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Screening on yield and yield attributes of seven hybrid varieties of chilli under bundelkhand agro-climatic zone (VII)

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Abstract
An experiment entitled "Screening on yield and quality attributes of seven variety of chilli under bundelkhand Agro-climatic zone (VII)" was conducted at Research Farm, College of Agriculture, Tikamgarh during *Kharif* season at 2015-16 to evaluate the hybrids of chilli yield. The experimental was laid out in the randomized block design with three replications. Varieties- V_1–Alankar, V_2–Natasha-727, V_3–Madhurima-148, V_4–Classica-152, V_5–Prajwala, V_6–Divyajyoti, and V_7–Sonaskhi-44. Results obtained in the present investigation revealed that, the highest Plant height at 50% flowering (36.23cm), Fruit length (10.60cm), Fruit diameter (4.22cm), Number of seed fruit^{-1} (91.33), Test weight of 1000 seeds (9.29g), Fruit yield plant^{-1} (1.14 kg), yield plot^{-1} (44.42 kg) and Fruit yield ha^{-1} (281.0 qt). Conclude that Prajwala performed the best with respect to productivity under the agro-climatic conditions of Bundelkhand (Tikamgarh) region.

Keywords: Yield, yield attributes, seven hybrid varieties, chilli

Introduction
Chilli (*Capsicum annum* L.) is a member of the solanaceae family that includes tomato, potato and brinjal (Erinle, 1989; Akinyosoye, 1977) [4, 1]. Capsicum was domesticated at lost five times by prehistoric peoples in different parts of south and Middle America. The genus Capsicum consists of approximately twenty wild species and five domesticated species, most cultivated in the world belong to the species *Capsicum annum* L. The five domesticated species of chilli are as follows *Capsicum annum* L., *Capsicum frutescens* L., *Capsicum chinense* L., *Capsicum pubescens* L. and *Capsicum baccatum* L. The substances that responsible for pungency in chilli is Capsaicin (C18 H37 NO3) and several related chemicals, collectively called Capsaicinnoids (Udoh *et al.*, 2005) [7]. The area, production and productivity of chilli in India is 287 thousand ha, 3406 thousand t and 11.86 t/ha respectively. In M.P., 574.80 thousand t chillies produced from an area of 33.64 thousand ha with the productivity of 17.086 t/ha (Indian Horticulture Database, 2016-17) [2]. Nutritionally, it is a rich source of vitamin A, B and C. Capsaicin an alkaloid responsible for pungency in chillies has medicinal properties and it prevents heart attack by dilating the blood vessels (Gill, 1989) [5]. Chilli (*Capsicum annum* L.) is a vegetable as well as spice and one of the most important cash crops of India. It is used for industrial purpose due to extraction of oleoresin. India is the world largest producer, consumer and exporter of chilli. Guntur in Andhra Pradesh is produces 30% of chilli particularly in India. This has the potential for improving the income and the livelihood of thousands of small holder farmers. The present research works on "Screening on yield and yield attributes of seven variety of chilli under bundelkhand Agro-climatic zone (VII)" was conducted.

Method and Materials
The field experiment was conducted at Research Farm, College of Agriculture, Tikamgarh during *Kharif* -2015 to evaluate the hybrids of chilli yield. It is situated in the north-eastern part of Madhya Pradesh at 240 43' North latitude and 780 49' East longitudes at an altitude of 358 meter mean sea level. It has sub-tropical climate characterized by hot dry summers and cool dry winter. The average maximum temperature during the month of October varies between 35.0 to 36.50C, while the average minimum temperature varies between 3.5 to 5.5 ^{0}C during month of December, which is the coldest month of the year. The average Season rainfall of this region is about 213.7mm which is mostly received between July- August and a little rainfall is also obtained during January. The average humidity of the tract is about 73%.

The soil of the experiment field was clay loam in texture. The soil of the experiment yield was clay loam in texture, Low in available N (266 kg/ha), high in P_2O_5 (25.9 kg/ha) and K_2O (255 kg/ha) with pH 6.9.

