

USDA grows strawberries in test tubes

BELTSVILLE, Md. — Strawberry plants are rejuvenated by propagation in test tubes, according to USDA researchers, Gene Galletta and Richard Zimmerman. Propagation in laboratory tissue culture increases strawberry yields, and the berries taste as delicious as fruit produced by conventional methods.

Although tissue-culture propagation has been practiced in Europe for several years, until now it had not been tested with U.S. varieties. Galletta and Zimmerman of USDA's Agricultural Research Service, working with Harry J. Swartz at the University of Maryland, demonstrated last year that the technique stimulates yield increases for strawberries varieties 'Earliglow,' 'Redchief,' and

'Guardian,' which are widely grown in the U.S.

This research was awarded the George M. Darrow Award for excellence in viticulture and small fruits research. The award was presented on August 12, at the American Society for Horticultural Science meeting at Iowa State University, Ames, Iowa. A paper describing the research, "Field Performance and Phenotypic Stability of Tissue Culture-Propagated Strawberries," was published in the September, 1981, edition of the Journal of the American Society for Horticultural Science.

Strawberries are usually propagated by cutting runners and rooting them, said Galletta. A high-yielding plant will produce 100 new plants in a year.

Now a small piece of a strawberry plant, grown by tissue culture, can produce six shoots in only three weeks. Then each shoot, when transferred into another tissue-culture flask, produces three to six more shoots in the next three-week period. In tissue-culture flasks the plants are furnished vitamins, minerals, and hormones that stimulate growth.

"With tissue culture, theoretically, you can get a million new plants in a year," said Galletta.

In a side-by-side comparison, the researchers tested strawberry plants from tissue culture and from runners. They grew the plants in matted rows in which plants were set out four feet apart and allowed to fill in the two-foot-square beds.

The first year, the tissue-cultured plants produced 80 percent more runners in the field than plants from runners. The tissue-cultured plants also produced 24 percent more strawberries, Galletta said.

Although the fruit from the tissue-cultured plants are smaller, the berries were otherwise normal. They had the same taste, shape, color, and texture as fruit grown by conventional methods. And the tissue-cultured plants were more uniform and survived better in the field, Zimmerman found.

Tissue-cultured strawberries cost more than plants produced from runners, which may discourage some growers from using them. But nurseries are likely to profit from this new technique, since the invigorated,

tissue-cultured plants produce more runners in the first year, Galletta said. Nurserymen, therefore, could provide more plants to growers.

When runners from tissue-cultured plants are transplanted in their second year, they produce the same number of runners as plants grown by conventional methods. So the use of tissue-cultured plants by nurserymen would not affect the density of plants in the growers' fields.



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