

King Karl

I noted in the article entitled, 'Honey-sweet' Pear by Jules Janick (*HortScience* 12:357, 1977) that one parent of US 220 was listed as 'Roi Carlo de Wurtemberg'. This name is incorrect for several reasons. The original name was 'König Karl von Württemberg' (*The Pears of New York*, p. 438) which changed in French to 'Roi Charles de Wurtemberg'. In Italian, this changes to 'Re Carlo di Wurtemberg', a name misspelled by other workers in past ASHS publications as 'Ree Carolodi Wurtemberg' or 'Ree Carlo di Wurtemberg'. I have hopes that someday someone will spell the name correctly even if it turns out they're referring to the wrong cultivar!

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History of 'Caserta'

Often the history of a cultivar is forgotten or lost. In a letter to me from Don Taylor, Robson Seed Farms, he quotes Dr. Larry Curtis concerning the development of 'Caserta' squash.

"Concerning 'Caserta', this is an inbred derived from a mixed packet of seed which I received from Italy about 1941. I continued to select inbred lines from this packet and eventually found five or six interesting inbreds which shared many characteristics. The final selection I named 'Caserta' for a famous Castle in Italy where I have been stationed during the war. As you know this is a single stem type with an upright growth and few, if any, side branches. It has a Christmas tree appearance with all of the leaves taking horizontal position. It is a sparse producer of staminate blossoms, yet it provides enough for self pollination. Its production of early fruit is superb as its total production. I thoroughly expect this variety to distinguish itself as a high producer of edible fruit as well as a worthy progenitor of new varieties."

Mr. Taylor also mentioned that no one has this information except Dr. Curtis and he is near 80 years of age.

Question — Does anyone know the history of the Dickinson field pumpkin (*Cucurbita moschata*)?

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FROST-TOLERANT TOMATOES

Tomato, the most popular of garden vegetables, is readily killed by early- or late-season frosts. Plant breeders in the Department of Seed and Vegetable Sciences at Geneva, have isolated a source of frost tolerance and, by developing a series of frost tolerant breeding lines, have demonstrated the genetic basis for differences in tolerance. Furthermore, the progeny from crosses showed more tolerance than either of the parents. Repeated tests have shown that the cold tolerant lines are capable of withstanding temperatures of at least -3°C (27°F).

CHEMICAL LANGUAGE FOR APHIDS

An aphid under attack warns fellow aphids, through a chemical language, to fall or leap away from the oncoming enemy. The duration of the chemical signal is brief, up to 15 seconds, but is highly effective in issuing a warning.

New York Agricultural Experiment Station entomologists have isolated and defined two such chemical alarms used by different species and have succeeded in manufacturing several versions of one of the two chemicals. Since these chemical analogs do not break down as quickly as the real one, they keep insects from returning to the feeding site for an extended period.

LISTS OF UNAVOIDABLE DEFECTS AVAILABLE FROM FDA

FDA has released its current list of action levels for natural or unavoidable food defects which cause no hazards to health. FDA sets the action levels because "it is not now possible and never has been possible, to grow in open fields, harvest, and process crops that are totally free of natural defects."

FDA said the alternative to establishing natural defect action levels in some foods would be to insist on increased use of chemical substances to control rodents, insects and other natural contaminants. Because defect levels have been established, FDA said, does not mean that a manufacturer need only stay below that level. The levels represent the limits at or above which FDA will take legal action against a product to remove it from the market.

FDA emphasized that compliance with defect levels will not prevent FDA from acting against a manufacturer who does not observe Good Manufacturing Practices (GMP). Unsanitary plant conditions, for example, are a violation of GMPs and would render the food unlawful, even though the defect levels may be below FDA's action levels.

Copies of the list may be obtained from the Food and Drug Administration HFF-342, 200 C Street S.W., Washington, DC 20204.

