



RESEARCH ARTICLE

PROBLEMS FACED BY BETELVINE GROWERS AND SUGGESTIONS PROVIDED TO MITIGATE THOSE IN MIDNAPUR (EAST) DISTRICT OF WEST BENGAL

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ABSTRACT

Betelvine (*Piper betle* L.) is a perennial evergreen shade loving creeper to the family Piperaceae. In India, it is commercially cultivated as an important and potential cash crop. Betelvine crop cultivation is a profitable enterprise. Betelvine cultivation is the best example of direct income (in cash) in agriculture. Due to this character, this plant is very loving to farmers. A boroj of 500-600 sq. m. area is sufficient enough to nurture a family of 4-5 members whole round the year. But, all is not well in this enterprise. There are lot of problems in its' cultivation. Keeping it in mind, a study was conducted with the following objective:- to identify the problems faced by farmers in betelvine cultivation and their suggestions to mitigate those problems. The study was conducted in Midnapur (East) district of the State of West Bengal. Multistage purposive sampling technique was used for selection of the area and respondents. A sample of 100 respondents was randomly selected from the ten selected villages. The study revealed that the betelvine growers had the most important problems of (1) Insect-pests and diseases infestation (100%) (2) Lack of proper price of product (100%) (3) Cultivation cost is high (100%) (4) lack of fund (88%) (5) Flood problem (100%) (6) Problem of high wind blowing (100%) (7) Lack of irrigation water (93%)(8) No insurance in betelvine cultivation (100%)(9) cake price is high (87%)(10) Lack of soil testing facility (100%) (11) Transportation is a problem (87%) and(12) Day by day soil of boroj is becoming polluted (95%). In this respect the important suggestions to mitigate the faced problems were-(1) short-term training on insect-pests and diseases control (100%) (2) Govt. should announce minimum support price for betelvine products (76%)(3) Govt. should provide subsidies for fertilizers, pesticides, cakes etc. (81%) (4) There should have loan provision for all types of betelvine growers at lower interest rate considering their benefit (77%) (5) Canals should be renovated to overcome the flood problem (62%) (6) Iron bars should be used to establish a boroj which will provide better stability against high wind blowing (79%) (7) Govt. should permit to set shallow tube-well (88%) (9) Govt. should introduce insurance policy in betelvine cultivation (100%) (9) Govt.'s initiation and cooperation is very much needed to establish cold storage (69%) (10) Market inspection is needed to check the price of cake (76%) (11) There must have soil testing facility in locality (100%) (12) Roads should be repaired on urgent basis especially in rainy season (80%) (13) Organic manure as well as bio-fertilizers should be applied to maintain the fertility status of the boroj soil (65%) and (14) Govt. should introduce a systematic and efficient export system (58%). Therefore, the extension agencies who are working at base level should take proper measures to promote the betelvine cultivation considering the findings of present investigation.

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INTRODUCTION

Betelvine (*Piper betle* L.) is a perennial evergreen shade loving creeper to the family Piperaceae. In India, it is commercially cultivated as an important and potential cash crop.

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India has a long ancient history of betelvine culture as mentioned in Atharva Veda. The betel leaf occupies a significant place in everyday life of Indian people as it is used in rituals and in Indian system of medicine as cure of many diseases and disorders (Das, 2010). Betelvine or pan is a perennial aromatic creeper grown for its leaves. It is an important commercial crop in India, Bangladesh and Sri Lanka and also most profitable amongst all cultivated crops. Betelvine is cultivated over an area of 50000 ha.

In India covering the states of West Bengal, Assam, Meghalaya, Orissa, Andhra Pradesh, Tamil Nadu and Kerala extensively and in other parts of north and south India in sporadic areas. It is the most important commercial crop which plays a vital role in the overall livelihood security of farm families of South 24 Paraganas, Midnapore, Howrah, Hooghly and Nadia district. This has brought a paradigm shift in the farm economy of Sundarbans and offers perennial employment and income to small and marginal farming community because of its capital and labour intensive characteristics. Betelvine cultivation is highly intensive and particularly suited to small holding (may be 5 to 10 decimel land). The edible portion is green leaf, used as masticatory along with arecanut, lime and catechu. Chewing of pan leaf is an ancient habit having existed for more than 2000 years. It is also auspicious to make offering of betel leaf and arecanut on the occasions such as religious ceremonies, pujas and wedding ceremonies. The pan leaf contains Vit. B and C and also beneficial in accelerating the process of digestion. It also possess anti-microbial activity due to peroxidase, nitric and secretory antibiotics (slg A), which offer protection against microbial proliferation in mouth so that tooth and gum decay is kept under check. The betel leaf is also used as medicinal and cosmetic purposes also (Chandra and Sagar, 2004). Offering betel morsels (pan supari) to guests in the Indian subcontinent is a common courtesy (Palaniappan *S.aureus.*, 2012). One of commercial crops in our country is betelvine.

