PRODUCING HEALTHY SEED POTATO TUBERS

The Potato Laboratory produces disease-free potatoes for the Seed Certification Scheme through a process called micropropagation

Background

Disease-free seed at planting is a prerequisite for a productive crop. The potato is propagated vegetatively and is prone to seed degeneration from continued multiplications and the accumulations of pathogens (particularly viruses), from one generation to the next. Most countries have formal systems in place, usually referred to as Seed Certification Schemes, which include various production steps whereby a 'flush-through' system is applied to renew seed stocks.

The Department of Agriculture, Fisheries and Food operate the Seed Potato Certification Scheme. The Potato Laboratory maintains a collection of more than 300 virus-free potato varieties and provides new seed through the process of micropropagation each year to seed potato growers participating in this Scheme.

Steps in Potato Micropropagation

Step 1

Tubers from virus-tested plants, which have been tested for bacterial-rot diseases, are allowed to sprout in the laboratory.

Step 2

Sprouts are removed from the tuber and surface-sterilised. The meristem (tissue found at the growing point of all plants and free from pathogens) is cut from the sprout tip under a dissecting microscope and transferred to a liquid growth medium.

Step 3

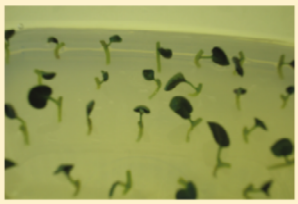
The meristem develops to form a microplant.

Step 4

The microplant is cut to give nodal cuttings.

Step 5

Nodal cuttings are planted in solid growth medium. Each nodal cutting produces a new microplant. Step 4 is repeated until the required number of microplants is produced.



Step 6

Microplants are transplanted into soil-free compost in an aphid-proof plastic tunnel or glasshouse and allowed grow for up to 100 days.

Step 7

Minitubers are harvested, stored in a cold room and sold on to seed growers the following spring.

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