Socio-Economic Status of Pineapple Growers in Moulvibazar District of Bangladesh

Tumpa Datta[1*], Jiban Krishna Saha[1], Mohammad Ataur Rahman[2], Muslima Akter[3] and Md. Rashid Ahmed[1]

[1]*Department of Agricultural Finance and Banking, Sylhet Agricultural University, Sylhet-3100, Bangladesh.*
[2]*Department of Agricultural Finance and Banking, Bangladesh Agricultural University, Mymensingh-2202, Bangladesh.*
[3]*Department of Agricultural Economics and Policy, Sylhet Agricultural University, Sylhet-3100, Bangladesh.*

Authors' contributions

This work was carried out in collaboration among all authors. Author TD designed the study, wrote the protocol and wrote the first draft of the manuscript. Authors JKS and MAR supervised and co-supervised respectively as well as edited the work. Author MRA reviewed the literature and assisted to prepare the manuscript. Author MA managed the literature searches. All authors read and approved the final manuscript.

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ABSTRACT

Socio-economic indicators are significant for determining the overall lifestyle of the Pineapple Growers. The study examines the different socio-economic variables of the pineapple farmers. The researchers selected the Sreemangal upazila of Moulvibazar district purposively and primary data was collected through a structured questionnaire during 2017-2018 cropping season from one hundred pineapple growers (small, medium and large) following simple random sampling technique. Descriptive statistics include frequency, sum, average, percentage and ratios were used to analyze the data. The study revealed that majority of the farmers were in small (44 percent) and medium (30 percent) categories and average farm size was 2.130 ha. Most of the pineapple growers were

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*Corresponding author: E-mail: tumpa.afb@sau.ac.bd;

middle aged (31-40 years old) while a little portion of them were older aged (greater than 60 years). It was found that 81 percent of the respondents were married in the study area. In addition, almost all farmers (95 percent) were literate and more than sixty percent of them had primary education. Averagely, a family consists five members and above three members are dependent to their family in the study areas. Majority of the respondents had 11-20 years of farming experience and the primary occupation of them (91 percent) was agriculture including pineapple cultivation. Moreover, a significant portion of farmers received training from government agricultural extension office whereas around one sixth of pineapple farmers received credit from both public and private banks as well as from NGOs. However, Extension office need to provide more and effective training facilities to the pineapple farmers for profitable production, simplification of buying, selling, renting and leasing of land to reduce production cost as well as different incentive packages can be introduced by the government for encouraging unemployed youth people to engage in pineapple production.

Keywords: Socio-economic profile; pineapple; growers; Moulvibazar; Bangladesh.

1. INTRODUCTION

Pineapple (*Ananas comosus*) is a well-positioned fruit in the world since its trade is oriented towards developed countries such as Japan, the USA and the European Community. The pineapple is the third most important tropical fruit crop, contributing to over 20 percent of the world production of tropical fruits [1]. Besides nutritional and medicinal benefits, it has a potential export market and has got a unique position in the world fruit market with a leading commercial production [2]. Due to its excellent flavor and taste, it is known as the queen of fruits [3].

In Bangladesh pineapple is one of the most important commercial fruit crops among all other minor crops [4]. It contains considerable amount of calcium, potassium, vitamin C, carbohydrates, crude fiber, water and different minerals that is good for the digestive system and helps in maintaining ideal weight and balanced nutrition [1]. Although Bangladesh is not a tropical country, the subtropical monsoonal climatic condition and the soil of many parts of Bangladesh are much more suitable for pineapple production. At least ninety varieties of pineapple are cultivated in the world. In Bangladesh, however, three varieties (Giant Kew, Honey Queen and Ghurasal) of pineapple are mostly grown. Although the environment of Bangladesh is suitable for pineapple cultivation, it abundantly grows in some districts, namely Tangail, Rangamati, Mymensingh, Gazipur, Chattogram, Khagrachari, Bandarban, Moulvibazar, Sylhet and Dhaka [5]. Each year a huge amount of pineapples is produced extensively in this country. Bangladesh produced 2,08,401 metric tons of pineapple in 2017-18 from 14259.91 ha of land [5]. Export figure of pineapple was 23.28 metric tons in 2015-16. It occupies 9.05 Percent of the total garden area under fruits in Bangladesh. Among all the fruits produced in the country, pineapple ranks 3rd in terms of total garden area under fruits cultivation [4].