The State West Bengal is first among all betelvine producing states of India. Every district of Bengal has more or less betelvine cultivation, but important ones are Midnapur (East), South 24 Paraganas, Howrah, Hooghly and Nadia. Betelvine cultivated area in West Bengal is one-third part of India's total betelvine cultivated area. In West Bengal, there are nearly 20000 ha of betelvine cultivation land, out of total betelvine cultivating land of our country. Betelvine is not only transported from one state to other states of our country, but also exported to other countries also. There are many cultivable varieties in our country, but the most important ones are Bangla, Mitha, Sanchi, Daseri, Kapuri etc. (Panda, 2015). Betelvine crop cultivation is a profitable enterprise. Betelvine cultivation is the best example of direct income (in cash) in agriculture. Due to this character, this plant is very loving to farmers. A boroj of 500-600 sq. m. area is sufficient enough to nurture a family of 4-5 members whole round the year (Sengupta & Dutta, 2008). But, all is not well in this enterprise. There are lot of problems in its' cultivation. Keeping it in mind, a study was conducted with the following objective: - to identify the problems faced by farmers in betelvine cultivation and their suggestions to mitigate those.

MATERIALS AND METHODS

The study was conducted in the state of West Bengal. Multistage purposive sampling technique was used for selection of the area and respondents. At the first stage of sampling, Midnapur East district, one of leading districts in betelvine production (occupies first position in area of cultivation and production in the state) was purposively selected. Midnapur East district has four sub-division (i.e. Tamluk, Haldia, Contai and Egra), out of these, Tamluk sub-division was selected randomly at the second stage of sampling. The selected sub-division has 7 agricultural blocks (i.e. Tamluk, Shahid Matangini, Panskura-I, Panskura-II,

Nandakumar, Chandipur and Moyna), out of these, the Moyna block was selected randomly at the third stage of sampling. The selected block has 85 villages, out of these; ten villages were selected randomly at the last stage of sampling. The selected villages were Sridharpur, Raichak, Gobradan, Bakcha, Payrachak, Kripanandapur, Balvadrachak, Ismalichak, Arangkiyarana and Gojina. Respondents of the study area were betelvine growers of minimum three years experience who having minimum a boraj for betelvine cultivation or are cultivating betelvine for a large area under contract (lease). A sample of 100 respondents was randomly selected from the ten selected villages (10 respondents from each selected village) according to convenience. The number of respondents selected from each village is presented in the following Table 1.

RESULTS AND DISCUSSION

The main cultivated crops of Moyna block are paddy, betelvine, jute and mainly for home consumption vegetables & fruit crops. Day by day the block is becoming an important fish producing block. Data collection was done in month of September and October-2016. There are total 32 most important problems those were replied by majority of respondents of the present study (Table 2).

Table 1. Distribution of respondents (N=100)

Sl. No.	Name of Village	Number of respondents selected	Percentage of respondents selected
1.	Sridharpur	10	10
2.	Raichak	10	10
3.	Gobradan	10	10
4.	Bakcha	10	10
5.	Payrachak	10	10
6.	kripanandapur	10	10
7.	Balvadrachak	10	10
8.	Ismalichak	10	10
9.	Arangkiyarana	10	10
10.	Gojina	10	10

