

Minnesota Nurserymen's newsletter

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CONNELL RED, A NEW APPLE VARIETY

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The introduction of a new variety of fruit usually arouses much interest, not only among fruit growers, but also among the general public. Such interest is especially keen in Wisconsin and Minnesota because our severe winter climate always has limited the kinds and varieties of fruits that can be grown in this area.

Connell Red, a new apple, was formally named at a ceremony held at the Connell Orchards, Menomonie, Wisconsin on October 4. The new variety, believed to be a red sport of Fireside, was discovered in the Connell orchard in 1949.

In tracing the history of this new variety, we must go back to 1914 at the University of Minnesota Fruit Breeding Farm when a large amount of apple seed was collected for use in an extensive apple breeding program. Some of this seed was from controlled crosses and some from open-pollinated fruits of varieties which were hoped would be good parents. Several thousand seedlings were grown and planted in a test orchard in the spring of 1917.

This orchard endured many vicissitudes. The so-called "Test Winter" of 1917-1918 destroyed hundreds of the less hardy trees. It was in the days of World War I, and because of lack of adequate help, the orchard suffered from some neglect. Part of the labels were lost, and it became impossible to trace the parentage of many of the seedlings. Several excellent varieties were selected from this orchard, and it is unfortunate that their parents are unknown.

One of the best of these "war orphans" was introduced in 1943 under the name of "Fireside." The original tree bore its first crop in 1927. The fruits were of such fine quality that the second test was started immediately by top-working the variety into young bearing trees. Succeeding crops on the original seedlings tree were so promising it was decided, in 1930, to combine the second and third tests by distributing grafting wood to fruit growers in many parts of the county.

By the late 1930's the new variety, identified as Minnesota No. 993, was fruiting in many test plantings. The trees proved to be very winter-hardy and productive. The fruits were large, highly flavored and kept in good condition throughout the winter in common storage. Under good growing conditions, the color was attractive; a warm red striped and splashed over a yellow ground.

In some northern locations, and in one or two seasons at the Fruit Breeding Farm, the color failed to develop satisfactorily. By 1943, however, the tests demonstrated that the public greatly appreciated the rich non-acid flavor of this variety and would accept it even when the color was not well developed. It has as much flavor and quality as the popular Delicious and is a much better storage apple.

After the Fireside was formally named and introduced in 1943, nursery stock became generally available, and many growers added it to their orchard plantings. Among these were Mr. William Connell of Menomonie, Wisconsin, who purchased his trees in 1943 from the Andrews Nursery Company of Faribault, Minnesota. When Mr. Connell's trees came into bearing, one differed from the others in that it produced fruits with a solid dark red color instead of the striped and splashed red over yellow. Mr. Connell's interest was aroused. Was it a variety mixture that had got accidentally into his nursery order, or could it be a true color sport of the Fireside?

Samples were submitted to many fruit growers and Experiment Station pomologists. All agreed that it seemed to be a color sport. When top-grafted into other trees, it reproduced the same high colored fruits as did his original tree. When Mr. Connell was finally satisfied that he had a color sport of the Fireside, he secured a plant patent for the new variety and arranged for propagation of nursery stock.

While the perfect variety of fruit may never be produced, it is true that modern varieties are step by step approaching that goal. The Connell Red has achieved one such step.

Trees will be distributed by Connell, Schneider, Connell, Inc., Box 89, Menomonie, Wisconsin.



BASIC CAUSES OF WINTER INJURY¹

Leon C. Snyder

Professor and Head, Department of Horticulture
University of Minnesota

Why do certain plant varieties show winter injury, while others do not?

Why do certain plants show injury one winter and not another? To answer these questions let us look at the basic causes of winter injury.

¹ Presented at the Thirty-Second Annual Meeting of Minnesota Nurserymen's Association Dec. 2, 1957.

Winter injury may be caused by suffocation, desiccation, or ice formations within the plant tissues.

Suffocation or smothering may be caused by ice or packed snow. Perennials in poorly drained soil may show this type of injury. Packed snow caused by walking across a lawn could result in dead grass the following spring.

Desiccation is a more common cause of winter injury. Plants, both deciduous and evergreen, lose some moisture through their stems and leaves by transpiration throughout the winter months. If this loss is not made up by water taken up by the roots, desiccation results. This type of injury is most serious on evergreens such as arbor-vitae, hemlock and yews and is more serious on soils that are deficient in moisture and during periods of bright sunshine or high winds. For this reason home owners are urged to water their evergreens thoroughly in the fall just before the ground freezes. These evergreens should be planted in sheltered locations with protection from the afternoon sun.

