

## EVALUATION OF CHILLIES GERMPLASM

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*Capsicum*, native to the New World Tropics, now widely cultivated for use as spices or vegetables in the temperate zone. Chillies powder, red and cayenne peppers, tabasco, paprica, sweet or bell peppers and pimentos are all derived from the pod like berries of various species of *Capsicum*. The pungency of pepper is due to *capsaicin* or *capsicutin* ( $C_{18} H_{27} NO_3$ ) a condensed product of 3-hydroxy-4 methoxy benzylamine and the vanillyl amide of isodecylenic acid, contained in the placenta. It is grown in all parts of India including the districts of Uttar pradesh viz, Pithoragarh, Almora, Nainital and adjoining parts of *tarai* region of Kumaon and also Pauri, Uttarkashi and Dehradun districts in Garhwal hills. Chillies broadcasting cultivation still prevails in some hilly tracts. Gola-Khatima area is having *Jheen Mirch* (a wild form) and some tribal belts have *Longia Mirch* (*Capsicum frutescens*). The collections made from the local habitat (farmers' fields) of Kumaon Hills, from different state and private agencies during different explorations, and exotic collections from USA were included in evaluation programme and promising types identified for various traits for use in crop improvement programmes.

One hundred nineteen accessions were sown in nursery for raising seedlings and planted in an augmented randomised complete block design along with four checks P-1094, P-1130, P-1311 and P-1639 at NBPGR Regional Station, Bhowali, Nainital (UP). The inter row spacing was maintained at 50 cm and within row spacing at 30 cm respectively. All the standard practices recommended for the crop were followed (Muthukrishnan *et al.* 1986). The accessions were evaluated for qualitative (31) and quantitative (12) characters. The evaluation was conducted for three consecutive years, 1993, 1994 and 1995 at Bhowali (29°N latitude and 70°E longitude) at an altitude of 1600 m above sea level. The climate of this site is sub-temperate with minimum and maximum temperature ranging between -2°C to 32°C and with an average annual rainfall around 1600 mm.

**Table 1. Promising accessions identified in chillies germplasm**

S.No.	Characters	Promising accessions
1.	Days to 50% germination > 80 days	EC-362911, EC-362931
2.	Leaf length > 12 cm	EC-362918, EC-362919, EC-362922, P-1939, P- 2072, N-1149, N-1382
3.	Leaf width > 5 cm	EC-362919, EC-362925, EC-362930, EC-362938, P-1639, P-1713, P-1718
4.	Plant height > 60 cm	P-2072, N-1160, N-1382
5.	Days to 50% flowering < 150 days	P-32, P-64, P-173, P-290, P- 241, P-272, P-249, EC-362905
6.	Days to 50% fruiting < 165 days	P-32, P-64, P-173, P-297, P- 641, EC-362905
7.	Number of fruits/plant > 60	P-1399, EC-362903, E-362916, EC- 362930
8.	Fruit length > 9 cm	P-1311, P-2072
9.	Fruit width > 2 cm	P-840, KN-613, N-1149
10.	Fruit (10) green weight > 30 g	P-64, P-190, P-1258, P- 2072, N-349, KN-613
11.	Fruit (10) dry weight > 30 g	P-64, P-100, P-1258, P-1639, N- 349, N-368, N-867, N-1149
12.	Disease free accessions from leaf spot, powdery mildew and fruit rot	IC-99910, IC-99912, IC-92150, P-1718, P-1939, N-1015, EC- 362901, EC-362910, EC-362913, EC-362925

The germplasm exhibited wide range of variability in plant height (50.0-86.0 cm), growth habit (prostrate, compact, erect), leaf and stem pubescence (glabrous, sparse, intermediate, abundant), seedling, leaf and stem colour (green, purple), density of branches, plant canopy (104.0-6348.0 sq cm), leaf length (4.2- 15.9 cm), leaf width (1.2-6.8 cm), flower colour, days to 50% flowering (142-172 days), pedicel position, number of pedicel per axil, days to 50% fruiting (161 - 220 days), fruit set, calyx margin and shape, annular construction at junction of calyx and peduncle, fruit position, fruit colour at immature stage (green, yellow, orange, red, purple, brown/black), fruit shape (elongate, oblate, round, conical, campanulate, bell/blocky), fruit shape at peduncle attachment (truncate, cordate, lobate, acute, obtuse), fruit shape at blossom end (pointed, blunt, sunken), presence and absence of neck at base of fruit, fruit cross section (smooth, intermediate, corrugated), fruit pungency, number of fruits per plant (2.1-120.0), fruit length (1.6-12.4 cm), fruit width (0.2- 2.6 cm), fruit green weight/10 fruits (7.0-55.0 g), fruit dry weight/10 fruit (1.0-7.5 g), seed colour and pest and diseases of varying intensity.

Number of fruits per plant is the main character for increasing the fruit yield with other important associated characters e.g. fruit length, fruit width and fruit weight. Accessions P-64, P- 190, P-1258, P-2072, N-349 and KN-613 showed higher fruit weight whereas accessions P-1399, EC-362903, EC-362916

and EC-362930 showed more number of fruits/plant which revealed that individual fruit weight and all the factors associated with fruit number are not having strong compensatory interactions (Lacy, 1973; Webb *et. al.* 1974; Mason *et al.* 1980). It is suggested that the promising genotypes (Table 1) could be used in hybridization programmes for selecting desirable segregants/cross combinations for the economic traits under study. Requests for small quantity of seed for the research purposes can be made to the Director, National Bureau of Plant Genetic Resources, Pusa Campus, New Delhi 110012 or to the Officer-In-Charge, NBPGR, Regional Station, Bhowali (Nighat) Distt Nainital U.P. 263132

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