



ISSN (E): 2277- 7695  
ISSN (P): 2349-8242  
NAAS Rating: 5.23  
TPI 2022; SP-11(1): 405-407  
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Received: 01-11-2021  
Accepted: 03-12-2021

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## Varietal performance of chilli variety Arka Meghana in agro-climatic condition of Kokrajhar district

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### Abstract

The present study was conducted during rabi season, during the year 2019-20 to 2020-21 at farmers field to evaluate the performance of chilli variety Arka Meghana with local chilli cultivar as check in Agro-climatic condition of Kokrajhar district. The trial was laid out in a randomized complete block design with four replications. The result of the study indicated that chilli variety Arka Meghana was found superior to local cultivar in terms of Days to 50 per cent flowering (63.0 days), Days to first harvest (83.25 days), Numbers of Fruits per plant (68.0), Fruit weight (7.2g), fruit length (12.1 cm), Yield (19.665 t/ha) as compare to the local cultivars which found to take 67.75 days to 50 per cent flowering, 88.75 days to first harvest and recorded 65.0 numbers of average fruits per plant with average fruit weight of 5.25g, average fruit length of 3.45 cm and yield of 15.944 t/ha. Plant height was recorded highest in local cultivar (55.0 cm) whereas Arka Meghana recorded plant height of 50.5 cm.

**Keywords:** performance, chilli, Arka Meghana, yield

### Introduction

Chilli (*Capsicum annum* L.) is a beery fruit, belonging to the family Solanaceae. The domestication of chilli first occurred in Central America, most likely in Mexico, with secondary centers in Guatemala and Bulgaria (Salvador, 2002) [14] and it is valued for its diverse commercial uses. Its fruits are used for its pungency spicy taste in diet and also a valuable foreign exchange earner (Patel *et al*, 2001) [9]. The popularity of chilli is due to its wide range of shape, size and sensory attributes such as colour, pungency and piquancy that make generally insipid bulk nutritive flesh, cereal and vegetable foods more appetizing (Govindarajan *et al.*, 1987) [4]. Chilli is also a good source of vitamin A (292 I.U per 100 g), vitamin C (111 mg per 100 g) and thiamine (0.19 mg per 100 g). It is known that nutritional and visual quality of fruit depends both on variety and growing conditions (Pivovarov *et al.*, 2009) [11].

India is major producer, exporter and consumer of chilli in the world and it is grown in almost all states of India. Kokrajhar, a district of Assam, located on the north bank of the river Brahmaputra. The district lies roughly between 89°46 E to 90°38/ E longitudes and 26°19/N to 26°54/ N latitudes with a total area of 3169.22 sq. km. Chilli is naturally grown by the farmers in the district as commercial crop as well as for home consumption in the homestead garden. Only few progressive farmers are well aware of hybrids available in the market and their yield potential. Therefore, the experiment was conducted on seven different locations at the farmers' field of Kokrajhar district to evaluate the performance of chilli hybrids variety Arka Meghana along with a popular local chilli variety grown by the farmer's as check for the study.

### Materials and Methods

The present experiment to study the performance of chilli variety Arka Meghana was carried out at twelve farmers' fields at Patgaon, Monglajhora, Basbari, Ghunapara, Khulisanimani, Kasukata, Choutara and Bhomrabil villages of Gossaigaon Subdivision of Kokrajhar district during Rabi season of 2019-20 and 2020-21. Local chilli cultivar (Naidaw) was used as local check for the study. For the past two years the area has received total annual rainfall of 5166.5 mm and has mean maximum temperatures and minimum temperatures of 29.63 °C and 18.55 °C respectively. The farming situation is irrigated sandy loam soils. Seeds of chilli hybrid variety Arka Meghana were purchased from ICAR-Indian Institute of Horticultural Research, Bengaluru and used for this study. The trial was laid out in a randomized complete block design with four replications. The nursery raising of seedling was done with standard procedure of raising seedlings for transplanted vegetables and the experimental fields were well prepared following recommended package of practices.