Nursery bed preparing during used to 10-15 kg farm yard manure was incorporated along with one kg of urea, 500 g of single super phosphate and 200 g of murate of potash before sowing for each seed bed. After words, seeds were sown thinly in the lines of 7.5 cm apart in two beds of each 3 m long x 1.0 m width and 0.1 m height. Soon after sowing the beds were covered with paddy straw and watering was done regularly. The paddy straw was removed on 6th day when seeds started emerging. The beds were drenched with 0.2 per cent Captan solution. Necessary plant protection measures were provided to get healthy seedlings. Healthy seedlings were transplanted at 30-35 days after sowing with a spacing of 60 cm between row to row and 45 cm between plant to plant. The manure and fertilizers were applied as per respective plots.

Full dose of RDF (100: 60: 40 kg NPK ha-1) and 1/3 nitrogen were given to the plot before sowing as basal dose. Remaining 2/3 quantity of nitrogen was applied in two split doses i.e., 30 and 60 day after transplanting. The experimental was laid out in the randomized block design with three replications. Varieties- V_1–Alankar, V_2–Natasha-727, V_3–Madhurima-148, V_4–Classica-152, V_5–Prajwala, V_6–Divyajyoti, and V_7–Sonaskhi-44. Five plants were randomly selected from each treatments and replication for the study. Plant height at 50% flowering, Daye to 1st flowering, Fruit length, Fruit diameter, Number of seed fruit^{-1}, Test weight of 1000 seeds, Fruit yield plant^{-1}, Fruit yield plot^{-1} and Fruit yield ha^{-1}.

Result and Discussion

(A) Yield Parameters

Number of fruit plant^{-1}

Plant Height at 50% flowering

Data on plant height presented in Table 1 revealed that all the hybrid differed non significantly but 1 maximum plant height of 36.23 cm was recorded for the hybrid Natasha followed by Alankar 32.73 cm and Prajwala 31.11cm, whereas it was minimum 29.43 cm for Sonakshi-44.

Days to 1st flowering

Data pertaining to days to first flowering depicted in Table 1 revealed that all the chilli hybrid differed significantly for days to first flowering and maximum days taken by the hybrid Prajwala (35 days) followed by Natasha (33.33 days) while less days were taken for the 1st flowering by Divyajyoti (30.33 days). The results of lowest value of days to 1st flowering are in close conformity with finding of Hasan *et al.* (2014) [6].

Marketable fruit length and diameters

For the character fruit length (Presented in table 1) all the hybrids showed significant differences and the maximum fruit length of 11.58 cm was recorded for the Prajwala followed by Madhurima -148 (10.60 cm) and Sonakshi- 44 (10.10 cm) while minimum length of 7.58 cm of chilli was recorded for Classica -152. The results of highest value of marketable fruit length are in close conformity with finding of Vishvkarma *et al.* (2018) [9].

In case of fruit diameter all the hybrids differed significantly and maximum diameter of 4.22 cm was recorded for Natasha closely followed by Prajwala 3.36 cm and Alankar 3.20 cm. the other have minimum diameter of fruit was recorded for hybrid Classica 152 (2.04cm).

Number of seed per fruit

Data presented in Table 1 for the seed number per fruit revealed that higher number (91.33) of seeds per fruit was recorded with the hybrid Prajwala followed by Sonakshi 44 (71.00) and Madhurima 148 (56). All the hybrids differed significantly among themselves and significantly lowest numbers of seed per fruit were counted for the hybrid Divyajyoti (37.3). The results Number of seed per fruit are agreement with finding of Hasan *et al.* (2014) [6].

1000 Seed weight

All most all the hybrid differed significantly for 1000 seed weight and significantly maximum seed weight of 9.29g was recorded for the hybrid Prajwala closely followed by the Natasha 9.21g and Alankar 7.22g where as it was lowest for the hybrid Divyajyoti 5.15g.

Fruit yield plant^{-1} (Kg)

The different varieties varied significantly with respect to formation of fruit yield plant^{-1} as shown in table-1. Prajwala produced significantly higher fruit yield plant^{-1} (1.14 kg) as compared to all the varieties. The second best variety was Natasha-727 producing (1.07 kg fruits plant^{-1}). The third best variety was Classica-152 (0.95 kg fruits plant^{-1}). Divyajyoti produces significantly lowest fruits yield (0.73 kg fruits plant^{-1}), closely followed by Sonaskhi-44 (0.82 kg fruits plant^{-1}). The results of highest value of Green pod yield per ha are agreement with finding of Vishvkarma *et al.* (2018) [9] and Vanita *et al.* (2017) [8].