Insect-pests & diseases infestation: - Various insect-pests infestation is seen in betelvine cultivation i.e. Betelvine bug (*Disphinctus politus*), Linear scale pest (*Lepidosaphes cornutus*), Mealy bug (*Ferrisia virgata*), Red spider mite (*Tetranychus sp.*), Aphids (*Aphis gossypii*), White fly (*Dialeurodes pallid*), Black fly (*Aleurocanthus rugosa*), Leaf eating caterpillar (*Spodoptera litura*), Termites (*Odontotermes obesus*), Root knot nematode (*Meloidegyne incongnita*) and others. These insect-pests damage the crop profusely which ultimately reduces the profit margin of betelvine growers. Betelvine plant is infested by several diseases also i.e. Foot rot (*Phytophthora parasitica var piperina*), Root rot (*Rhizoctonia solani*), Collar rot/foot rot/ Sclerotial wilt (Gendi)(*Sclerotium rolfsii*), Leaf rot (Phoska disease)(*Phytophthora sp.*), Leaf spot and Anthracnose (Angari/chitla) (*Colletotrichum capsici*), Bacterial Leaf spot/Leaf blight/Stem canker (Kathiya)(*Xanthomonas campestris var. Betlicola*), Powdery mildew (*Oidium piperis*) and others. These diseases hamper the crop production and ultimately reduce the farmers' profit margin and sometimes crop failure happened. This problem was reported by cent percent of respondents (100%). Das (2010) reported that in spite of the tremendous potentiality of the crop, cultivation of betelvine is highly risky and returns are uncertain because of its susceptibility to several pests and diseases, aggravated by the nature of the plantation.

Table 2. Most important problems faced by betelvine growers (N=100)

Sl.	Most important problems	No. of respondents reported	Percentage of respondents reported
1.	Insect-pests & diseases infestation	100	100
2.	Lack of proper price of product	100	100
3.	Cultivation cost is high	100	100
4.	Lack of fund	88	88
5.	Flood problem	100	100
6.	Problem of high wind blowing	100	100
7.	Lack of expert knowledge	60	60
8.	Lack of irrigation water	93	93
9.	Lack of proper marketing system	72	72
10.	No insurance in betelvine cultivation	100	100
11.	Lack of cold storage facility	71	71
12.	Cake price is high	87	87
13.	Lack of soil testing facility	100	100
14.	Wage of labour is more.	63	63
15.	Transportation is a problem	87	87
16.	Lack of high yielding varieties (HYV).	34	34
17.	Day by day soil of boroj is becoming polluted.	95	95
18.	Maintaining proper leaf size & colour is difficult.	41	41
19.	Unavailability of soil	57	57
20.	Improper position of boroj.	14	14
21.	Entering salty water for fish cultivation, making soil of boroj salty.	33	33
22.	Lack of training centre.	37	37
23.	Lack of export of betelvine leaves.	60	60
24.	Surrounding of boroj, water is there due to lease for fish, so boroj is getting wetty condition which invites diseases more.	31	31
25.	Puja contribution is a problem.	47	47
26.	Lack of proper drainage system.	38	38
27.	Food habit of eating pan is decreasing due to high price.	29	29
28.	Production is not upto the mark due to various reasons.	29	29
29.	Marketing place is far way.	31	31
30.	Unequal distribution of govt. subsidies, compensations etc.	24	24
31.	Winter season wind blowing deposits dust particles on betelvine leaves.	11	11
32.	Ultimate problem faced by farmers.	34	34

Table 3. Suggestions provided by betelvine growers to their faced problems (N=100)

Sl.	Most important suggestions	NRR	PRR
1.	Short –term training on Insect-pests & diseases control	100	100
2.	Govt should announce minimum support price for betelvine products	76	76
3.	Govt. should provide subsidies of fertilizers, pesticides, cakes, etc	81	81
4.	There should have loan provision for all types of betelvine growers at lower interest rate considering their benefit.	77	77
5.	Canals should be renovated to overcome flood problem.	62	62
6.	Iron bars should be used to establish a boroj which will provide better stability against high wind blowing.	79	79
7.	Proper extension activities must be performed by agriculture development office and other existing extension agencies to provide knowledge to farmers.	52	52
8.	Govt. should permit to set shallow tubewell	88	88
9.	Regulated market should be introduced.	53	53
10.	Govt. should introduce insurance policy in betelvine cultivation.	100	100
11.	Government's initiation and cooperation is very much needed to establish cold storage.	69	69
12.	Market supervision/inspection is needed to check the price of cake.	76	76
13.	There must have soil testing facility in locality.	100	100
14.	Wage of labour must be reasonable and affordable.	59	59
15.	Roads should be repaired an urgent basis especially in rainy season.	80	80
16.	HYV should be made available by agriculture office and other extension agencies are present in locality.	29	29
17.	Organic manure as well as bio-fertilizers should be applied to maintain the fertility status of the boroj soil.	65	65
18.	Proper knowledge must be provided by the extension personnel.	39	39
19.	Pond base soil or soil from the field where fish cultivation is absent should be applied in the boroj.	48	48
20.	Village panchayat must resolve the problem.	11	11
21.	Nearby Rupnarayan River water should be channelized in this block.	31	31
22.	Govt. should establish a training centre in each block.	35	35
23.	Govt should introduce a systematic and effective export system.	58	58
24.	Lease party should construct a bund around the boroj field.	27	27
25.	Proper rule and regulation is needed to prevent such type of forceful puja contribution.	31	31
26.	Canal should be renovated periodically.	36	36
27.	Organic farming is needed as well as pan quid should be sold at reasonable price.	27	27
28.	Expert knowledge is needed through conducting training for various aspects of betelvine cultivation.	22	22
29.	Local retail market should be developed by betelvine growers's joint efforts otherwise road should be always in proper condition or repaired condition.	19	19
30.	Govt. officers must be bias free and must follow a systematic way for distribution of benefits.	21	21
31.	Borj's roof and wall covering must be maintained properly.	9	9
32.	Organization of farmers is very much needed.	13	13