Sylhet division is the 4th most pineapple producing division in Bangladesh after Dhaka, Chattagram and Mymensingh. In Sylhet division, pineapple has been grown at several districts namely, Moulvibazar, Habiganj, Sylhet and Sunamganj. Among them, Moulvibazar ranks 1st in terms of pineapple producing district under Sylhet division [5]. All areas of Bangladesh are not equitably suitable for Pineapple production. But soil and climatic condition of some areas are much more suitable for profitable pineapple production. Sreemangal upazila under Moulvibazar district is one of such areas. In Sreemangal, pineapple production is the main source of income for many farmers. Moreover, pineapple covers approximately 70 Percent of the production of the fruits in Sreemangal [6]. The juicy and tasty fruit has been growing abundantly in that area since Pakistan period, which is known as 'pineapple village'. At that time, there was no intention among the growers to make profit out of the pineapple cultivation. The situation has now changed and the local residents are cultivating it on massive scale. Locally grown pineapple has a great demand outside the district [6].

However, Madhupur upazila of Tangail district is the largest pineapple producing upazila in Bangladesh covers the maximum amount of pineapple production per year [5]. In comparison to this upazila, pineapple production is much lower in Sreemangal and farmers are unable to

gain profit from it. Whereas, an acre of land that may not produce cereals worth of TK. 5000 may bring Tk. 30000 through the production of pineapple in Bangladesh [2]. Besides, Pineapple growers of Sreemangal upazila are reluctant to invest in pineapple production. The existing knowledge gap on the socio-economic factors influencing pineapple production which might have a negative impact on the investment motive of pineapple growers in target upazila.

Given the backdrop, a study revealed that the mean age, education and experience of the rice farmers was 46.04, 7.54 and 22.16 years respectively. The majority of the farmers owned small (54.44 percent) and medium-sized (41.11 percent), had agriculture as their primary occupation (99.44 percent), cultivated rice on their own lands (71.94 percent). Results found that 67.22 percent and 81.11 percent of the farmers had contact with extension agencies and had access to institutional credit [7]. Another study formed to determine the impact of pineapple cultivation on the socio-economic status of pineapple growers of Madhupur upazila under Tangail District. Most of the respondents were middle-aged (49.3 percent), had a primary level of education (56 percent), possessed medium farm (57.3 percent) and small family size (85.3 percent). The respondents had medium organizational participation (65.3 percent) and medium extension contact (83.1 percent). It was found that most of the respondents had sufficient knowledge of pineapple cultivation along with favorable attitudes towards pineapple cultivation [8]. Regarding the Impact of pineapple production on the socio-economic status of farmers, a Uttar Dinajpur district based study found that majority (56 percent) of the farmers were predominantly middle-aged (31-50 years) and large family size (46 percent). Maximum cultivators have a secondary level of education (42 percent) as well as low or rarely contact (46 percent) to extension agents, input dealers, friends, neighbours, and village leaders, and 58 percent having farm size less than 0.5 hectare (marginal). Results also revealed that about 70 percent of farmers were agree or have a positive response to pineapple cultivation [9]. Further, a study was undertaken an effort in the Darjeeling district to assess the socio-economic status of pineapple cultivators under contract farming conditions. It was found that pineapple cultivators were predominantly middle-aged (42 percent) and generally educated as about 46 percent had middle-level education. 96 percent of the pineapple cultivator's primary occupation was

cultivation and 40 percent of the cultivators were having one to three acres of land. It was also noted that ADO's, Panchayat Personnel, Society personnel and input dealers were the cosmopolite source whereas friends, neighbours, and village leaders as localize sources of farm information for pineapple growers [10].

Thus, it is crucial to analyze socio-economic factors of individual farmers which provide a clear-cut comprehensive idea about the composition of the respondents that may help the researcher and policy maker to suggest better location-specific plausible solutions for the improvement of efficiency. Therefore, the authors made an effort to assess the socio-economic status focuses on average farm size, age, educational profile, farming experience, family size, dependency ratio, occupational and marital status, training facilities and access to institutional credit of pineapple farmers in Sreemangal upazila of Moulvibazar district.

