

Toward production of elite potato seed using shoot tip meristem

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In Palestine, the traditional method of planting potato is the use of the whole or sectioned tubers. Tubers are bulky and perishable, requiring costly storage, handling, and transport. Moreover, the use of tubers as seed, presents problems for potato production.

Palestinian farmers imports annually 4000 tons (2000 tons to be planted in Spring and another 2000 to be planted in Autumn) from Holland and the second import (2000 tons) from Israel (MAO, 2009). The cost is about 5-6 Israeli shekels / Kg with total cost reaches to 10-12 millions Israel shekels. Framers usually keep small tubers obtained from Spring to be cultivated in Autumn, but this will lead to a reduced yield that will follow up with hike in price reaches to 5-6 Israel shekels / Kg.

Potato tuber of the commercial Spunta and Draga was successfully obtained using shoot tip culture. Ninety four to ninety five percent of shoot tips that were cultured on MS medium basal salt without growth regulators formed shoots within 3-4 weeks. No significant differences were seen in growth responses between the two cultivars. Shoot with 4-5 cm long were multiplied frequently on MS medium without growth regulators through lateral bud. Well rooted plants were transferred to green house for tuber production. The rate of survival was 100%. Tubers were produced after 2-3 months of planting hardened plant. Potato plants grown in soil mixed with sand gave better tuber size and number in caparison with those grown in Perlite alone in both cultivars.

Domestic production of most economically important potato elite seeds is considered very vital to be self independent in producing our own elite seeds and to reduce the cost of potato production that will ultimately reduce the price.

These results clearly show that minituber production in Palestine is very much possible and the total cost of minituber reduced by 40-50 %.