(NRR=No. of Respondents Reported) (PRR=Percentage of Respondents Reported)

A good number of hemipteran insect-pests occur in betelvine ecosystem which dwindle betelvine yield potentiality. Among these the polyphagous betelvine blackfly, *Aleurocanthus rugosa* is a major pest causing severe damage to the foliage in the conservations (boroj). Chandra and Sagar (2004) reported that more than 15 insect-pests attack betelvine yard, the major ones are –betelvine bug, linear scale pest, mealy bug, red spider mite, nematodes, aphids, white fly and leaf eating caterpillar. Sengupta and Dutta (2008) reported that the betelvine crop is mainly infested by leaf rot, wilt, foot rot, anthracnose and leaf spot diseases whereas the main insect-pests are white fly, black fly, mealy bug, scale insect, aphids and nematodes. Chakrabarti *S.aureus*. (2010) reported that leaf rot disease (caused by *Phytophthora nicotianae var parasitica f. Piperina* Dastur.) and foot rot disease (caused by *Pythium piperinum* Dastur.) are two most important diseases of betelvine crop. These are mainly seen in rainy season. For controlling leaf rot disease application of Bordeaux mixture or suitable copper fungicides are needed whereas controlling foot rot disease treating the ridges with Bordeaux mixture (2:2:50) (125 litres in 50 meters area) before cuttings are planted and then at monthly or bimonthly intervals are effective).

Lack of proper price of product: - Betelvine growers do not get proper price in selling the product. Only three months (Feb-April.) in a year they get proper price Rs.14000-16000/- per mote (bundle), but all other months they do not get proper price. Sometimes price goes down to Rs. 2500-3000/- per mote (bundle). Lack of proper price of product discourages the growers to cultivate the betelvine crop. This was reported by cent percent of respondents (100%) in the study area. The betelvine growers of the study area are cultivating Bangla pan, generally this pan has less price in market. The study area is not suitable for mitha pan cultivation. The betelvine growers who are cultivating Mitha pan in the other areas, they generally get proper price. One mote (bundle) of Mitha pan price is Rs. 100000-115000. Make into bundles, in West Bengal 50 leaves make one goachh, 20 goachhes make 1 pai and 10 pais make one mote (bundle). That means one bundle contains 10000 betelvine leaves. Price fluctuation is a major problem of betelvine production. Due to fluctuation, it is very difficult to plan properly and discourages the cultivation.

Cultivation cost is high: - Cultivation cost is day by day increasing, therefore farmer's profit margin is similarly reducing. To cultivate betelvine, boroj infrastructure is needed which is made of bamboo, jute stick, kumbra (a plant which is as substitute of jute stick), rope, paddy straw, iron wire etc. those inputs are becoming costlier day by day, purchasing betelvine seedlings, application of mustard cake in soil, application of fertilizer, manures, pesticides, irrigation water time to time, intercultural operations, lowering of betelvine, harvesting of betelvine leaves, arranging of betelvine leaves, making a mote (bundle), transport mote (bundle) to market, selling there the products etc. all the measures are costly and labour intensive activities. Fertilizers and pesticides are two essential inputs of betelvine crop cultivation. But, their price is high. Therefore, it is a problem to farmers/betelvine growers especially small betelvine growers. It was reported by 100 percent of respondents in the study area.