There are limited researches especially regarding the socio-economic status of the pineapple farmers in Sreemangal upazila. Hence, providing pertinent information through research is inevitable which might help in profitable pineapple production in target upazila. An empirical study on socio-economic status would help to decide whether pineapple farmers have full capacity in their production processes or not that helps to improve their productivity. Keeping this into consideration, an endeavor was made to inquire into the socio-economic condition of pineapple growers.

2. MATERIALS AND METHODS

2.1 Selection of the Study Area

Moulvibazar district is the first largest pineapple producing district under the Sylhet division [5]. The subtropical monsoonal climate condition and the soils of this district are much more suitable for pineapple production. Pineapple cultivation is reported at seven upazilas which comprised the Moulvibazar district. But only two upazilas experienced tremendous pineapple production namely Kamalganj and Sreemangal upazila. In 2011, Kamalganj produced 6660 MT of pineapple from 563.73 ha of land and Sreemangal produced 6300 MT of pineapple from 299.87 ha of land [11]. In addition, in Sreemangal pineapple production recorded 11.81 MT per ha of land whereas it was 21.01 MT per ha of land in Kamalganj. Thus, there is a

great potentiality for pineapple growers in Sreemangal to think about the efficient use of limited resources to accelerate production. So, this upazila has been selected purposively for the present study as the study area.

2.2 Selection of Sampling Technique and Sample Size

Simple random sampling technique was used to collect the required data for the study. Also to determine sample size, published tables (presented by Glenn in 1992) was used [12]. For a selection of the sample, a list of the total population (i.e., pineapple farmers) of Sreemangal upazila was gathered from respective Upazila's Agriculture Officer (UAO). From that list, 100 pineapple growing farmers were selected randomly for data collection and they were categorized into small, medium and large based on land holding as per criterion [5]. The classifications of farm groups were as follows:

- ➤ Small farmers: 0.020 to 1.007 hectares
- ➤ Medium farmers: 1.011 to 3.031 hectares
- ➤ Large farmers: 3.035 hectares and above

2.3 Survey Period & Collection of Data

Usually flowering period of pineapple started from February and continued to March. Time of harvesting started from April and continued up to July. In this regard, the primary data were collected in a field survey by direct interview with pineapple farmers in the study area for the 2017-18 production periods (April to June, 2018). Some secondary data which served as supplementary were obtained from different reliable sources like books, Bangladesh Bureau of Statistics (BBS), various documents, published and unpublished journals, thesis and reports.

2.4 Technique for Analysis

Descriptive statistical measures involving the computation of mean, frequency, percentage were employed to analyze the collected data.

3. RESULTS AND DISCUSSION

3.1 Classification of Farmers Based on Land Holding

Land is the basic resource and almost valuable asset which support the production of all agricultural commodities.

Table 1. Classification of farmers

Farm category	No. of farmers	Percent
Small	44	44
Medium	30	30
Large	26	26
All	100	100

Source: Field Survey

Out of 100 farmers, 44 percent were small, 30 percent were medium and 26 percent were large farmers (Table 1). That means maximum pineapple farmers were belonging in small category in the study area.

3.2 Average Land Holding of Farm Families

Farm size is measured by the entire land area operated by the farmers. It is computed by adding the area rented in and mortgaged in and deducting the rented out and mortgaged out to the others [13]. Average farm size was calculated as:

Average farm size = Own land in cultivation + Rented in land + Mortgaged in land – Rented out land – Mortgaged out land

Table 2. Average land holding of sample farmers

Land type	Small farmer		Medium farmer		Large farmer		All	
	Area (ha)	Percent	Area (ha)	Percent	Area (ha)	Percent	Area (ha)	Percent
Homestead area	0.058	7.89	0.101	5.50	0.279	5.13	0.128	5.59
Pond area	0.023	3.13	0.032	1.75	0.046	0.86	0.032	1.40
Own cultivated land	0.325	44.22	1.185	64.54	4.940	90.76	1.783	77.86
Leased in	0.329	44.76	0.518	28.21	0.178	3.27	0.347	15.15
Total land holding	0.735	100.00	1.836	100.00	5.443	100.00	2.290	100.00
Farm size	0.654	88.98	1.703	92.76	5.118	94.03	2.130	93.01

Source: Field Survey

It was found that large farmers occupied more lands with comparison to medium and small farmers. The average farm size of the small, medium and large farmers was 0.654, 1.703 and 5.118 ha respectively and for all farmers, it was 2.130 ha.

