International Journal of Forestry and Crop Improvement
Volume 5 | Issue 2 | December, 2014 | 98-99 | Visit us : www.researchjournal.co.in
e ISSN-2230-9411

Research Note

DOI: 10.15740/HAS/IJFCI/5.2/98-99

Varietal response of *Bela* on productivity and profitability under climate change

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ABSTRACT : The FLD was laidout in cluster on eleven farmers fields during *Zaid* season of 2010 at Kannauj district. The pilot area situated in the catchments area of river *Kali*, having loam soil with low fertility status. The main objective of the study was to pluck higher flowers yield, maximum net return and desired recovery of concrete. The secondary objective was to increase the living standard of farm families reeling below the poverty line. The flowers yield of cv. MOGRA SINGLE of *Bela* was recorded by 76.80 q/ha, which was higher by a margin of 16.00 q/ha or 26.31 per cent than the familiour indigenous cultivar (60.80 q/ha). The maximum gross return of Rs. 307200/ha, net return of Rs. 249540/ha and BCR of 1:5.32 were found with plucking of marketable flowers from raising of cv. MOGRA SINGLE than the gross return of Rs. 243200/ha, net return of Rs. 191000/ha and BCR of 1:4.65 computed under indigenous variety. Therefore, cv. MOGRA SINGLE can be raised on riverine soil for plucking of faney flowers and improving livelihood security of small and marginal farmers.

KEY WORDS : Aromatic plants, Concrete, Fancy flowers yield, *Mogra Single*, Riverine soil

How to cite this Article : Singh, Amar, Singh, R.A. and Kanaujia, V.K. (2014). Varietal response of *Bela* on productivity and profitability under climate change. *Internat. J. Forestry & Crop Improv.,* **5** (2) : 98-99.

Article Chronical : Received : *13.10.2014;* Accepted : *30.11.2014*

The area situated in the vicinity of Kannauj district of Uttar Pradesh is the power house of aromatic plants cultivation. Among the aromatic plants, *Bela* crop is very much popularize for flowers production, because it is commonly used for producing *attar*, which sell at fancy price. It blooms from March to August and recorded yield of this area is 34.10 q/ha of fresh flowers per hectare annually on the farmers fields as reported by Mishra and Singh (2011) from C.S. Azad University of Agriculture and Technology, Kanpur. The reported yield is less than the potential yield, because farmers do not cultivate the high yielding varieties. The application of balance dose of nutrients is also not in vogue, resulting in, poor yield of flowers obtained by farmers, which directly influence to the profitability. The percentage recovery of the concrete is also poor due to use of imbalance nutrients and indigenous variety as reported by perfumers of Kannauj city. With the view to harvest higher flowers yield, more net return and desired recovery of concrete, the front line demonstration with full recommended agronomical practices was planned and conducted on the farmers fields of Kannauj district. The improved variety *Mogra Single* was compared with indigenous variety in FLD, which is already available with flowers growers.

The front line demonstration was conducted during *Zaid* season of 2010 on farmers fields of Mahmoodpur Pad village of Kannauj Block in district Kannauj. The operational site is situated in alluvial tract of Central Plain Zone of U.P. in catchments area of river *Kali*. The main objective of the study was to harvest higher yield of flowers, more net return and desired recovery of concrete with the plantation of improved

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Table 1: Flowers yield and economics of aromatic plants crop of *Bela* under FLD

Sr. No.	Cultivar	Average flowers yield (q/ha)	Economics			
			Cost of cultivation (Rs./ha)	Gross return (Rs./ha)	Net return (Rs./ha)	BCR
1.	*Mogara Single*	76.80	57660	307200	249540	1:5.32
2.	Indigenous (Conventional)	60.80	52200	243200	191000	1:4.65

Sale price of flowers- Rs. 4000 per quintal

variety and use of balance nutrients. The secondary objective was to increase the financial status of flowers growing farm families. The demonstration site was loam having pH 8.0, organic carbon 0.26 per cent, total nitrogen 0.02 per cent, available P 10.0 kg/ha and available K 273 kg/ha, therefore, the fertility status was low. The farming situation of demonstration site was irrigated. The main problem, of this flowers growing area is lower yield of flowers due to imperfect knowledge of aromatic plants cultivation and production of flowers from indigenous cultivars. The front line demonstration was conducted on farmers fields and compared the flowers yield and economics with conventional practice of cultivation (farmers practice). The cultivar *Mogra Single* was grown in FLD and compared its flowers yield with indigenous cultivar. The nursery plants of *Bela* were planted from 30 August to 8 September 2009. The flowers plucked between 15 April 2010 to 30 August 2010. The aromatic crop of *Bela* was raised with recommended agronomical practices. The plant protection measures were followed to check the incidence of insects, pest and diseases. The irrigations were given as and when required. The FLD was conducted in cluster of eleven farmers fields.

The results obtained from FLD have been discussed below:

Comparison of flowers yield :

The yield data of flowers under both the varieties have been reported in Table 1. Perusal of data make it clear that the *Mogra Single* cultivar gave flowers yield as 76.80 q/ha, which was higher by a margin of 16.00 q/ha or 26.31 per cent over the indigenous cultivar (60.80 q/ha). It is also worthwhile to mention here that the fancy production of flowers was also found in the cultivation of cv. *Mogra Single*. The higher flowers yield in cv. MOGRA SINGLE was due genetic variability. The use of recommended agronomical practices and application of balance dose of nutrients also supported to the higher flowers yield of cv. MOGRA SINGLE. These observatiobns supported to the findings of Singh *et al.* (2008).

Comparison of economics :

The data recorded on economics have been reported in Table 1. The cost of cultivation under FLD of cv. MOGRA SINGLE was computed by Rs. 57660/ha, which was higher than the cost invested on cultivation of indigenous cultivar by a margin of Rs. 5460/ha or 10.45 per cent. The cost of cultivation under cv. MOGRA SINGLE was higher due higher cost of planting material, application of balance dose of plant nutrients and use of insecticides and fungicides to check the incidence of insects, pest and diseases.

The higher gross return of Rs. 307200, net return of Rs. 249440/ha and BCR of 1: 5.32 were found with plucking of flowers from the front line demonstration, conducted with cv. *Mogra Single*. The gross return, net return and BCR were computed by Rs. 243200/ha, Rs. 191000/ha and 1:4.65, respectively, from the cultivation of indigenous cultivar. The application of recommended agronomical practices in FLD of cv. MOGRA SINGLE boosted the flowers yield, resulted in, increased the net profit. Singh *et al.* (2013) also reported the similar results.

Conclusion :

The cultiar *Mogra Single* of aromatic plant *Bela* gave higher flowers yield and net profit under climate change, therefore, its cultivation can be suggested to the flowers growers.

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