Injury resulting from the formation of ice crystals is less thoroughly understood. Ice crystals form in most plant tissues when the temperature drops much below freezing. Some plants can freeze solidly and not be injured. Others are killed before the temperatures get low enough for ice formation. If the temperature drop is slow, ice crystals form in the intercellular spaces. This results in the removal of water from within the cells and a gradual desiccation of the cell contents. If the temperature drop is sudden, ice crystals may form within the living cell. If the plant thaws out gradually, there will be less injury than when the temperature rise is rapid. Repeated freezing and thawing will be more harmful than continuous cold.

Plants subjected to freezing temperatures before they have had a chance to harden for winter will be injured much more than they will if the plants are well hardened. The Armistice Day storm of 1940 and the sudden freeze on the west coast in November of 1955 resulted in severe losses. In both cases, the weather had been mild and conditions were favorable for growth right up to the time of the freezes. This naturally raises the question of what happens to plants during the hardening period. It has been noted that the sugar content of plant tissues increases as temperatures drop in the fall. The amount of free water in the plant tissues decreases and the amount of bound water held by hydrophilic colloids increases. How do these changes affect the ability of a plant to withstand cold? The amount of sugar formed is not enough to prevent ice formation. The sugar apparently reduces the harmful effects of ice crystal formation accompanied by shrinkage of the protoplasts and subsequent thawing. Cells protected by sugar can reconstitute themselves after freezing with less injury than cells lacking sugar. The decrease in free water in the plant reduces the amount of ice formation.

Plants that are weakened by summer drought or adverse soil conditions are more subject to winter injury than healthy plants. Plants that grow too rapidly or late in the fall are also subject to severe injury. A moderate rate of growth seems desirable. This accounts for the fact that losses in the nursery where growing conditions are more or less ideal may be

greater than where the same species is planted in the lawn and the plants have to compete with grass roots for moisture and minerals. This is particularly true of plants of border-line hardiness such as Crimson King Maple and Moraine Locust.

Winter injury may express itself in a variety of ways. Death of the plant is the most severe symptom of injury. In the case of evergreens, the browning of the leaves is the most common symptom. Tip killing is common on plants of marginal hardiness such as weigela and smokebush. Other forms of injury include crotch cankers and sunscald.



FOOD FOR THOUGHT

Walter P. Trampe
Nursery Inspector

Minnesota State Department of Agriculture

JAPANESE BEETLE -

The Japanese beetle was brought into the United States in 1916 with nursery stock which was shipped from Japan. There was a gradual spread of the area infested by this insect from 1916 to 1949, a period of 33 years. However, the area infested from 1949 through 1956, a 7 year period, was approximately triple in size to that which was involved prior to 1949. It would appear that the spread and distribution of this pest is taking on a snowballing effect which is of considerable concern to agricultural interests all over the country. The infested area is generally concentrated in the region of the east coast. It has been moving westward in isolated outbreaks which often enlarge and coalesce to form a larger section. This is one such area in northwestern Indiana which appears now to have an infestation which cannot be eradicated in the foreseeable future. It is conceivable that insects from this area could become established in Minnesota. The Japanese beetle presents a formidable and real threat to the nursery industry and to all agriculture in the state.

THE SOYBEAN CYST NEMATODE -

This pest was found in North Carolina in 1955. Shortly thereafter an infestation was discovered in the southeastern corner of Missouri. On December 13, 1957, the U. S. D. A. listed acreages infested as follows:

<u>STATE</u>	<u>COUNTIES INFESTED</u>	<u>ACREAGE</u>
N. Carolina	3	2084
Mississippi	1	300
Kentucky	1	275
Tennessee	4	6833
Missouri	3	2852
Arkansas	2	2059

The infestation is believed to be confined to two general areas. The pest is associated with the soil and could be moved readily in balled and burlapped nursery stock.

CANADIAN RESTRICTIONS -

The province of British Columbia has, for a number of years, required an oriental fruit moth

certificate to accompany each shipment of fruit trees which has entered the province. In the case of shipments originating in Minnesota, it was sufficient to state that the trees were grown in Minnesota, and that no oriental fruit moth was known to exist in the state. Recently these import regulations were rewritten to require the fumigation of all host plants of oriental fruit moth. Anyone contemplating the shipment of fruit trees into British Columbia should write or phone the writer for further information. It is questionable if such a shipment would be practical under these restrictions.