3.3 Age Distribution of the Sample Farmers

Age of farmers plays an important role in risk taking attitude and innovativeness in adopting new technologies as well as better management of the farming activities. The age distribution of sample farmers was scrutinized by classifying into five age groups (Table 3).

Table 3 exhibits that most of the small farmers belonged to the age group 41-50 years (29.5 percent) followed by the age group below 30 and 41-50 years (27.3 percent for both groups), whereas the highest proportion of medium farmers belonged to the age group 31-40 years followed by 41-50 years and 51-60 years. In the case of large farmers, there was none belongs to the group above 60 and the highest 38.5 percent belong to the age group 31-40 years. However, it is revealed that majority of the farmers belonged to the age group 31-40 years and lowest to the above 60 years, which implies that most of the farmers were relatively in middle aged and were in a position to put physical effort for pineapple cultivation and they are supposed to have enormous vigor and risk bearing ability. This findings coincide with the results of [7,8,9,10].

3.4 Marital Status of the Respondents

Marital status is an essential socio-economic status of pineapple farmers as it is correlated with household size. Large household size with active persons is a source of labor for most farm operations. More adult persons in the household meant more quality labor would be available for carrying out farm activities [14].

In the study area on an average 81 percent sample farmers were married. Married respondents might be more active than the single ones who are into pineapple farming [14]. Medium farmers (83.3 percent) were dominant in case of marital status followed by large (80.8 percent) and small (79.5 percent) in the study area, means that they had comparative advantage on it.

3.5 Educational Level of the Respondents

Education plays a very important role in adopting improved practices in pineapple production, proper utilization of credit and a successful production. Education has its own merit and it contributes positively to economic and social development of any country. It makes a man more capable of efficiently managing scarce resources with a view to earn maximum profit [13]. From educational point of view, the sample farmers were grouped into two categories, i.e, Illiterate and literate. Further on the basis of Bangladesh Bureau of Statistics, educational status of the respondents was classified into four levels [5]. These levels are: Primary (from grade 1 to 8), Secondary (from grade 9 to 10), Higher Secondary (from grade 11 to 12) and Tertiary (above grade 12) (Table 5).

It is evident that 4.5 percent and 10 percent under small and medium group were, respectively illiterate. In case of large farmers, there was found no illiterate farmer. The study showed that on an average the literacy of the pineapple growers was found to be 95 percent which was higher than national average, 58.4 percent [15]. It is important that majority of the farmers (63 percent) have primary education. This result conforms to [8] and contrast with [9]. However, there was found no farmer in small and medium category having tertiary education but a small portion (7.7 percent) of farmers in large group were achieved tertiary education, appears that large farmers were more conscious about education attainment than other farms in the study area.

Table 3. Age distribution of the sample farmers

Age group (years)	Small farmer		Medium farmer		Large farmer		All	
	No.	Percent	No.	Percent	No.	Percent	No.	Percent
Below 30	12	27.3	2	6.7	6	23.1	20	20
31-40	12	27.3	9	30.0	10	38.5	31	31
41-50	13	29.5	8	26.7	6	23.1	27	27
51-60	2	4.5	8	26.7	4	15.4	14	14
Above 60	5	11.4	3	10.0	0	0	8	8
Total	44	100	30	100	26	100	100	100

Source: Field Survey

Table 4. Marital status of the respondents in the study area

Marital status	Small farmer		Medium farmer		Large farmer		All	
	No.	Percent	No.	Percent	No.	Percent	No.	Percent
Unmarried	9	20.5	5	16.7	5	19.2	19	19.0
Married	35	79.5	25	83.3	21	80.8	81	81.0
Total	44	100.0	30	100.0	26	100.0	100	100.0

