
Social participation	Low (<9.08)	65	36.11
	Medium (9.08-10.36)	72	40.00
	High (>10.36)	43	23.89
Mean=9.72		S.D=1.29	
Sources of information	Low (<51.36)	51	28.33
	Medium (51.36-59.84)	84	46.67
	High (>59.84)	45	25.00
Mean= 55.60		S.D=8.48	
Training received	Yes	62	34.44
	No	118	65.56

social participation followed by low (36.11%) and high (23.89%) level of social participation. The findings about social participation can be explained on the basis of the fact that majority of the respondents have participated in activities of social organizations as a member / office bearer, such as any Panchayat Raj Institutions, cooperatives, youth clubs, farmer associations and FPOs / FPCs. It can be visualized from Table 4 that, less than half (46.67%) of the Byadagi chilli growers had medium level of source of information, whereas, 28.33 per cent and 25.00 per cent of them fitted to low and high level source of information category, respectively. The farmer with formal educational qualification shows the tendency of sources of information. The reason behind medium level source of information behaviour is due to the frequency of using sources of information channels such as personal localite, personal cosmopolite and mass media sources by them. Hence, the information sources act as channel to promote various technology adoptions by the farmer society. Nearly two third

(65.56%) of the Byadagi chilli growers have not undergone training on agriculture and allied agricultural activities and only 34.44 per cent have undergone training programmes.

From the Table 5, it can be observed that training received by Byadagi chilli growers on different aspects. Less than one third (29.03%) of the farmers received training related to crop production, besides

TABLE 5
Training received by Byadagi chilli growers on different aspects

Purpose of training	Frequency	Per cent
Livestock related	11	17.74
Disease and pest management	17	27.42
Marketing and export	13	20.97
Value addition and processing	3	4.84
Crop production	18	29.03