Editors Comments

R. J. Stadtherr

University of Minnesota 1958 Introductions

Garden Chrysanthemums

Minnehaha and Princess are two new varieties which were introduced in 1958 by the Agricultural Experiment Station. Minnehaha has full - double, large, rosy - salmon blooms. The plant is medium tall and the flower sprays are especially good as cut flowers. Princess has double 2 inch flowers of old rose with gold centers and gold tipped forked petals. The plant is low-moundlike in growth.

Flowering Crabapple

Radiant is an outstanding new flowering crabapple variety. Flower buds are deep red. The single flowers are deep pink of medium size. Annually the trees have been covered with flowers which remain colorful for almost two weeks. Small $\frac{1}{2}$ -inch bright red fruits reach their peak of color and size in September. The fruits persist on the trees throughout the winter if birds don't devour them earlier. Birds are especially fond of the fruits. New foliage is reddish-tinted, later becoming green. In autumn the red pigment in the leaves becomes very pronounced and the leaves are very attractive. The trees are compact and upright in growth. They are completely hardy in all parts of Minnesota, where they have been tested.

Gooseberry

Welcome is a new variety of gooseberry, which is virtually thornless. The medium large fruits have prominent veins which are green but inconspicuous when ripe. The light dull-red fruits have pink flesh and few, small seeds. The flavor is mildly tart, of good quality. The fruits can be used to make jam and pies. The bushes are vigorous, medium upright to spreading, relatively free from disease and very productive.

Apple-Crabs

Centennial and Northland are the names of two excellent new varieties developed by crossing Dolgo with a commercial apple variety.

Centennial has medium sized dark yellow fruits with bright to dark red stripes. The crisp, tender, juicy flesh is very delicious when eaten. Fruits ripen from late August to early September. The flowers are large, white and showy. The medium to small sized trees are compact and sturdy. Fruiting habit tends to be biennial on mature trees.

Northland is an extremely hardy variety developed especially for northern Minnesota regions. The highly attractive deep red fruits resemble Dolgo in shape and general appearance. They are larger and much better for dessert purposes. They are useful for sauce, jelly and pickles. The trees are medium in size, open in habit, relatively hardy and very productive.

Two New Reports

For more detailed and complete information on these new introductions get Miscellaneous Report 29 "New Ornamentals for 1958" and Miscellaneous Report 30 "Three New Fruits". Copies may be obtained by writing to: The Bulletin Room, University of Minnesota, Institute of Agriculture, St. Paul Campus, St. Paul 1, Minnesota.



Plant Propagators Meeting

Mr. Albert Johnson, in charge of research in the breeding of woody ornamental plants at the University of Minnesota, and your editor attended the Seventh Annual Meeting of the Plant Propagators Society at Cleveland, Ohio, November 21 through 23.

There were 196 registrants attending the meetings. Presently there are 340 memberships. Lively educational discussions filled the program.

The meetings began with a symposium on spruce propagation. Dr. R. P. Meahl of Pennsylvania State University reviewed the literature on propagation by seedage, grafting and cuttings. Practical methods of growing spruce by seeds was discussed by Mr. Thomas Pinney, Evergreen Nursery, Sturgeon Bay, Wisconsin. Mr. John Ravenstein, Mentor, Ohio, told about grafting and Dr. Stewart Nelson, Central Experiment Farms, Ottawa, Canada, presented a paper by Mr. R. W. Oliver, of the same station, on the use of cuttings.

The Thursday afternoon symposium was on the propagation of herbaceous perennials and annuals. Mr. Phil Jones, George J. Ball Inc., Chicago, Ill., gave an excellent discussion on production methods and merchandising of bedding plants. Slides of some of the newer annuals were shown. Mr. Kenneth Fisher, Kingwood Nurseries, Mentor, Ohio, presented an interesting discussion on propagation of perennials. Root cutting about $\frac{1}{8}$ inch in diameter and $1\frac{1}{2}$ inches long were used to propagate garden phlox from late summer to early fall. Polygonum reynowtria was also propagated by using root cuttings. Mist propagation was used for bleeding heart, veronica, Frikarti asters, and many others. A mixture of half Fermate and half Hormodin #2 was used to treat cuttings of Bristol Fairy Babysbreath.

