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Production constraints of banana cultivation in western district of Assam

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Abstract
In North-Eastern Region, Assam is one of the potential state to increase the total banana production. In western districts of Assam, commercial cultivation of banana has gaining popularity in recent years. Commercial cultivation of Malbhog banana is noticed in Bongaigaon, Chirang and Dhubri districts of Assam. The study was conducted as a part of survey work with 270 numbers of farmers of three districts of Assam *viz*., Bongaigaon, Chirang and Dhubri. The study revealed that out of the technological constraints; lack of knowledge of scientific crop production ranked I (72.96%), occurrence of insect pests and diseases ranked II (70.00%) and Lack of regular visit by extension personnel to villages ranked III (65.18%) Again, as regards to the infrastructural constraints; less cultivable land ranked I (72.22%), non availability of quality planting material II (69.25%) and Inability to purchase modern agricultural implements (61.85%), ranked III. Whereas, out of the economical constraints; Non-availability of labour during peak period ranked I (71.11%), High cost of agricultural chemicals ranked II (65.92%), Non-availability of timely credit facilities and ranked III (62.59%).

Keywords: Genetic combining ability, specific combining ability, okra, variance, growth, yield and quality

Introduction
The 'Adam's Fig' banana (*Musa* spp.) belongs to the family Musa. The place of origin of banana is tropical region of South East Asia. All the parts of banana have varied uses, right from fruit and leaves to pseudo stem. Fruits are highly nutritious and helps to fight many human maladies. Bananas are the fifth largest agricultural commodity in world trade after cereals, sugar, coffee and cocoa. There are more than 1000 varieties of bananas produced and consumed locally in the world. Total banana production in the world was 148.4 m t during 2016. Among all the countries India ranks first in terms of production (29.1 mt), followed by China (13.1 mt) (FAOSTAT, 2017) [3].

Assam produces 913270 t banana from an area of 53080 ha area during 2017-18 (Annon, 2018) [2] with productivity of 17.21 t/ha, as against national productivity of 34.86 t/ha. In western districts of Assam, commercial cultivation of banana has gaining popularity in recent years. Commercial cultivation of Malbhog banana is noticed in Bongaigaon, Chirang and Dhubri districts of Assam. During 2012-13 the area and production of banana in these districts are 695 ha and 10050 t in Bongaigaon, 647 ha and 10652 t in Chirang, and 1108 ha and 17119 t in Dhubri district (Annon, 2013) [1]. The productivity are 14.46 t/ha, 16.46 t/ha and 15.45 t/ha in Bongaigaon, Chirang and Dhubri districts, respectively Assam is a state under North-Eastern Region of India and bestowed with humid tropical climatic condition. This makes it possible to grow a wide variety of fruits and vegetable crops all the year round. There is, however, a great potential for increasing the total banana production in the North-Eastern Region due to suitable climatic, edaphic and great market prospective in the region. In North-Eastern Region, Assam is one of the potential states to increase the total banana production.However, it has become a major concern due to sharp progressive decline in production and area under banana during the last few years in the district. The low yield of banana in the district may be attributed to the various attacks of pests and diseases, inadequate irrigation facilities, short supply of manures and fertilizers, lack of HYV, lack of knowledge about the actual time of incidence of pest and diseases are also responsible for its low yield.

Keeping this in view, a study was undertaken in Bongaigaon, Chirang and Dhubri district of Assam to find out the probable causes of poor productivity of banana in these districts.

Materials and Methods
The study was conducted with 270 numbers of farmers of three different villages of each three districts *viz*., Bongaogaon, Chirang and Dhubri to identify the different production constraints

of banana cultivation. A purposive cum random sampling technique was followed to draw the sample for the study. Three districts were purposively selected for the study. Three villages from each of the district were selected and from each village 30 numbers of farmers were selected randomly for the study. Total number of respondents for the study was 270. A semi structured interview schedule was administered to individual respondents which were followed by group discussion to collect the relevant data/ information from the respondents. As many as 19 major items in different areas were finally identified which may be considered as the important constraints of banana cultivation in western district of Assam. These identified constraints were grouped in three categories such as technological, infrastructural and economical. In order to ascertain the degree of seriousness of the problems and for taking up different extension efforts, the items were ranked based on the percentage intensity of responses against each item.