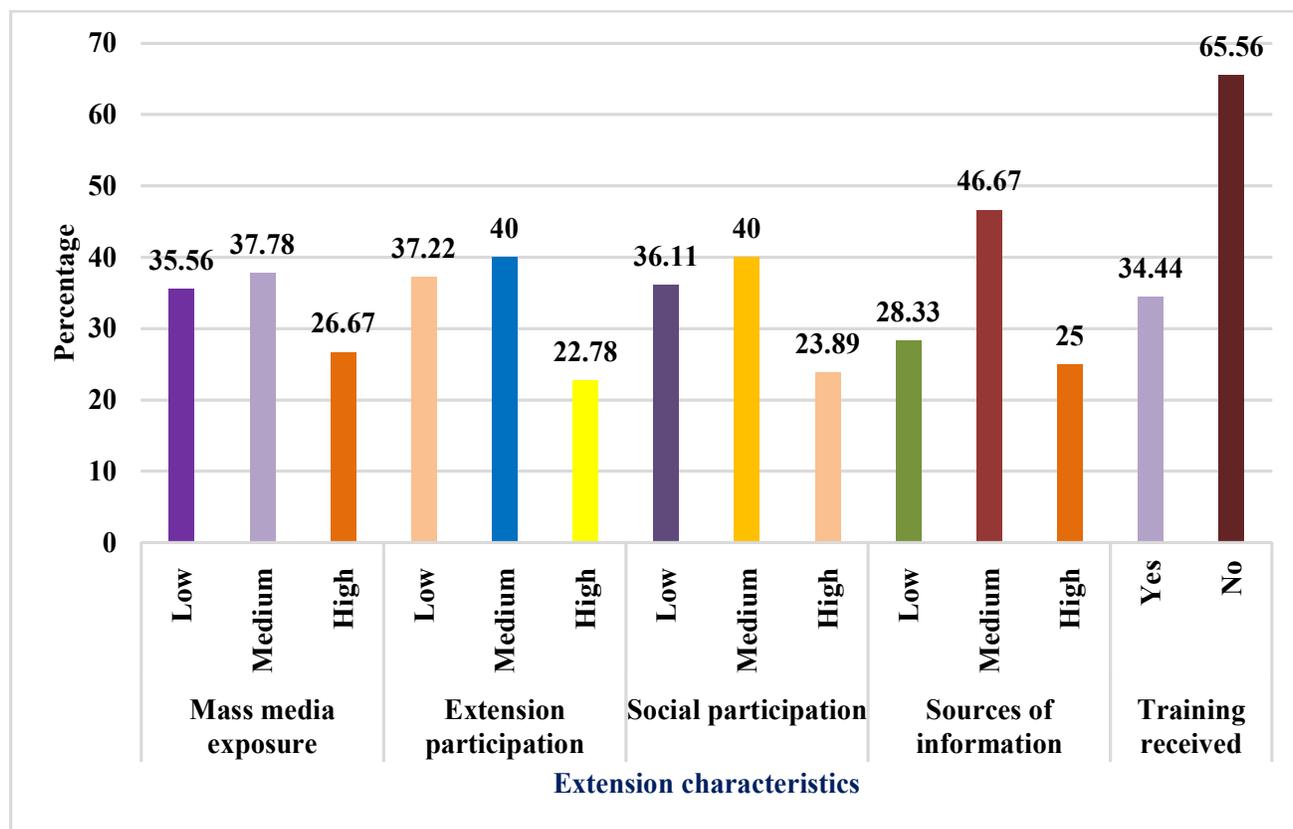


Fig. 2: Extension characteristics of Byadagi chilli growers

more than one fourth (27.42 %) of the farmers have received training on disease and pest management aspects. A notable per cent *i.e.* 20.97 and 17.74 per cent of the farmers undergone training on marketing & export and livestock related respectively, whereas only small per cent of farmers (4.84%) undergone on value addition and processing related training programme. Farmers mainly concentrate on the production aspects, therefore they undergone crop production related training programmes conducted by agricultural departments like Krishi Vigyana Kendra, agricultural university, *etc.* Increase in pest and disease incidence which reduces the yield and returns, might be the reason farmers for attending pest and disease management related training programs. Production and pest management are directly proportionate to the income of the farmers and hence farmers may be concentrating on these two important aspects. Only few interested, farmers having ambitious to improve their economic performance and influenced by other progressive farmers been attended such kind of training programs. These might be the main possible reasons for the above results.

Table 6 reveals that overall economic performance of the Byadagi chilli growers, more than one third (38.33%) of the growers had medium overall economic performance followed by low (32.78%) and high (28.89) category, respectively. This might be due to the reason that the cost of production and profit are in inverse proportion. These results are in conformity with Harish (2010) and Bindu (2018).

TABLE 6

Distribution of respondents according to overall economic performance of Byadagi chilli growers (n=180)

Category	Byadagi chilli growers		B.C Ratio
	Frequency	Per cent	
Low (<118.69)	59	32.78	1.48
Medium (118.69-136.55)	69	38.33	
High (>136.55)	52	28.89	
Mean=	127.62	S.D=17.86	

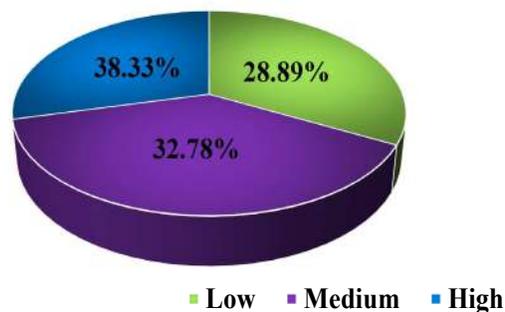


Fig. 3: Distribution of respondents according to overall economic performance of Byadagi chilli grower

Table 7 reveals the relationship of personal, socio-economic, psychological and communication characteristics of Byadagi chilli growers with their economic performance.