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## Result and Discussion

The results (Table 1) revealed that local cultivars grow up-to a height of 55.0 cm compare to Arka Meghana which grows upto a height of 50.5 cm. In case of days to 50 percent flowering it reveals that Arka Meghana is earliest to 50 percent flowering (63 days) than the local cultivar which take 67.75 days to 50 percent flowering. According to Mishra *et al* (2017) [6] this might be due to genetic makeup of varieties. Data on days to first harvest also reveals that the Arka Meghana harvested in 83.25 days whereas local cultivar take 88.75 days to first harvest.

Regarding yield attributing characters Arka Meghana produces higher numbers of fruits per plant (68.0) where as local cultivar produces 65.0 numbers of fruits per plant. Variation in chilli genotypes for number of fruits per plant was also reported by Sreelatha Kumary and Rajamony (2004) [18], Smitha and Basavaraja (2006) [17], Sandeep *et al.*, (2008) [15], Tembhrune *et al.*, (2008) [19], Ajjaplavana and Channagoudra (2009) [1], Pramila *et al.*, (2009) [12] and Chatto padhyay *et al.*, (2011) [2].

Average fruit weight was highest in variety Arka Meghana (7.2g) as compare to the local cultivar (5.25g). Similarly the

results on average fruit length also revealed the Arka Meghana has fruit length of 12.10 cm which is found to be higher than local cultivar (3.45cm). Variation in fruit length in chilli was also observed by Padda *et al.* (1970) [8] and Pillai and Bellukutty (1978) [10]. Sreelatha Kumary and Rajamony (2004) [18], Smitha and Basavaraja (2006) [17], Dahal *et al.*, (2008), Tembhrune *et al.*, (2008) [19], Pramila *et al.*, (2009) [12], Chattopadhyay *et al.*, (2011) [2], Shiva *et al.*, (2013) [16], Dhaliwal *et al.*, (2014), Rohini and Lakshmanan (2014) [3], Vijaya *et al.*, (2014) [20]. According to Hosmani, (1982) chilli fruits length is of market value because normally medium to long fruits are preferred by customers.

Demonstrated variety Arka Meghana recorded the highest yield per plant of 491.62g whereas the local check registered the yield per plant of 398.59g under Kokrajhar condition. Similarly Arka Meghana recorded highest yield per hectare of 19.66 t/ha compare to the local check of 15.94 t/ha yield per hectare. This varietal difference is corroborated by the findings of Odeleye and Odeleye (2001) [7] who reported that difference in yield of crops has been ascribed to the cultivars grown and genetic make-up.

**Table 1:** Performance of chilli varieties at farmer's field for growth and yield parameters

Sl. no	Particulars	Arka Meghana	Local cultivar Naidaw	SED	CD (p=0.5%)
1.	Plant height (cm)	50.5	55.0	1.19	2.81
2.	Days to 50 per cent (days)	63.0	67.75	0.48	1.13
3.	Days to first harvest	83.25	88.75	1.55	3.68
4.	No. of fruits per plant	68.0	65.0	5.26	12.44
5.	Average fruit weight (g)	7.2	5.25	0.28	0.65
6.	Average fruit length (cm)	12.1	3.45	0.12	0.28
7.	Yield per plant (g)	491.62	398.59	32.78	77.51
8.	Yield per ha (t/ha)	19.66	15.94	1.28	3.04
9.	Market preference	Very good	Good	-	-



**Fig 1:** Chilli Variety Arka Meghana



**Fig 2:** Local Chilli Cultivar (Naidaw)

## Conclusion

The findings of the study concluded that Arka Meghana cultivation is economically viable and profitable to the farmers due to its yield contributing traits such as number of fruits per plant, fruit length, average fruit weight, yield per plant and yield per hectare which were found to be higher than local cultivar. The variety could be considered as a promising and suitable variety in Kokrajhar district. Considering the variety production and profitability, the farmers expressed satisfaction with the performance of Arka Meghana.

## Acknowledgement

The author is thankful to the farmer of the District from the selected villages for their active participation in the study of demonstrated variety of chilli, for providing information and to other who are directly or indirectly involved in carrying out the study successfully for their kind assistance and support.

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