Source: Field Survey

Table 5. Educational status of the respondents

Education level	Small Farmer		Medium farmer		Large farmer		All	
	No.	Percent	No.	Percent	No.	Percent	No.	Percent
Illiterate	2	4.5	3	10.0	0	0.0	5	5.0
Literate	42	95.5	27	90.0	26	100	95	95.0
Primary	27	61.4	23	76.7	13	50.0	63	63.0
Secondary	14	31.8	4	13.3	2	7.7	20	20.0
Higher Secondary	1	2.3	0	0	9	34.6	10	10.0
Tertiary	0	0.0	0	0	2	7.7	2	2.0
Total	44	100.0	30	100.0	26	100.0	100	100.0

Source: Field Survey

Table 6. Distribution of households according to their family size

Categories according to family size	Small farmer		Medium farmer		Large farmer		All	
	No.	Percent	No.	Percent	No.	Percent	No.	Percent
Small family	2	4.5	0	0.0	0	0.0	2	2.0
Medium family	41	93.2	29	96.7	26	100.0	96	96.0
Large family	1	2.3	1	3.3	0	0.0	2	2.0
Total	44	100.0	30	100.0	26	100.0	100	100.0
Total family members	225		148		135		508	
Family size	5.11		4.93		5.19		5.08	
Total earning members	70		51		42		163	
Dependency ratio	3.21		2.90		3.21		3.12	

Source: Field Survey

Table 7. Farming experience of the respondents

Experience (years)	Small farmer		Medium farmer		Large farmer		All	
	No.	Percent	No.	Percent	No.	Percent	No.	Percent
Below 10	9	20.5	2	6.7	5	19.2	16	16.0
11-20	14	31.8	13	43.3	15	57.7	42	42.0
21-30	16	36.4	12	40.0	6	23.1	34	34.0
Above 30	5	11.4	3	10.0	0	0.0	8	8.0
Total	44	100.0	30	100.0	26	100.0	100	100.0
Farming experience	20.59		22.3		16.73		20.1	

Source: Field Survey

3.6 Family Size and Dependency Ratio of the Respondents

In this study family size has been defined as total number of persons living together excluding servants and taking their meals unitedly from the same kitchen and living under the control of one head [13]. Family size of the respondents were classified into three categories (1) Small (up to 3 members), (2) Medium (4-6 members) and (3) Large (above 6) [16].

All of the families were composed of both income earners and dependents. Dependency ratio was calculated as: [13]

$$\text{Dependency Ratio} = \frac{Total\ family\ members}{Total\ earning\ members}$$

Table 8. Occupational status of the pineapple growers

Occupation of the farmer	Small farmer		Medium farmer		Large farmer		All	
	No.	Percent	No.	Percent	No.	Percent	No.	Percent
Main occupation								
Agriculture (pineapple cultivation)	43	97.7	27	90.0	21	80.8	91	91.0
Business	1	2.3	1	3.3	5	19.2	7	7.0
Service	0	0.0	2	6.7	0	0.0	2	2.0
Total	44	100.0	30	100.0	26	100.0	100	100.0
Subsidiary occupation								
Agriculture (pineapple cultivation)	1	2.3	3	10.0	5	19.2	9	9.0
Business	2	4.5	5	16.7	6	23.1	13	13.0
Service	0	0.0	0	0.0	0	0.0	0	0.0
No Subsidiary occupation	41	93.2	22	73.3	15	57.7	78	78.0
Total	44	100.0	30	100.0	26	100.0	100	100.0

Source: Field Survey

Average family size for sample farmers was found to be of 5.08 person/family (Table 6), whereas the national average was 4.85 person/family [15]. The family size was observed to be higher for the large farm (5.19 person/family) followed by small (5.11 person/family) and medium (4.93 person/family) in the study area. It is believed that too large family size with more active persons is a greater opportunity to think like an asset as source of family labor in the agricultural production [14].

The dependency ratio of all sample farmers was found to be 3.12 persons/each earning members. This indicates that for every 1 active working people, there are 3.12 persons who are not actively working in the study areas. Larger family size with more dependent members is responsible for over exploitation of natural resources. The dependency ratio was found to be the lowest in case of medium farms (2.90 persons/each earning members) followed by small and large farm (3.21 persons/each earning members) during the study.

3.7 Farming Experience of the Respondents

Farming experience is an important socio-economic characteristic which affects the overall efficiency performance in pineapple production. On the basis of farming experience, the farmers have been classified into four groups as shown in the Table 7.

