Short Communication

PERFORMANCE OF PARENTS OF SWEET POTATO FOR SEED PRODUCTION AT CHHATTISGARH

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Abstract: 24 (twenty four) crosses were made in Line x Tester design utilizing 6 Female and 4 Male parents of wide genetic base to as certain the performance of parents for TSPS attributes. Among these crosses Indira Navin x Sre rethna for capsule set, Indira Navin x Gauri for seeds per capsule and IGSP-C-15 x Sree rethna for 100 seed weight were found promising. Parental lines Indira Madhur, Sree rethna and Gauri were good females and all four testers were good males for TSPS production.

Keywords : Performance, Potato, Production, Seed, Sweet

INTRODUCTION

In sweet potato breeding, flower production and capsule setting are two basic requisites ,for making desired crosses. The use of TSPS as a means of propagation has enhanced the importance of attributes like pollen fertility, seed per capsule and 100 seed weight (Gaur and Pandey, 1990). Genetic constitution of male and female parental lines determines the TSPS quality and quantity (Upadhyay *et al*., 1984). The present investigation was undertaken to study the performance of sweet potato parental line for duration of flowering, pollen fertility, capsule and 100 seed weight and to identify the promising crosses with desirable attributes for TSPS production.

MATERIAL AND METHOD

The study was carried out at Vegetable Farm (AICRP) Tuber (Sweet potato) Horticulture Farm, Indira Gandhi Krishi Vishwavidyalaya, Raipur (C.G.) (24^0-5'N latitude and 72^0 E longitude, 360 m msl) during Rabi season of 2009-10. Sweet potato flowering at Raipur during the crop season, thus flowering was induced by prolonging photoperiod by 4 to 6 hours and temperature is very higher. Crosses were made in Line x Tester design utilizing 6 female and four male of wide genetic base. Minimum of 10 bunches (40-50 flower buds) were pollinated per crosses. Data were recorded on progenies for duration of flowering (days), viable pollen grains (%), capsule setting (%), and numbers of seed per capsule and 100 seed weight (mg). Performance of male and female parents was calculated by taking average of each parent's performance over crosses with four male and six female parents, respectively.

RESULT AND DISCUSSION

The duration of flowering ranged from 41.33 days (Indira Navin and Indira Nandini) to 62.67 days (IGSP-C-15) in female parents, whereas all four male parents had around 63 days flowering duration. IGSP-C-15, IGSP-C-16, Indira Nandini, Indira Navin, IGSP-C-16 and IGSP-C-14 had longer flowering during. All female parents had around 50 % viable pollen grains. Among the pollen parents, maximum percent of viable pollen grains were in IGSP-C-16 (91.22 %) followed IGSP-C-14 (89.73%), Indira Navin (75.04 %) and Indira Nandini (67.92 %) (Table 1). The exent of capsule setting ranged from 22.08 % (Indira Navin x Sree Rethna) to 95.03 (IGSP-C-16 x Gauri) maximum capsule setting among female was Indira Navin (90.14) followed by IGSP-C-15 (88.75 %), Indira Nandini (83.66%), IGSP-C-16 (83.46 %) and IGSP-C-17 (79.03 %), while among males it was maximum in Indira-9 (72.62 %) followed by Gauri (71.68 %) and Indira Madhur (69.45 %) Table-1). A large variation has found for number of seeds per capsule (Pandey and Gupta, 1995). In the present study number of seeds per capsule ranged from 15.53 (IGSP-C-16 x Gauri) to 3 (IGSP-C-15 x Gauri) to 5 (IGSP-C-16 x Sree Rethna). Among female parents maximum seeds per bery were in IGSP-C-16 (5) followed by IGSP-C-14 (4), Indira Navin (3) and Indira Nandini (2) Table 1). Among the pollen parents, maximum seeds per capsule were in Indira Madhur (5) followed by Gauri (4), Sree Rethna (3) and Indira-9 (2). The 100 seed weight in various crosses ranged from 23.31 mg (IGSP-C-15 x Sree Rethna) to 128.7 mg (IGSP-C-14 x Indira Madhur). Among the females IGSP-C-14 (98.41 mg) produced maximum 100 seed weight followed by IGSP-C-15 (78.86 mg), IGSP-C-16 (77.64 mg), Indira Navin (72.29 mg) and Indira Nandini (69.84 mg). Crosses IGSP-C-15 x Indira Madhur, IGSP-C-16 x Sree Rethna and IGSP-C-14 x Indira Madhur were promising for capsule setting seeds per capsule and 100 seed weight respectively. IGSP-C-15, Indira Navin, IGSP-C-16, Indira Nandini and IGSP-C-14 were found good female and all four males Sree Rethna, Gauri, Indira Madhur and Indira-9 good males for various characters important to TSPS production.

Table 1. Performance of parental lines for characters important to TSPS production.

Parents	Duration of flowering (days)	Viable pollen grains (%)	Capsule setting (%)	Seeds/capsule (no)	100 seed weight (mg)
Female					
Indira Navin	61.86	74.50	76.75	5.5	58.75
Indira Nandini	63.32	73.85	75.75	4.6	57.50
IGSP-C-14	62.75	72.95	72.75	5.9	62.78
IGSP-C-15	60.75	86.75	67.85	4.5	61.25
IGSP-C-16	63.56	83.89	65.75	3.78	68.75
IGSP-C-17	61.56	78.78	68.75	4.25	57.65
Male					
Sree Rethna	62.67	75.04	69.45	5.60	57.00
Gauri	62.33	89.73	71.68	5.20	54.66
Indira Madhur	64.00	91.22	64.93	4.05	65.93
Indira-9	63.33	67.93	72.92	3.68	59.78

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