Lack of fund: - Lack of money is the main problem of betelvine cultivation. For boroj establishment, initial investment is needed and therefore to carry out several activities, fund is needed.

Farmers approach to bank for money, but bank does not provide loan to everybody. Bank provides loan to those who have capacity to return the loan. Therefore, fund crunch is a major problem of cultivation of betelvine growers. There is provision of agricultural loan, but to get that needs to do lot of paper activities. It is really troublesome as well as boring, hence farmers preferred to go to local moneylender though their interest rate is very high. This problem was faced by 88 percent of respondents.

Flood problem: - The study area's topography is basin type, compare to surrounding area of the block, this block's area is low. As a result rain water deposition is a very common feature. But when rain happens more, flood happens due to improper drainage. Side of the block, Chandi river, Kelaghai river, Kangsavati (Kasai) river are there, and rivers have renovated, therefore possibility of flood due to river water has reduced compare to previous period. It was reported by 100 percent of respondents of the study area.

Problem of high wind blowing: - High wind blowing (on months of May-June as Norwester (Kalbaisakhi) and especially in rainy season due to low pressure) causes damage of boroj or complete fall of boroj. This was reported by 100 percent of respondents.

Lack of expert knowledge: - - ADO (Agricultural Development Officers) and KPSs' (Krishi Prayukti Sahayaks) contact is less, their frequency of conducting training in local area is very less. As a result farmers have limited scope to up-to-date their knowledge. Hence, farmers of the study area traditionally are cultivating the crop therefore farmers are deprived of modern days scientific knowledge for scientific cultivation. This problem was reported by 60 percent of respondents.

Lack of irrigation water: - Water, water everywhere, but not a single drop of water for irrigation. In surrounding of boroj, fish leased field is there. There is sufficient amount of water, but that water is not suitable for irrigation-because to cultivate fish lot of feed is applied in field, cake is applied, lime, $KMnO_4$, geolite, alam etc are applied, applying these water quality become poor for irrigation. Another aspect is that in summer season, salty river water is entered in fish field which is not applicable to boraj due to its salty nature. Therefore, betelvine growers bound to apply –pond water or shallow tube well water. Pond water is not available whole round the year as well as shallow tube well water is not available whole round the year due to water level depletion. It was reported by 93 percent of betelvine growers.

Lack of proper marketing system: - Proper marketing system indicates regulated market. But, in study area, there is no regulated market for selling agricultural products; therefore farmers are deprived of facility of regulated market. In regulated market, it is tried how much return is possible to provide farmers; therefore, farmers always get benefit. But in case of other markets, purchasers always try, how much less will be provided to farmers so they will gain that much. Hence, it is one kind of exploitation of farmers. At market at first middlemen purchase and then middlemen sell the product to wholesaler or wholesaler has the agent who purchase the product from farmers as less as possible, hence he gets commission for each mote (bundle). These middlemen and agents make a group and decide the each day's price of product. These categories have a friendly relationship with

wholesalers and they quite engulf the profit margin of wholesalers' but they exploit as much to farmers. This problem was faced by 72 percent of respondents.

No insurance in betelvine cultivation: - Under Pradhan Mantri Phasal Bima Yojana (Prime Minister's Crop Insurance Scheme) all the major crops' cultivation is insured but betelvine crop is still not covered under that policy. Govt. considers the crop an additional crop but not essential crop and its cultivation is confined in few places of country. Betelvine crops leaves are mainly consumed as quid and it serves recreation purpose or one kind of showing aristocracy for that it is not covered under insurance. It was reported by 100 percent of respondents.

Lack of cold storage facility: - Cold storage requirement is need of the hour. Cold storage facility enhance the shelf life of crop/betelvine leaves, therefore, farmers will have time in hand to market it at proper time. Actually agricultural produces are perishable in nature, therefore, now-a-days cold storage requirement is one of basic requirements. It was reported by 71 percent of respondents.

Cake price is high: - In betelvine cultivation mustard cake is an essential input. But high price of cake is a problem to its' availability. Several causes of high prices are –limited cultivation of mustard in West Bengal, in study area fish cultivation has introduced where large amount of mustard cake is needed as fish feed, transportation cost (transportation to remote villages) etc. Previously, in the study area mustard cake is mainly used in boroj and there was a balance between demand and supply. Now-a-days vast paddy field used for fish cultivation and as a feed of fish, cake is used much more as a result; there is imbalance in demand and supply of mustard cake. So price of mustard cake is high. It was reported by 87 percent of betelvine growers.