On an average 42 percent of the sample farmers have 11-20 years of farming experience that was

the highest compared to other groups. On the other hand, only 8 percent of the sample farmers have more than 30 years of farming experience. On the whole, 84 percent of the sample farmers have been cultivating pineapple for a period of 10 years over. The average farming experience was highest for medium farmers while it was lowest for large farmers. In a nutshell, the average farming experience of all farmers was found around 20 years. This implies that approximately all the pineapple farmers are not novice in farming activities.

3.8 Occupational Status of the Respondents

The occupation from which lion's share of the income earned irrespective of time and labor devoted to it is termed as the main occupation of the respondent of the study area. Occupation is one of the most important indicators of socio-economic status, because it is closely related with the income, wealth condition and living standard of the households. As Bangladesh is an agro-based country, the majority of the people in the rural area adopt agriculture as their main occupation.

It was found that the earning members of the sample households were engaged in different occupation. The major occupation of all sample farmers was on farm agriculture but mainly pineapple cultivation which accounted for about 91 percent (Table 8). Agriculture as the main occupation was observed to be higher for the small farm (97.7 percent) followed by medium (90 percent) and large farm (80.8 percent) in the

Table 9. Training status of the sample farmers

Training status	Small farmer		Medium farmer		Large farmer		All	
	No.	Percent	No.	Percent	No.	Percent	No.	Percent
Not taken	15	34.1	7	23.3	13	50.0	35	35.0
Taken	29	65.9	23	76.7	13	50.0	65	65.0
Total	44	100.0	30	100.0	26	100.0	100	100.0

Source: Field Survey

Table 10. Credit status for pineapple production

Credit status	Small farmer		Medium farmer		Large farmer		All	
	No.	Percent	No.	Percent	No.	Percent	No.	Percent
Not taken	14	31.8	9	30.0	20	76.9	43	43.0
Taken	30	68.2	21	70.0	6	23.1	57	57.0
Total	44	100.0	30	100.0	26	100.0	100	100.0

Source: Field Survey

study area. On the other side, business and service as the main occupations of all sample farmers constituting 7 and 2 percent respectively. The dominance of agriculture as an occupation is evident from Table 8. This is also in accordance with the findings of [7].

3.9 Training Status of the Sample Farmers

Training is a most important tool for acquiring knowledge about technology. It can increase farmer's skill regarding production practices and related aspects.

The study revealed that small (65.9 percent), medium (76.7 percent) and large (50 percent) farmers received one day training in each month on pineapple farming organized by Department of Agricultural Extension, Bangladesh. They got training about different techniques on farming such as fertilizer application, production practices and harvesting methods etc. It appears that medium farmers were more conscious about training attainment than other farms in the study area (Table 9).

3.10 Credit Status for Pineapple Production

A timely flow of agricultural credit can meet farmers demand to ensure agricultural productivity. It is an important element of crop production.

The Table 10 illustrates that on an average, majority of the farmers (57 percent) taken credit for pineapple production from public and private

institutions which partially similar to [7]. Medium farmers have taken highest percentage (70 percent) of credit for pineapple production. The farmers under study, reported that they faced difficulties in securing agricultural credit from public institutions specially Bangladesh Krishi Bank because of non-availability at proper time, long institutional procedures and collateral requirements.

4. CONCLUSION

The study concluded that there have been some differences among small, medium and large farmers on the basis of their socio-economic characteristics. Majority of the pineapple farmers are middle aged and have primary education that means they are within the age of active workforce as well as more capable to adopt modern production practices. Although the farmers are cultivated different kinds of fruits (as lemon, orange, banana including pineapple), their real income source is pineapple cultivation. In this case, they have reasonable years of experience that can be an important resource for sustainable development of pineapple produce. In the study area, married people are more involved in pineapple production. Expectedly, most of the farmers attained necessary training facilities which are crucial for improving farm productivity. It is good that more than half of the sample farmers received credit facility from institutional sources of credit and hence they are be able to use better inputs and achieve high production of pineapple. Therefore, it is revealed that the socio-economic characteristics have positive impact on pineapple farmers in the study area.

CONSENT

As per international standard or university standard, respondents' written consent has been collected and preserved by the author(s).

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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