TABLE 7

Relationship between independent variables of Byadagi chilli growers with their economic performance (n=180)

Independent variables	Correlation co-efficient (r)
Age	0.0960 ^{NS}
Education	0.1532 ^{NS}
Size of landholding	0.2111 *
Farming experience	0.1999 *
Family type	0.0898 ^{NS}
Cropping pattern	0.2345 *
Extent of chilli area	0.22196 *
Annual income	0.3816 **
Source of information	0.2996 **
Training received	0.4195 **
Farm implements	0.2981 **
Mass media exposure	0.3816 **
Extension participation	0.4166 **
Social participation	0.2165 *
Cosmopolitaness	0.3816 **
Deferred gratification	0.0981 ^{NS}
Livestock possession	0.2218 *
Credit orientation	0.2316 *

** - Significant at 1 per cent; * - Significant at 5 per cent
NS-Non-Significant

The variables such as size of land holding, farming experience, cropping pattern, extent of chilli area, social participation, livestock possession and credit orientation were found to have positive significant relationship with the economic performance of Byadagi chilli growers at five per cent level of significance. Whereas, annual income, source of information, training received, farm implements, mass media exposure, extension participation and cosmopolitaness were found to be positive significant at one per cent level of significance with economic performance of Byadagi chilli growers. The remaining variables such as age, education, family type and deferred gratification had non-significant relationship with economic performance of Byadagi chilli growers

With the large size of land holding, Byadagi chilli growers can get higher yield which leads to the higher returns. They will also be having higher resource mobilization and risk bearing ability. So, it can be concluded that, larger the size of land holding and extent of chilli area, more will be the economic performance of Byadagi chilli growers. It is imperative that the growers with more experience in cultivation or farming can easily and effectively perceive the things and they can accurately take up the adaptation measures. Cropping pattern refers to the proportion of land under cultivation of different crops at different points of time. Some scientific evidence proves a 10 to 25 per cent increase in crop yield in crop rotation rather than monoculture. It will add to get high returns which effects to economic performance. Those who possessed a greater number of dairy animals due to which they got more milk yield and higher income from dairy enterprise. It is directly proportionate to economic performance of Byadagi chilli growers.

Credit plays a vital role in economic performance of Byadagi chilli growers. Credit availability at cheaper rates of interest encourages the farmers to borrow more. Borrowing more money will facilitate the growth of farming activities or increase in production or productivity and economic performance. Byadagi chilli growers were involved in different crops cultivation, subsidiary occupations. So, the income

from different sources also affects to their economic condition and entrepreneurial behaviour to taken up any activity. Hence, annual income was observed to have positive and significant relationship with the economic performance. If Byadagi chilli growers participate in extension activities to greater extent, they can get valuable advices to enhance their productivity and returns like advice to take up subsidiary enterprises like dairy, poultry, multiple cropping, adopting innovative and improved practices in Byadagi chilli cultivation. Therefore, extension participation had positive and significant relationship with economic performance.

Greater social participation encourages Byadagi chilli growers to develop contact with the support system that promotes the Byadagi chilli growers through reinforcing behaviour. The tendency of the Byadagi chilli grower to participate in various extension activities helps him to gather information from various sources. This helps to cooperate and acquire knowledge for growing better price yielding crops, share infrastructure like storage, negotiate for better crop prices with buyers, negotiate for better input prices with sellers, *etc.* which helps to better economic performance by getting high returns to Byadagi chilli growers.

Training enhances farmer's knowledge, skills and practices of Byadagi chilli cultivation as well as marketing aspects. It directly contributes to increase in productivity, increase in production of livestock, improvement in efficiency of input use (cost saving), increase in crop intensity, diversification towards high value crops and improved price realization by farmers. By this way farmer can get high returns, which will help to better economic performance. Farming tools, implements and equipment are critical to the success of a farmer. The benefits of possession of farm implements are timeliness of operation, precision of operation, enhancement of safety, reduction of drudgery of labour, reduction of loss of crops, increased productivity of land and increased economic return to farmers. It will reduce the cost and economically cost effective to the Byadagi chilli growers.