Lack of soil testing facility: - Farmers of the study area reported that they have no opportunity to test the soil. Therefore, they do not know what the actual condition of the soil is and what is the actual need of soil? Now-a-days farmers have better education level, by that knowledge they realize the importance of soil testing but lack of that facility disappoint them to cultivate crop. They reported that only one soil testing laboratory is there in Midnapur (town) and its' service is also insufficient; above all it is situated far away from their place of living (64 km away). All the respondents (100%) reported about this problem.

Wage of labour is more: - Labour charge is more and it is a problem. Due to introduction of Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) has created labour shortage and raised wage, per day they charge Rs. 200-250. There are lot of works in pan boroj i.e. boroj establishment, land preparation, seedlings or cuttings planting, application of cake, application of fertilizers, application of pesticides, damage repairment, provide soil in boroj, termite control, lowering of betelvine plant, harvesting of leaves, arranging the leaves, mote (bundle) binding, transportation, selling etc. Several time to do those activities, labourers are needed. It was reported by 63 percent of respondents of the study area,

Transportation is a problem: - Due to lack of availability of local market, farmers are bound to transport their product 36 km away market (Kaktia market).

Therefore, after harvesting each time transport the product to that market is really a troublesome problem. Study area is 12 km away from block head quarter and this road is completely rural road. Road is (half part, 6 km pucca road and another half kachha road-*moram* covered) not properly constructed, therefore a lot of problem is there in transportation especially in rainy season. In rainy season, due to heavy vehicle movement, kaccha part is severely damaged and therefore, transportation is nearly stopped. Carrying pan mote (bundle) manually from boroj (if leaves are arranged in home then from home) to bus stand/treker stand, from the stand to market bus/treker stand/ from market stand to carry manually to point of selling, three times expenditure are there which makes transportation a costly affair. Along with they also reported it that, if price of product becomes appropriate in market then this cost is negligible otherwise a burden. This problem was reported by 87 percent of respondents.

Lack of high yielding varieties: - Lack of high yielding varieties is one of important problems of betelvine cultivation in study area. It is seen that whatever the varieties farmers used in earlier, the same varieties they are cultivating year after year. High cost of production may be beat by high yielding of the crop. New insect-pest and disease resistant varieties also reduce the cost of production. Therefore, it is need of the hour to evolve new varieties of betelvines, hence more research is needed in varieties' development. More than one-third of respondents in the study area (34%) reported about this problem.

Day by day soil of boroj is becoming polluted: - Year after year in boroj, betelvine cultivation is going on. In soil, manures, fertilizers, pesticides, mustard cake, lime etc. are applied. As a result, soil is becoming polluted. Another reason is that there is no soil testing facility. So, farmers cannot identify the exact cause of soil pollution. This problem was reported by 95 percent of respondents.

Maintaining proper leaf size and colour is difficult: - In market larger size leaves and deep green coloured leaves have better demand compare to smaller size leaves and light green betel leaves. Therefore, farmers try to maintain larger size of leaves in boroj and deep green of leaves in boroj, but always it is not possible because too much care is needed as well as soil must be healthy in every respect. But in study area farmer are managing their boroj properly but due to lack of soil testing facility and expert knowledge they are unable to produce quality product. It was reported by 41 percent of betelvine growers in the study area.

Unavailability of soil: - In boroj in a year 2-3 times, it is needed to provide soil. In the study area, field is leased for fish cultivation-nearby all round the year water deposition is there in field, therefore availability of soil from that fish leased field is not possible. If possible that soil is not suitable for betelvine cultivation due to heavy application of fish feed, cake, lime, geolite, Potassium par manganate (KMnO_4), alum (aluminum potassium sulfate, K_2SO_4 , $\text{Al}_2(\text{SO}_4)_3 \cdot 24\text{H}_2\text{O}$), etc. day by day making soil nearly unfertile. Fish field's soil is not suitable for application due to deteriorated condition of soil. As a result, soil is collected from pond base and if it not possible then soil is purchased from the farmers' field where field is not under fish cultivation It was reported by 57 percent of farmers.