Mr. George Rose and Henry Fields, Shenandoah,

Iowa, told about their experiences with pot culture for perennials. A mixture of 3/4 ground sphagnum moss and 1/4 styrofoam was excellent for shipping plants in pots. They favor the re-usable plastic pots. A polyethylene sleeve was used on many plants to reduce moisture loss. Tops of the plants were exposed. Adhesive backed tape was placed directly on the pot to correctly identify the plants. Ureaform fertilizers were used and applied only after hunger signs were shown.

The use of high concentrations of growth substances for short periods of time was utilized by Dr. L. J. Enright, University of Maryland with Mahonia beali. Up to 20,000 ppm of IBA for 10 seconds proved to give excellent results. Mr. Leslie Hancock, Woodland Nurseries, Cooksville, Ontario, obtained better rooting percentages of the pink-flowered smoke bush by etiolating and layering the long shoots. Mr. George P. Blyth, Mc Connell Nursery Co., Fort Burwell, Ontario, propagates many evergreens in an electric cold frame run at 60°F. Some of the grafting was done in mid-January.

Mr. Jack Hill, D. Hill Nursery Co., Dundee, Ill., said they propagated directly in 1 gallon containers. Multiple cuttings were used in many cases to produce a more compact, more appealing plant in a container.

Dr. K. W. Reisch, Ohio State University continued this discussion. The use of 1 to 4 hardwood cuttings stuck in March and April was very satisfactory with Weigela, Philadelphus, Forsythia and Rosa hugonis. Equal parts of sand, soil and peat were used as a medium. Plants were fertilized every two weeks through the use of a Hozon proportioner.

Mr. Harvey M. Templeton Jr., Phytotector, Winchester, Tennessee, told about the problems of overwintering Viburnum carlesi. Unprotected cuttings grown under mist tend to remain vegetative. After the first freeze in fall many of the stems crack and these rooted cuttings die. Saran screen, placed over a semi-circular frame, was used to induce onset of dormancy by reducing light and preventing sudden temperature drops. Two mil polyethylene was used.

Dr. L. L. Baumgartner, Baumlanda Horticultural Research Laboratory, Croton Falls, New York, discussed the use of Wiltpruf on cuttings. He said that a mixture of equal parts of Perlite and peat gave better aeration and penetration than soil mixtures for canned nursery stock. The sedge or woody peats were preferred.

Other interesting discussions included: Synthetic Aids to Propagation by Dr. A. E. Hitchcock, Boyce Thompson Institute, Yonkers, New York; a panel on propagating structures; Dwarfing and Hybridization Techniques by Dr. Karl Sax, The Arnold Arboretum, Jamaica Plains, Mass., and a panel on propagation of unusual plants.

If you are interested in propagation practices or methods for any particular crop and would like to know more about it, let us know and we will include it in one of your newsletters.

Another interesting, well-attended convention is now history. Annually, it seems, attendance increases. There were 143 registrants this year.

Since there isn't enough space available to cover the program in this issue, we will include some of the reports in succeeding issues of your newsletter. Dr. Leon C. Snyder's discussion, given at the convention, appears in this newsletter. Summaries of the talks given by: Mr. L. Morgan Yost, landscape architect, Kenilworth, Ill., on "The Relationship of Architecture and Landscape Design"; Mr. Jack Siebenthaler, Siebenthaler Nursery, Dayton, Ohio on "Garden Store Merchandising" and others will appear later.

Mr. Kim Andrews, president, Mr. Larry Bachman, vice-president and Mr. Ed. Reid, secretary-treasurer, were re-elected.

Mr. Russ Zakariasen was selected as a delegate to the 1958 AAN convention with Mr. Charles Hawkins as his alternate. Mr. Kim Andrews is the second delegate with Mr. Dick Andrews as his alternate. Mr. Harry Francis and Mr. Charles Hawkins were re-elected to the executive board. Mr. Frank Seifert was chosen again to head the nursery operating research committee.



NITROGEN CONFERENCE SCHEDULED

The upper Midwest's first nitrogen conference will be held Feb. 20-22 at the Lowry Hotel, St. Paul. The conference is sponsored by the Midwest Soil Improvement committee and the University's Soils Department. University soils experts and outstate speakers will review latest nitrogen developments. For further information write to W. P. Martin, head, Soils Dept., University of Minnesota, St. Paul.



HAVE A HAPPY, PROSPEROUS AND GLORIOUS
1958!



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