Survey Area

S. No.	District	Village
1	Bongaigaon	Moligaon, barphola Part 1 and Nowagaon
2	Chirang	Tongabari, Kolobari and Sitpota
3	Dhubri	Hajergaon, Tamarghat and Futkibari

Results and Discussion

The result of the study (Table 1) indicated that out of the technological constraints; lack of knowledge of scientific crop production ranked I (72.96%), occurrence of insect pests and diseases ranked II (70.00%) and Lack of regular visit by extension personnel to villages ranked III (65.18%) followed by poor fertility of the soil (61.11%), crop damaged due to flood (60.00%), Poor growth due to low soil moisture at the time of sowing (52.96%) and Moisture stress during crop growth period (37.77%) ranked IV, V, VI and VII respectively. As regards to the infrastructural constraints; less cultivable land ranked I (72.22%), non availability of quality planting material II (69.25%) and Inability to purchase modern agricultural implements (61.85%), ranked III followed by non-availability of agricultural chemicals in time (58.14%), lack of irrigation facilities (45.55%), crop damage due to free grazing (34.81%) ranked IV, V, VI, respectively. Again, out of the economical constraints; Non-availability of labour during peak period ranked I (71.11%), High cost of agricultural chemicals ranked II (65.92%), Non-availability of timely credit facilities and ranked III (62.59%) where low selling price ranked IV (49.62%) and less profit ranked V (37.77%).

It is very much evident from the study that there existed a wide gap between development of technologies and their transfer to actual farming situations. Hence, these constraints perceived by the farmers could be overcome by the following proper strategies like suitable and intensified awareness and training programme and various field trials on banana cultivation and their production technologies along Integrated pest management strategies for pest and disease management among the farmers of the district. Improved and short duration of high yielding varieties recommended for the district and processing industries should be made available to the farmers. Farmers are to be encouraged to cultivate high yielding varities to earn more profit for upliftment of their economic condition. State Department of Agriculture and Zonal Research Stations may take concerted initiatives in this regard supported by financial institutions to provide credit facilities in terms of short-term loan to the farmers. Moreover, the State Government should prepare policy to provide the minimum support price in the state, which will encourage the growers for extensive cultivation in the district.

Table 1: Production Constraints of banana cultivation in western district of Assam (N= 270)

S. No.	Constraints	Frequency (F)	Percentage (%)	Rank
A	Technological			
i.	Lack of knowledge of scientific crop production	197	72.96	I
ii.	Lack of regular visit by extension personnel to villages	176	65.18	III
iii.	Poor fertility of soil	165	61.11	IV
iv.	Occurrence of insect-pests and diseases	189	70.00	II
v.	Crop damage due to flood	162	60.00	V
vi.	Poor growth due to low soil moisture at the time of sowing	143	52.96	VI
vii.	Moisture stress during crop growth period	102	37.77	VII
	Average	162.00	59.99	
B	Infrastructural			
i.	Less cultivable land	195	72.22	I
ii.	Non-availability of quality planting material	187	69.25	II
iii.	Non-availability of agricultural chemicals in time	157	58.14	IV
iv.	Inability to purchase modern agricultural implements	167	61.85	III
v	Lack of irrigation facilities	123	45.55	V
vi.	Crop damage due to free grazing	94	34.81	VI
	Average	153.83	56.96	
C	Economical			
i.	Non-availability of labour during harvesting period	192	71.11	I
ii.	Non-availability of timely credit facilities	169	62.59	III
iii.	High cost of agricultural chemicals	187	65.92	II
iv.	Low selling price	134	49.62	IV
v.	Less profit	102	37.77	V
	Average	155	57.40	

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