

EFFECT OF PLANTING METHODS ON SEED MULTIPLICATION COEFFICIENT OF EARLY POTATO CULTIVARS

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Abstract. *First early or 'new' potatoes are so-called because they are the earliest to crop, in June. They take 10-12 weeks to mature. Plant 30cm apart, with 60cm between rows, around 12cm deep. To obtain fast and uniform germination of potato plants, the tubers should be planted in moist soil or irrigated after planting to stimulate root development and more active germination of tubers in moist soil. Second early potatoes take 14-16 weeks to mature. As with first earlies, plant them 30cm apart, in rows 60cm apart, 12cm deep. Early, or new potatoes are fast and easy to grow. Dig fresh from the garden, they're a melt-in-the-mouth delight that taste so much better than shop bought ones. They also require much less space to grow than later varieties, so are ideal for small gardens. Try growing in the ground, in large containers or potato growing bags. January is the time to buy seed potatoes, but with so many varieties out there, it's worth knowing which ones have the best flavour and biggest harvests.*

Key Words: *potato plants, agro-ecological zones, diseasefree, minitubers, aeroponics, suboptimal agronomic practices.*

Introduction. There are a number of production problems. The major ones are unavailability and high cost of seed tubers; lack of well-adapted cultivars to the major agro-ecological zones; suboptimal agronomic practices; the prevalence of diseases and insect pests; and inadequate storage, transportation, and marketing facilities. To address these problems, the Ethiopian Institute Agricultural Research (EIAR)—the then Institute of Agricultural Research—in collaboration with the International Potato Center (CIP), initiated potato research. The research had as its main objectives to develop adaptable and high-yielding potato cultivars with good resistance to biotic and abiotic stresses; identify the best agronomic practices and storage systems; adopt the use of botanical seed as an alternative propagation method; develop seed production system in the country; and train farmers and other stakeholders. Shortage of seed potato has been recognized as one of the most important factors limiting potato production in developing countries. The production of clean seed is very crucial to sustain high production and productivity of potato in the country. Currently, the common method for propagation of important potato cultivars is through tubers. However, this propagation method has encouraged accumulation of tissue-borne viruses, fungi, and bacteria in subsequent seasons. This has led to significant losses in yield and tuber quality over the seasons. Therefore, the

multiplication of clean tuber seed is an essential part of a strategy for organizing a potato seed program and involves different methodologies and approaches. A prerequisite to a successful and sustainable seed scheme is a continuous supply and maintenance of pathogen-free seed. Quality seed of an improved potato variety is key to increasing the productivity of a potato crop. The genetic potential and other traits of a variety are determined by the use of healthy and improved seed. This is true because the usual method of potato propagation throughout the world is using the vegetative seed tuber. The TC technique employed in the micropropagation of potatoes consists of the aseptic cultivation of cells or fragments of plant tissues and organs in an artificial medium under controlled temperature and light conditions. Vigorous and disease-free potato plantlets can be obtained in the laboratory using this method, and then transferred to screen house in pots and aeroponics conditions for the production of minitubers. Moreover, the seed materials should be free of disease-causing pathogens. Clean stocks are first obtained by meristem culture, then these plantlets are transferred to seed beds, screen house in pots, and aeroponics to produce minitubers. Minitubers are commonly used in seed potato production to increase seed tubers. One of the advantages of this method is the maintenance of genotype identity, as meristem cells preserve their genetic stability more uniformly. Aeroponics is the process of growing plants in an air or mist environment without the use of soil or an aggregate media. Aeroponics refers to the method of growing crops with their roots suspended in a misted nutrient medium. This is an alternative method of soil-less culture in growth-controlled environments. Minitubers are those progeny tubers produced on in-vitro-derived plantlets.

Conclusion. At most of the places, Kufri Khyati yielded higher than the other early maturing cultivars. An important feature of this variety is that, unlike most of the early maturing varieties, it possesses moderate resistance to late blight. This variety performs well both under very early (60 days) and early (75 days) harvests. Best for roast potatoes – undoubtedly King Edward, although Maris Piper, Kerr's Pink and Setanta are very good too. Best for chips – Kerr's Pink and Casablanca are good choices. Best for jacket potatoes & mash – King Edward, Maris Piper. Best for fun factor – Pink Fir Apple produces funny looking tubers. When to Plant Potatoes. Potatoes grow best during cooler weather. Plant potatoes 2-4 weeks before the last frost in the spring, when the soil temperature is at least 40 degrees F. In warm climates, potatoes are planted from January to March and harvested between March and June.

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