

Growth analysis of Potato (*Solanum tuberosum* L.) under short day condition

SHASHI KAMAL, N. P. SINGH* AND VIRENDER KUMAR¹

Department of Veretable Sci. College of Agriculture, G. B. Pant University of Agriculture and Technology, Pantnagar

¹ Department of Genetics and Plant Breeding

(Accepted : December, 2005)

SUMMARY

A field experiment was conducted with six newly developed potato cultures viz., JW-160, JX-23, JX-216, MS/86-89, MS/89-60, MS/89-1095 with two popular varieties viz. Kufri Sutluj and Kufri Bahar at Pantnagar, during winter season in 2003-04. These cultures differed significantly for all the characters and maximum values or number of leaves/plant, shoot length/plant, fresh and dry weight of leaves and shoots/plant, leaf area index, number of shoots/plant and number of tubers/plant was recorded in culture MS/86-89. Maximum tuber yield was recorded in culture JX-23 followed by MS/86-89. These cultures also showed resistance against late blight as well as a possibility of acceptance under short-day conditions of tarai region.

Key words: Potato, Short day, condition.

Potato (*Solanum tuberosum* L.) is mainly grown under short day conditions in plains. The analysis of growth characters is an important potential device to know the physiological basis of yield of any crop. As the development of new genotypes having high nutritive value as well as higher yield is a continuous process in any crop and particularly in potato crop. With ever increasing demand of potato, it has become necessary to have high yielding and suitable varieties under cultivation in different agro climatic conditions to boost up the potato production in per unit area and per unit time. The present study was undertaken during the winter season in order to evaluate the newly developed potato cultures and identify the most promising ones for tarai region.

MATERIALS AND METHODS

The investigation was carried out under the agro climatic conditions of tarai belt of Uttaranchal at Vegetable Research Centre of G.B. Pant Univ. of Agriculture and Technology, Pantnagar and Department of Vegetable Science, during winter season of the year 2003-04. Six newly developed culture viz., JW-160, JX-23, JX-216, MS/86-89, MS/89-60, MS/89-1095 along with two popular varieties viz., Kufri Sutluj and Kufri Bahar were evaluated in randomized block design with three replications. Recommended package of practices were followed to raise the healthy crop. Observations were recorded on plant emergence (%), number of leaves/plant, number of shoots/plant, shoot length/plant (cm), fresh and dry weight of leaves and shoots/plant (g), leaf area index, number of shoots per plant, number of tubers/plant and tuber yield (q/ha).

*Author for correspondence

RESULTS AND DISCUSSION

Significant differences in relation to plant emergence were recorded at 30 days after planting in all the cultures (Table-1). Maximum emergence was recorded with JX-23 followed by MS/89-1095, where as minimum values were recorded with Kufri Sutluj. The possible reason faster emergence at early stage was shorter dormancy of seed tuber. These findings are in agreement with Singh, (1984).

Number of leaves per plant differed significantly in all the cultures (Table-1). Culture MS/86-89 produced maximum number of leaves where as minimum was observed with MS/89-60. This difference in number of leaves per plant might be due to the genetical character of the culture as well as their interaction with local environment. These findings are in accordance with Purohit *et al.*, (1970). Culture JX-23 produced maximum number of shoots per plant which was statistically superior to the rest of the culture (Table-1), minimum values was recorded in MS/89-1095. The higher number of shoots in culture JX-23 might be due to the presence of higher number of eyes on the mother tuber Bleasdale, (1965) and due to the genetic composition of cultures as well as environmental factors Molotskii and Razkevich, (1980). Maximum shoot length per plant was recorded in MS/86-89 which was statistically superior to MS/89-60 and MS/89-1095 (Table 1). Minimum shoot length was recorded in Kufri Bahar which was statistically at par with JW-160 and JX-216. The difference in shoot length was primarily due to genetic characters of the culture. These findings are in accordance with Purohit *et al.*, (1970) who reported that period of active growth of plants varied considerably both with place and variety.

Data pertaining to the fresh and dry weight of leaves