ADVANCES IN PLANT LIGHTING

Low pressure sodium (LPS) and high pressure sodium (HPS) lamps are more effective than cool-white fluorescent (CWF) lamps or CWF in combination with incandescent (I) for starting plants and could result in substantial increases in plant yields and savings in energy costs according to research by USDA researchers H.M. Cathey and L.E. Campbell at Beltsville, Maryland. The addition of incandescent light enhanced the horticultural effects of the other lamps. Light comprised of wavelengths between 700 to 850 nm (nanometers = 10^{-9}m) and supplied only by I lamps, or by sunlight, is required by most plants for stem elongation, increased fresh weight, and early flowering and fruiting.

The LPS + I lamps were 8% more energy efficient than CWF + I, 36% more efficient than LPS alone, and 51% more efficient than CWF alone. These percentages show efficiency expressed in watts per square meter at 0.25 meter above test plants. The ARS researchers found that HPS + I are about equal to CWF + I in efficiency. However, where acceptable and useable, growers might go to HPS + I for the additional heat radiated from HPS lamps.

Because LPS lamps are tubular in shape, they can be used in designs similar to those for CWF lamps. But HPS lamps require a different type of reflector—parabolic in shape as opposed to the linear reflectors which are used for CWF or LPS.

LPS lamps also produce more light per lamp than do CWF. Cathey and Campbell found that three 180 watt LPS lamps can light an area that would take eight 115-watt CWF lamps. HPS lamps have a similar efficiency. Thus, LPS lighting or HPS lighting could reduce costs for the grower by requiring less power, less wiring, and for supplementing natural light in greenhouses, LPS or HPS fixtures will cause less shading of crops.

Agricultural Research

Send items of interest to: Jerome Hull, Jr., Dept. of Horticulture,
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Not letters

PLANT CAUSES PHOTOSENSITIZATION

Bishops weed, *Ammi majus*, has been found to cause photosensitization (excessive sensitivity to sunlight) to cattle and sheep in the U.S. Gulf coast area. Researchers in Texas collected the plant and fed it to cattle and sheep in measured amounts under controlled conditions. After exposure to sunlight, all the animals developed symptoms of the disease as did the seven employees who handled the plant. Both animals and men recovered from the disease, although new sores sometimes appeared on previously unexposed skin areas. This was found to occur up to 30 days following initial contact with the plant.

The disease is like a super-bad sunburn. On the animals, it first produced redness, then blistering, loss of skin, and sores on muzzle, ears, udders, and other body parts. Dark as well as light colored animals are affected. The symptoms in themselves have not been known to be fatal except when followed by secondary complications such as screwworm infestations.

NEW ROOTING TECHNIQUE FOR TREE IMPROVEMENT

Bob Hare of the U.S. Forest Service's Southern Forest Experiment Station has reported a dependable way to root tree cuttings which frees forest geneticists from the laborious task of grafting their stock. Few tree species will root from cuttings under normal circumstances.

Hare's new rooting technique involves three vital phases; 1) the rooting powder, 2) planting medium, and 3) shoot girdling. He combined two auxins, which work better than one alone and he added a growth retardant, daminozide. Other ingredients included powdered sucrose for root food and the fungicide, captan, to inhibit root rot. Instead of peat moss, a standard rooting medium, he used perlite and vermiculite which also helps inhibit root rot.

The key to his technique is girdling the shoot a month or two before cutting. By removing a ring of bark 6 to 8 inches from the tip, he prevented translocation of sugars out of the shoot via the inner bark. Food reserves therefore accumulated above the girdle where they induced formation of callus tissue and root primordia. This process was enhanced by treating the upper part of the wound with the rooting powder paste, which was then covered with saran wrap and foil.

After 4 to 8 weeks, the branch is severed at the girdle, the wound retreated with powder, and the cutting inserted into the greenhouse propagating bed under intermittent mist. In one test, 100% of cuttings from sycamore rooted in 1 month.