Improper position of boroj: - The area where study was conducted that area is lowland and water deposition mainly in rainy season is a common feature. Water deposition for long period of a year has motivated the area men to cultivate fish. Recently the large field is given in lease for fish cultivation. In that field few farmers have raised their field and they are cultivating the betelvine crop. It is just like island situation. Hence it is a main problem to those betelvine growers who are practically facing that problem. Another aspect is that, suppose one farmer's field is situated in such a place that to go there that farmer will walk on other farmer's courtyard or land, in that case if later one does not permit the first one, it is very difficult to go to field or the farmer will follow a long route to go to his field. It was reported by 14 percent of respondents in the study area.

Entering salty water for fish cultivation-making soil of boroj salty: - At summer season water shortage is there in study area. Side of field a canal is there and the canal is connected with river Chandi through a sluice gate. Fishermen who take lease the crop field for fish cultivation-to maintain the water level in summer season they are bound to enter salty river water though salty water is not suitable for fish cultivation. As a result the soil of borojs of the field becomes salty which hampers betelvine growth. This problem was informed by 33 percent of respondents of present investigation.

Lack of training centre: - In the study area, there are no training centre where farmer will go and get skill oriented vocational training. Nearly one fourth percent of respondents (37%) reported that there is need of such type of training centre in locality.

Lack of export of betelvine leaves: - Betelvine leaves are exported to few countries only, therefore, there is not sufficient demand. Hence it is need of the hour for expansion of export areas. Due to presence of pesticides' residues in Indian agricultural products, many countries have rejected Indian agricultural products. Therefore, farmers should be encouraged in organic farming or judicious application of pesticides. A major part of betelvine production (leaves) is exported to our neighbor country Pakistan. But this year a war-like situation is going on therefore export to that country is stopped. As a result demand of leaves has reduced drastically; simultaneously price has also reduced upto a certain extent. It was reported by 60 percent of respondents.

Surrounding of boroj, water is there –fish lease, so boroj is getting wetty condition which invites diseases more:- Surrounding of boroj whole round the year water deposition is there due to fish cultivation. It makes boroj wetty which is detrimental of betelvine plants' growth as well as invites more diseases. This problem was reported by 31 percent of respondents in the study area.

Puja contribution is a problem.- There are many pujas in Bengal, these are Lakshmi Puja, Kali puja, Biswakarma puja, Narayan puja, Manasa puja, Sitala puja etc. above all Durga puja, the main festival of Bengal. When product is transported from place of production to place of selling in the way various puja committees forcefully demand contribution for their pujas and they charge Rs. 100/- per mote (bundle). Therefore, it is a costly affair to farmers. It was reported by the 47 percent of respondents.

Lack of proper drainage system: - The whole block's soil topography is basin type, here deposition of rainwater is a natural phenomenon. Other aspects is there, whatever the canals are there in the study area are not renovated properly to drain the water to adjacent river as a result nearly 7 months period of water deposition is there naturally. On the other hand due to fish lease the fish field is holding water whole round the year. So the borojs situated in the study area always get a watery environment, boroj surrounding soils are always wetty which is not suitable for betelvine cultivation. This situation mainly invites more diseases. This problem was reported by 38 percent of respondents.

Food habit of eating pan is decreasing due to high price: - After lunch or dinner, taking pan is a common food habit to many persons. But, price rise of betelvine compels customers to restrain to purchase betelvine quid (A 'betel quid' synonymous with 'pan' or 'paan' generally contains betel leaf, areca nut and slaked lime, and may contain tobacco. Other substances, particularly spices, including cardamom, saffron, cloves, aniseed, turmeric, mustard or sweeteners, are added according to local preferences and consume). One piece of pan quid price is Rs. 5 to Rs. 10. As a result demand of betelvine leaves in market is also decreasing. Food habit is day by day changing. In past period, there was a joint family system and there pan eating was one kind of tradition. Now-a-days, in nuclear family that tradition is nearly absent due to rat race competition in life. Another important aspect in this regard is that heavy application of pesticides, making customer reluctant to consume pan. It is true that pan is consumed in raw form directly and therefore, there is high possibility of presence of pesticides' residues in pan. It was reported by 29 percent of betelvine growers of the study area.

Production is not upto the mark due to various reasons: - Now-a-days production has reduced upto a certain extent. But why the production has reduced it is difficult to identify. This was reported by 29 percent of the farmers.