Fruit yield plot^{-1} (Kg)

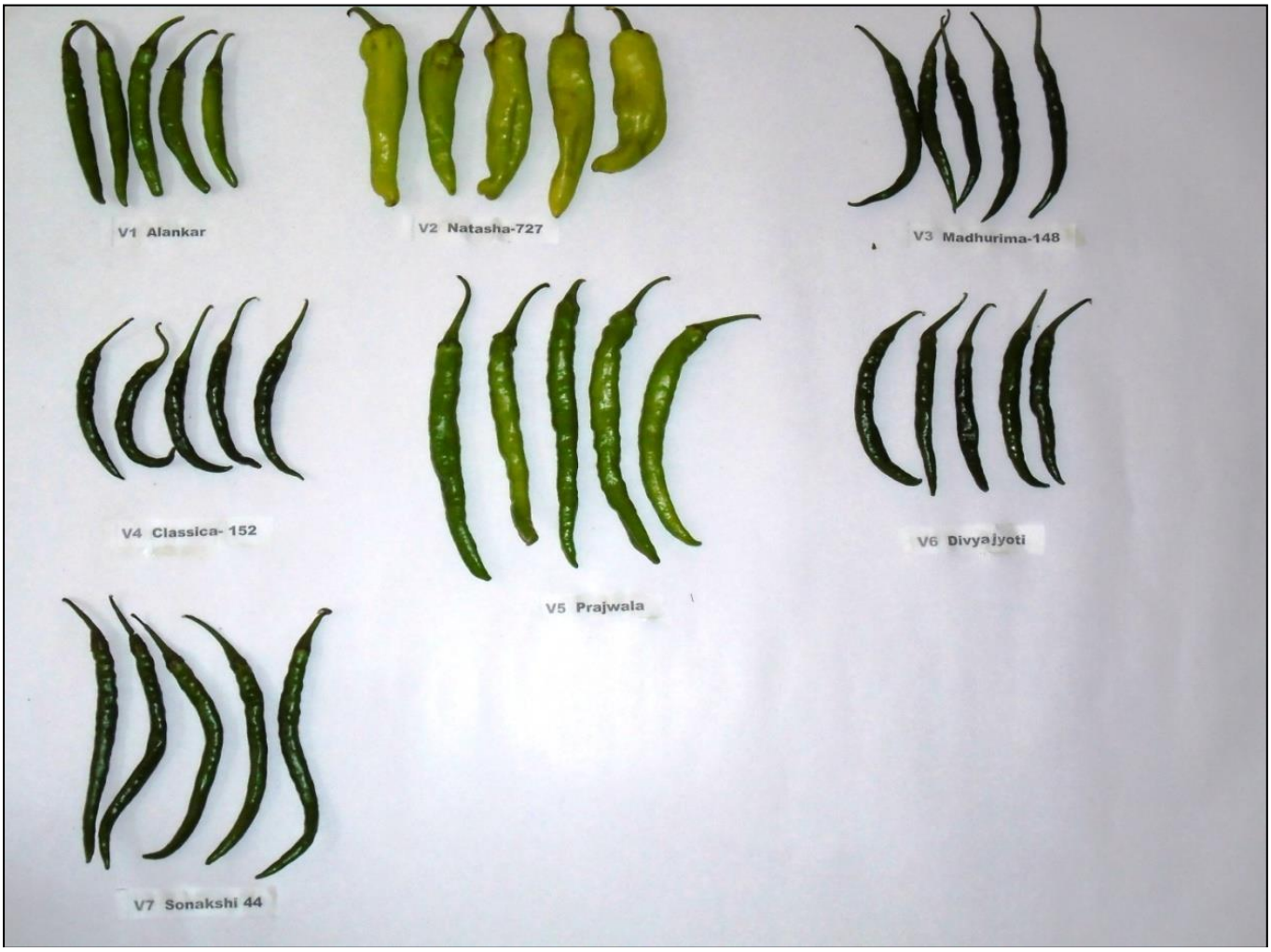
The different varieties varied significantly with respect to formation of fruit yield plot^{-1} as shown in table-1. Prajwala produced significantly higher fruit yield plot^{-1} (44.42 kg) as compared to all the varieties. The second best variety was Natasha-727 producing (41.61 kg fruits plot^{-1}). The third best variety was Classica-152 (36.21 kg fruits plot^{-1}). Divyajyoti produces significantly lowest fruits yield (27.85 kg fruits plot^{-1}), closely followed by Sonaskhi-44 (31.89 kg fruits plot^{-1}).

