ABSTRACT: The shoot cuttings of 26 genotypes treated with rootex were planted during August for generation of dihaploids during off season. The results indicated that the period of potato hybridization in case of medium and late maturing genotypes can be extended by shoot cutting technique. The early maturing genotypes, however didn’t respond. After pollination with dihaploid inducer parent, berries and seeds could be obtained. The berry setting percentage ranged from 0 to 36.67%.

In India, hybridization in potato is being done at Kufri (30°N, 75°E and 2370 amsl) during long day conditions (June-July). In certain cases, due to lack of synchronized flowering between male and female parents it is difficult to obtain desired success. In such cases it is necessary to extend/prolong the hybridization period which in natural field conditions at Kufri is not possible due to heavy rains and late blight; therefore, shoot cutting of pistilate parents was explored to be the possibility. Initiation of flowering in large number of genotypes depends upon their maturity behaviour as early maturing genotypes flower early whereas, late maturing genotypes are very late in flowering. During summer 2004, which almost was a normal potato season, the flowering in dihaploid inducer parent, IVP 35 (CP 3810) and IVP 101 (CP 3811) was expected by September-October, whereas, the flowering in most of the female lines by that time would have been over. Therefore, with the objective to attempt hybridization between these parental lines shoot cuttings treated with rootox were planted in the earthern pots during August.

Twenty six genotypes including commercial varieties and late blight resistant germplasm accessions were selected from the hybridization garden at CPRS, Kufri, which were planted in the fourth week of April, 2004. In the first week of August, the aerial stem (apical portion having 3-4 nodes) which did not initiate the flower buds were cut from all the above mentioned 26 parents and planted in pots. These pots were filled with 1: 1: 1 proportion of sand, FYM and soil (Simmonds, 1965). These pots were kept inside the glass house for three weeks and watered once a day and were shifted to a poly house thereafter. The stem cuttings of S. phureja male parent CP 3811 were also shifted to poly house. The pollination was done in the emasculated flowers of female parents with pollens of inducer parent. Observations were recorded on % plants established, plant height, number of flowers/inflorescence % berry set to total flowers pollinated and number of seeds/ berry. The whole experiment was conducted in completely randomized block design with two/three replications. The data were analyzed statistically using statistical software MSTAT-C (Michigan State University, USA).

There was a significant (P ≤ 0.05) difference between genotypes for % plant establishment, branches per plant,% berry setting and number of seeds per berry (Table 1). The per cent plant establishment from stem cuttings ranged from 0 (in 5 genotypes) to 75% (cv. Kufri Pukhraj). It indicated a varied response of genotypes for stem cuttings. The genotypes CP 3364, CP 1428, Kufri Megha, Desiree and Atlantic had no establishment i.e. all the cuttings failed to establish into plants. This might be due to the fact that all these genotypes are early/medium maturing genotypes. It clearly indicated that the time of cutting, i.e. planting of cuttings till tuber initiation is more important factor for getting good plant establishment. Poor response after tuber initiation for cutting has already been reported (Ewing, 1985).

Some genotypes (MS/82-797, CP 1449, CP 3158, CP 1588 and Kufri Jyoti) established very well similar to tuber grown plants. However, few genotypes did not established well but produced aerial tubers e.g. Desiree. It indicated that these plants did not develop roots and the food accumulated from the source was converted into aerial tubers. The available literature on these aspects stated that the cutting taken before tuber induction, responds well (Ewing, 1985) and the present study also supports this observation. Because the early maturing varieties had already initiated tuberization, they did not establish into plants.

Most of the genotypes flowered normally. The berry setting percentage ranged from 0 (cvs. Kufri Chandramukhi, Kufri Giriraj, Kufri Jyoti, Kufri Lalima and Kufri Pukhraj) to 36.67% (CP 3210). The lower % berry setting was
expected as the male parent was diploid species and female parents were tetraploid cultivated species (Peloquin and Hougas, 1959). It may be concluded from the present study that it is possible to extend/continue the hybridization for obtaining hybrid seeds from some difficult crosses and cultivated tetraploid and phureja diploids through shoot cutting technique. However, for getting good success, cutting should be taken before the tuber initiation in female parents.

**Literature cited:**