Market place is faraway:- A certain percent of respondents (19%) reported that their market place is far away from their house. Therefore, it is always a headache after harvest how to transport that product to market as quick as possible. Actually from place of production to place of selling distance is 36 km. The market name is Krishnaganj (Kaktia) wholesale betelvine leaves selling market. Farmers reported that carrying the products in early morning and returning back to late afternoon obviously a whole day laborious affair. It was reported by 31 percent of respondents.

Unequal distribution of govt. subsidies, compensations etc.:- Sometimes govt. provides subsidies, compensations etc. but those are distributed to few known persons of distributors. As a result, others are always deprived of these kinds of facilities. This problem was reported by 24 percent of respondents of the present investigation.

Winter season wind blowing deposits dust on betelvine leaves: - In winter, a wind blowing is seen, that is from North to South direction. Due to that wind blowing a lot of dust particles deposits on betelvine leaves which hamper crop growth, requires more labour to wash leaves properly as well as reduces market value. It was reported by 11 percent of respondents.

Ultimate problem faced by farmers: - A very painful statement was reported by farmers (betelvine growers) in the study area. Various problems faced by our nation i.e. political disturbance, repeated election, monetary scam, tsunami, inflation, drought, flood, crop failure, epidemic, endemic diseases etc. ultimate problem is faced by farming community. It is practically seen that in our society various organizations of various categories of people are there, therefore they are able to tackle the situation but farmers having no such strong organization therefore farmers of our country are most sufferer, above all their illiteracy and localite nature aggravate the problem more. It was reported by 34 percent of respondents in the study area.

Conclusion

Betelvine plant is an important and well-familiar plant in Indian agricultural diaspora. After lunch or dinner, chewing a pan quid is a culture of many parts of our country. Hence, the plant is a culture influencing or culture forming plant. Along with other advantages in day to day life and medicinal values has made the plant an essential plant in Indian agriculture. Other dimension of this crop is that it is an important cash crop. It is considered that amongst all cultivated crops, betelvine is the most profitable crop (per unit land production basis). The betelvine cultivation offers perennial employment and income because of its capital and labour intensive characteristics. Above all, unique character of betelvine cultivation is that it is highly suited to small holding may be 5-10 decimal land. Therefore, it is the need of the hour to sustain cultivation of such type of highly potential crop. There are several limitations of betelvine cultivation, out of these the most important ones are mainly (1) Insect-pests and diseases infestation (100%) (2) Lack of proper price of product (100%) (3) Cultivation cost is high (100%) (4) lack of fund (88%) (5) Flood problem (100%) (6) Problem of high wind blowing (100%) (7) Lack of irrigation water (93%)(8) No insurance in betelvine cultivation (100%)(9) cake price is high (87%)(10) Lack of soil testing facility (100%) (11) Transportation is a problem (87%) and(12) Day by day soil of boroj is becoming polluted (95%). In this respect the important suggestions to mitigate the faced problems were-(1) short-term training on insect-pests and diseases control (100%) (2) Govt. should announce minimum support price for betelvine products (76%) (3) Govt. should provide subsidies for fertilizers, pesticides, cakes etc. (81%) (4)

There should have loan provision for all types of betelvine growers at lower interest rate considering their benefit (77%) (5) Canals should be renovated to overcome the flood problem (62%) (6) Iron bars should be used to establish a boroj which will provide better stability against high wind blowing (79%) (7) Govt. should permit to set shallow tube-well (88%) (8) Govt. should introduce insurance policy in betelvine cultivation (100%) (9) Govt.'s initiation and cooperation is very much needed to establish cold storage (69%) (10) Market inspection is needed to check the price of cake (76%) (11) There must have soil testing facility in locality (100%) (12) Roads should be repaired on urgent basis especially in rainy season (80%) (13) Organic manure as well as bio-fertilizers should be applied to maintain the fertility status of the boroj soil (65%) and (14) Govt. should introduce a systematic and efficient export system (58%). To solve these problems we need the following prime considerations-(1) Govt. should consider betelvine cultivation as an important crop cultivation.(2) Govt. should take various promotional measures to expand the betelvine cultivation area horizon in our country. (3) Govt. should take proper and confirm measures to export the betelvine products to other countries. (4) On aspect of value addition of betelvine products, more researches are to be conducted.

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