MYCORRHIZAE INCREASE ROOTING

Mycorrhizae fungi live in a symbiotic state in plant roots. In tests conducted on cuttings of bearberry and huckleberry, two popular native landscape plants that are difficult to propagate using normal rooting procedures, more cuttings developed more roots when the rooting medium was inoculated with mycorrhizae.

The increased number of roots increases the plant's nutrient uptake and enables it to become established in soils during the stressful period following transplant. It is also believed that the mycorrhizae produce many other growth benefits in plants well beyond the rooting stage.

Exactly how the mycorrhizae increase rooting is unknown. ARS plant pathologist, Robert G. Linderman, Ornamental Plants Research Laboratory, Corvallis, Oregon, who is conducting the study, suspects that the fungi are producing substances that create a chemical change in the cutting or the rooting environment. This change induces the plant to produce more roots than normally.

Agri-research Notes

PEAR WINE

According to the California Canning Pear Association, the growers' bargaining association, a pear grower with 50 tons of pears that had no home turned the 50 tons into pear wine. It was lucky that the grower also operated a winery, and it was further lucky that the pears lent themselves to wine making.

Gallo wine company purchased about 35,000 tons of California's 1977 pear crop as fermenting material and is reported to have contracted an additional 10 to 15,000 tons in Medford, Oregon area. Wine makers are reported interested in using pears as an alternative to apples and other fruit juices or concentrates in pop wines.

SHELF LIFE OF NUTS EXTENDED

A new packaging technique can add months to the shelf life of nuts and such hard-to-keep cereal grains as brown rice through a technique that takes advantage of the carbon dioxide-sorbing characteristics of the seeds.

The simple and economical process involves placing the nuts or grain in a plastic bag impervious to carbon dioxide, flushing with carbon dioxide and heat sealing the bag. Almost immediately the seeds begin to sorb the carbon dioxide and within 24 hours the process is complete, leaving the seeds in a vacuum.

The sorption phenomenon is similar to that in activated charcoal. The carbon dioxide is believed to be held in solid solution inside the pores of the seed. No refrigeration or other environmental safeguards are required.

Research at the National Peanut Research Laboratory, Dawson, Georgia, has shown that raw peanuts packaged by the new technique have retained their freshness and flavor for at least 8 months while roasted peanuts have been stored up to 4 months without losing their freshness.

TISSUE CULTURED VINEYARD

W. R. Krul, ARS, USDA, has established a 65-vine planting at Silver Run, Maryland in less than one year from just a cubic centimeter of grape vine tissue in a research laboratory. The vineyard is part of an experiment to propagate grape vines faster and more efficient through tissue culture. Thousands of grape vines can be produced from a single tissue culture in half the time it takes to propagate a few hundred vines by stem cuttings, the conventional way to propagate grapes.

Dr. Krul's vineyard is the first in the U.S., perhaps in the world, consisting of vines grown entirely from isolated cells and is expected to be in full production by 1980.

Tissue culturing provides scientists and nurserymen with an aseptic method of obtaining true-to-form plants from bits of immature flower buds, growing tips, or other tender parts of plants that possess disease resistance or other desired characteristics.

Hundreds of tiny 'Seyval' grape plantlets are still being harvested from the original cubic centimeter of cells. By adjusting the nutrient medium in test tubes, Krul can induce undifferentiated cells, called callus tissue, to form embryos, which can then be further cultured into mature vines.

METRIC WEATHER

The National Weather Service will be one of the first government bureaus to convert to full-time use of the metric system. The Weather Service wants full conversion by the first of 1979, and until that time will be reporting the temperatures in both conventional and metric units until June next year. Then, it will be metric reporting from that time on. Some exceptions are precipitation which will be under dual units in September and October of that year and metric after October.

CANCER CURE?

USDA researchers at the Northern Regional Research Center, Peoria, have found leukemia inhibitors in Japanese plum-yew (*Cephalotaxus harringtonia*). Trees are scarce in the U.S. and grow slowly. Cultured tissues are being investigated as an alternative source for production of the compounds that inhibit leukemia in laboratory mice.