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Short Communication

Studies on *in vitro* germplasm conservation in potato (*Solanum tuberosum* L.)

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Potato (*Solanum tuberosum* L.) is one of the crops that cannot be conserved in seed banks. Until recently large germplasm collections, which were maintained in the field, required much labour besides exposure to climatic effects as well as pests and diseases. The *in vitro* storing of such collections in laboratory is quite capable of solving the problems in storage. The cultures whose growth rate is limited need not be sub-cultured frequently. The success of *in vitro* storage depends on growth limitation, which is possible by lowering temperature [1] and adding growth retardant to medium [2]. The present investigation was undertaken to study *in vitro* germplasm conservation in seven parental lines of TPS (MF-I, MF-II, TPS-7, TPS-13, TPS-67, JTH/C-107 and EX/A-680-16).

The present study comprised *in vitro* cold storage and use of growth retardant cycocel to multiplication medium. The shoot tips of about 0.5-1.0 cm long were inoculated on MS medium [3] with 0.25 mg/1 BAP and cultures were stored at 4-6°C in dark for four durations (6 months, 1 year, 1.5 years and 2 years). The re-growth ability was recorded for these durations one month after transfer from cold storage to normal incubation temperature (25 ± 2°C). The shoot tips of about 0.5 cm long were inoculated on MS + 0.25 mg/l BAP and supplemented with four concentrations of cycocel (0.5, 1.0, 1.5 and 2.0 gm/l). The cultures were incubated at normal incubation condition (25 ± 2°C) under light (16 hours photoperiod). After one-year, plantlet height was recorded and shoot tips were transferred to retardant free medium. The proliferation percentage was recorded after one month.

After *in vitro* cold storage, the re-growth ability of lines varied according to storage duration (Table 1). The maximum re-growth (37.28%) was observed after six months storage, while minimum (2.57%) after two years storage. In case of lines, maximum (19.50%) and minimum (11.00%) re-growth was recorded by MF-I and TPS-67, respectively.

Table 1. Response of TPS parent lines of potato for percent re-growth ability stored for different durations

Sl.No.	Lines	Percent proliferation				Overall
		Six months	One year	One and half year	Two years	
1.	MF-I	48.00	20.00	8.00	2.00	19.50
2.	MF-II	45.00	15.00	10.00	4.00	18.50
3.	TPS-7	30.00	25.00	5.00	3.00	15.75
4.	TPS-13	35.00	10.00	4.00	4.00	13.25
5.	TPS-67	28.00	12.00	2.00	2.00	11.00
6.	JTH/C-107	50.00	20.00	11.00	2.00	20.75
7.	EX/A-680-16	25.00	18.00	6.00	1.00	12.50
	Overall	37.28	17.14	6.57	2.57	15.89

The proliferation percentage and plantlet height varied according to concentration of cycocel and line-to-line (Table 2). The proliferation ranged from 8.86

Table 2. Effect of different concentrations of cycocel on plantlet growth and percent proliferation in TPS parent lines of potato

Sl. No.	Lines	Plantlet height (cm) after one year				Overall
		0.5 gm/l	1.0 gm/l	1.5 gm/l	2.0 gm/l	
1.	MF-I	10.00 (50.00)	7.00 (40.00)	6.50 (20.00)	4.00 (15.00)	6.87 (31.25)
2.	MF-II	8.00 (45.00)	6.50 (40.00)	6.00 (30.00)	3.50 (12.00)	6.00 (31.75)
3.	TPS-7	9.50 (55.00)	8.00 (40.00)	7.50 (35.00)	3.00 (10.00)	7.00 (35.00)
4.	TPS-13	7.50 (50.00)	6.00 (42.00)	4.50 (40.00)	3.50 (11.00)	5.37 (35.75)
5.	TPS-67	8.50 (50.00)	4.50 (20.00)	3.00 (10.00)	2.00 (6.00)	4.50 (21.50)
6.	JTH/C-107	9.00 (45.00)	7.00 (20.00)	3.50 (12.00)	3.00 (4.00)	5.62 (20.25)
7.	EX/A-680-16	11.00 (40.00)	8.00 (15.00)	4.50 (12.00)	1.50 (4.00)	6.25 (15.00)
	Overall	9.07 (47.86)	6.71 (31.00)	5.07 (22.71)	2.93 (8.86)	5.94 (27.56)

(Figures in parenthesis indicate percent proliferation)

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to 47.86 % and plantlet height from 2.93 to 9.07 cm with different cycocel concentrations. In lines, proliferation ranged from 15.00 to 35.75 % and plantlet height from 4.50 to 7.00 cm. The maximum and minimum proliferation was recorded by TPS-13 and EX/A-680-16, respectively. The minimum and maximum plantlet height could be noted in TPS-67 and TPS-7, respectively. *In vitro* germplasm conservation in potato is on record at low temperature [1, 4-6] and using growth retardant in medium [2, 7].

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