Higher cosmopolitanness ensures a hope for the exchange of information and facts with the outside society for enhancement of mental ability to coordinate the things properly and the Byadagi chilli grower who exposed highly towards mass media are well equipped with knowledge regarding market prices and are capable to stand firm with proper decisions suitable for marketing of their products. They will plan accordingly market prices, which helps to increase their economic performance.

The personal, socio-economic, psychological and communication characteristics of Byadagi chilli growers having significant to highly significant relationship with their economic performance. The results are supported by the findings of Latha (2003), Veena (2017), Bindu (2018).

The linear multiple regression analysis applied to test the effect of independent variables on economic performance (Table 8) showed that annual income, mass media exposure, cosmopolitanness and extension participation were showing significant contribution at one per cent level of significance. Whereas, size of land holding, farming experience, cropping pattern, extent of chilli area, source of information, farm implements, training received, livestock possession and credit orientation were showing significant contribution at five per cent level of significance. The remaining variables such as age, education, family type, social participation and deferred gratification were not showing any significant contribution to economic performance of Byadagi chilli growers. The R^2 of regression model suggested that, all the variables together explained to the extent of 79.99 per cent of variation in the economic performance. Thus, it may be inferred that all the above significant predictor variables at different level were found be important in explaining the economic performance of Byadagi chilli growers. These findings are in line of Darshan *et. al.* (2019) and Naresh (2019).

The study implies that, Byadagi chilli growers were found to have medium level of economic performance. This was arrived based on cost benefit analysis of

TABLE 8
Multiple regression of independent variables with economic performance of Byadagi chilli growers (n=180)

Independent Variables	Regression co-efficient	S.E(b)	't'
Age	0.4374	0.3810	0.8712 ^{NS}
Education	0.2887	0.2680	0.9280 ^{NS}
Size of landholding	0.4701	0.9816	2.088 *
Farming experience	0.3719	0.8912	2.396 *
Family type	0.5682	0.7206	1.268 ^{NS}
Cropping pattern	0.3201	0.6678	2.086 *
Extent of chilli area	0.2080	0.4818	2.316 *
Annual income	0.2519	0.9618	3.818 **
Source of information	0.3820	0.8788	2.300 *
Training received	0.2806	0.6786	2.418 *
Farm implements	0.2446	0.5666	2.316 *
Mass media exposure	0.1097	0.4180	3.808 **
Extension participation	0.1372	0.3981	2.900 **
Social participation	0.1664	0.2810	1.688 ^{NS}
Cosmopolitanness	0.3681	0.9910	2.692 **
Deferred gratification	0.8218	0.8120	0.988 ^{NS}
Livestock possession	0.3034	0.6882	2.268 *
Credit orientation	0.2429	0.5612	2.310 *
Coefficient of Determination ($R^2 = 0.7999$ F=17.01 **)			

** : Significant at 1 per cent; * : Significant at 5 per cent;
NS : Non-significant

Byadagi chilli production followed by growers. Over the years in the study area, crop is getting effected with severe diseases like Anthracnose, Murda *etc.* which greatly effects the yield level. To control these diseases require expensive pesticides as well as they have to enhance the number of sprays. Both adding to the cost of production. This necessitates frontline extension agencies to take up large scale demonstration in Byadagi chilli growing belts on precision farming technology in Byadagi chilli cultivation which considerably save the cost of cultivation. Besides integrated crop management also be encouraged among Byadagi chilli growers. Variables such as size of land holding, farming experience, cropping pattern, extent of chilli area,

social participation, livestock possession and credit orientation, annual income, source of information, training received, farm implements, mass media exposure, extension participation and cosmopolitaness had a significant relationship with the economic performance of Byadagi chilli growers. Hence, it is judicious that government and extension agencies should make an effort to manipulate these variables for advancement in entrepreneurial behaviour and economic performance of Byadagi chilli growers.

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