Green chilli yield (t/ha)

Yield is the complex character and the ultimate aim of the vegetable grower is production enhancement for the some varieties with higher production is the felt need. Data depicted in Table-1 for green chilli yield showed that highest yield of 28.1 t/ha was recorded for the chilli hybrid Prajwala which was significantly superior over rest of the hybrid followed by Natasha (26.3 t/ha) and Classica-152 (23.51 t/ha). On the other hand significantly lowest was Divyajyoti (18.1 t/ha) and Sonakshi-44 (20.17 t/ha). The results of highest value of Green pod yield per ha are agreement with finding of Vishvkarma *et al.* (2018) [9] and Vanita *et al.* (2017) [8].

Table 1: Flowering, yield and yield attributes of different chilli hybrids during 2015.

Treatment	Plant Height at 50 % Flowering	Days to 1st Flowering	Marketable Fruit Length	Marketable Fruit Diameter	Total Plot Yield (kg/ha)	Yield Per Plant (kg)	Yield (t/ha)	Seeds Number per fruit	1000 seed weight (g)
Alankar	32.73	30.67	8.84	3.20	32.21	0.83	20.37	50.00	7.22
Natasha-727	36.23	33.33	8.68	4.22	41.61	1.07	26.32	45.00	9.21
Madhurima 148	31.27	33.00	10.60	2.52	35.34	0.90	22.35	56.00	6.58
Classic-152	31.27	30.33	7.58	2.04	36.21	0.95	23.51	43.00	9.29
Prajwala	31.77	35.00	11.58	3.36	44.42	1.14	28.10	91.33	7.01
Divyajoti	30.90	30.33	9.38	3.04	27.85	0.73	18.08	37.33	5.15
Sonakshi-44	29.43	30.67	10.10	2.12	31.89	0.82	20.17	71.00	7.12
C.D.	NS	3.08	2.11	0.46	1.53	0.04	0.99	7.39	0.54
SE(m)	2.099	0.989	0.678	0.147	0.491	0.013	0.317	2.373	0.173



Seven Chilli Hybrids of UPL Pvt. Ltd.

Conclusion

On the basis of data recorded for one season (Year). It is too early to draw any conclusion regarding adoption of seven hybrid varieties of chilli under this agro-climatic region. More testing are required for at least two- three years for the conformity of these results.

However, one year field trial indicated that the hybrid chilli Prajwala performed better over rest of the seven hybrid varieties.

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References

1. Akinyosoye VO. Senior tropical agriculture for West Africa. Macmillian Education Ltd. London, 1977, 100-101.
2. Anonymous. National Horticulture Board Gurgaon (Haryana). 3-4, 2016-17.
3. Bharadwaza RK, Prasad VM, Adinarayana M, Narayana Swamy G. Evaluation of Chilli (*Capsicum annuum* L.) Genotypes for Yield and Yield Attributes in Allahabad

Agro-Climatic Conditions. International Journal of Current Microbiology and Applied Sciences. ISSN: 2319-7706. 2017; 7:773-776.
4. Erinle ID. Present status and prospects increases production of tomatoes and pepper in Nigeria. In: AVRDC Edu. Prac. Inter. Symp. Integrated Manad. Practices, 1989, 536-547.
5. Gill HS. Improved technologies for chilli production. Indian Cocoa Arecanut and spices Journal. 1989; 12:118-119.
6. Hasan M, Haider T, Chowdhury MSN, Howlader MF, Jamal Uddin AFM. Study on Morpho-physiological and Yield Performance of Four Chilli (*Capsicum* spp.) Lines. Journal of Bioscience and Agriculture Research. 2014; 02(01):01-07.
7. Udoh, JD, Ndoh AB, Asuquo EP, Nyandoh UN. Crop production Techniques for the Tropics. Concept publications. Limited, Lagos, 2005, 261-265.
8. Vanita J. Screening of chilli (*Capsicum annuu*m var *annuum* L.) accessions for yield and quality suitable for rainfed conditions. Environment and Ecology. 2017; 353B:2146-2151.
9. Vishvkarma D, Singh VK, Shankhwar B. Screening for yield and quality parameters of different chilli varieties. International Journal of Chemical Studies. 2018; 6(4):1745-1747.