



WINTER-KILLING OF TREES AND FRUITS, 1950-51

A. J. Olney

The winter of 1950-51 will go down in history along with others of extreme severity. Temperatures of zero and below began on November 24. December was very cold and snow and ice remained through most of January. On February 1, another cold wave began with temperatures reported from 15 to 30 degrees below zero in all Kentucky except the eastern section.

Some of the older folk will compare this with the winters of 1898-99 and 1917-18. These winters are remembered because of the duration of cold temperatures and the amount of snow and ice; however, there have been other years when low temperatures of shorter duration occurred and damage to fruit plantings was nearly equal to that of the more severe winters. The winter of 1935-36 was such a winter and to a lesser degree, the winters of 1939-40 and 1941-42.

Winter-killing of fruit trees and plants does not follow a set pattern. Much depends on the condition of the trees, the humidity, and the rate of freezing and thawing as well as on the degree and duration of cold.

Most of the fruit buds of peaches were killed throughout the state and trees in most areas also show injury to some extent. In some orchards, the tips of the new growth have been killed back a few inches and in most areas there is considerable browning of the heart wood. Occasionally, trees show some splitting of the bark of the trunk. It appears that weak trees and those that bore a large crop last year are injured more than those that produced no crop. Many young, moderately vigorous trees show less damage; however some over-vigorous, very fast growing young trees have been severely injured.

Kentucky Agricultural Experiment Station
University of Kentucky
Lexington

Severe injury has been found on sweet cherry trees and some browning of the heart wood on sour cherries, plums and some varieties of pears. In general, apples seem to have escaped serious injury; however, some internal browning of apple twigs has taken place and a slight browning of tissues behind the fruit buds has been found on some varieties, especially Jonathan, and it may be that this will affect the set of fruit. Grapes show considerable killing of last year's canes and buds, and some tender vines killed to the ground.

An appraisal of winter damage cannot be made until growth can be observed in the spring or summer. In the meantime, it is recommended that trees that show browning of the heart wood or killing back of branches should not be pruned until the growth is well started in the spring. Dormant oil sprays should not be used on injured peach trees since the oil may cause additional injury to the buds and wood.

The recovery of winter-injured trees will be aided by providing the best possible conditions for growth. The use of nitrogen fertilizers or manure will help to stimulate the growth of injured trees and spring cultivation of trees in sod probably will be beneficial also.

After previous severe winters trees often have made remarkable recovery. It is not recommended that orchards showing injury be removed at this time unless there is some other good reason for doing so. As in past years, it will likely be late in 1951 or even 1952 or 1953 before the full effect of the winter injury to the trees can be determined.

PECANS IN WESTERN KENTUCKY

W. W. Magill

Seedling pecan trees have been growing wild in western Kentucky for generations and during the past 30 years the income from the nuts have been a regular source of farm income on many farms. They are especially abundant in the Ohio and Mississippi River bottoms, from Owensboro to Reelfoot Lake.

Some of the native seedling trees are known to be over 100 years old, some trees are over 5 feet in diameter and have a spread of branches of over 100 feet. Yields of the nuts produced some years is over 400 pounds per tree. Most of the nuts are rather small and have a thick shell. However, the quality of the kernel is excellent; in fact, the quality of the kernel far exceeds that of the average pecan of the south.

In Hickman, Fulton County, a commercial pecan-cracking organization has been in operation for several years. They purchase thousands of bushels of locally grown pecans each fall in southwestern Kentucky, as well as nuts grown in Tennessee, Arkansas, and other southern states. During October, November, and December it is not unusual to see large commercial trucks loaded with bags of pecans waiting their turn to unload their cargo at the "nut factory." Machinery designed for cracking and extracting the pecan kernels is in operation each day, giving employment to 50 or more men and women who process and package the pecan kernels for the wholesale market.

Outstanding Seedling Trees

Many citizens of the area are familiar with certain seedling pecan trees that produce nuts of outstanding size and quality. Two trees of special recognition grew in the Ohio River Valley, in Henderson County, within a few hundred yards of where the Green River flows into the Ohio River or near the Spottsville Ferry and now the Spottsville bridge on U. S. Highway No. 60. These two special seedling trees have been named the "Green River" and "Major" varieties. Other special trees originating in the territory also have been named, such as Posey (found in Posey County, Indiana), Indiana, Busseron, Goforth, and Giles. All these named varieties of native seedling pecans are recognized in the pecan industry as the "hardy northern varieties." These are far better suited to Kentucky conditions than are the so-called southern varieties such as Schley, Stuart and Success.

Pecans are propagated by either budding or grafting (similar to general practice with apple and peach varieties), and today we have nut nurseries where trees of the recognized varieties are grown and sold to the public. These northern varieties are in successful production throughout Kentucky, Indiana, Illinois, Ohio, Pennsylvania and other states where the southern varieties of pecan fail.

Several trees of these hardy varieties on the Agricultural Experiment Station farm at Lexington have been in production for over 20 years. At the Substation farm at Quicksand, Breathitt County, pecan trees of these varieties began to produce nuts in seven years after planting and have produced annual crops since.

Needless to say, a young pecan tree must be carefully planted on good soil and given careful attention for the first few years, just as is necessary for a young apple, peach, or pear tree.

Top Grafting Seedling Pecans

In the spring of 1938, the Kentucky Agricultural Extension Service and Experiment Station promoted a commercial top-grafting demonstration of seedling pecans in Fulton County, on the farm of the late Roscoe Stone, near Hickman. A 30-acre river bottom field adjacent to the main highway was selected for this commercial demonstration. The field had been planted to cotton in 1933, but since that date had been in pasture and had gradually been allowed to grow up to brush and woods. Among these, many seedling pecan trees and sprouts were growing, ranging in age from 3 to 12 years, and evenly scattered over the area. In the spring of 1948 about 165 of these seedling pecans were top-grafted, using grafting wood of the hardy northern varieties. About 100 other trees were top-grafted in 1949 and plans are already made for finishing the field by top-working 150 more trees this spring of 1951.

The underbrush and sprouts have been cleared from this 30-acre field, leaving only the top-grafted pecan trees scattered over the area, 35 to 65 feet apart. The new growth from the grafted trees ranges from 4 feet to as much as 8 feet. At least half a dozen of the top-grafted trees produced a few nuts in 1950 and in a few years will be producing good crops of fine nuts. A number of other farmers of the Hickman area have started a similar top-grafting program of their native seedling trees. Also, a landowner near Barlow, Kentucky, in the Mississippi-Ohio River bottoms plans to top-graft about 400 trees this spring. Where pecan

seedlings or sprouts, two inches to six inches in diameter at the base, are growing naturally, it is considered more practical to have these top-grafted to an improved variety than to buy and set a grafted nursery tree. This same program is also being used in top-working native black walnut sprouts to the improved Thomas black walnut variety.

As a pecan tree can be expected to live through the coming generations and produce many pounds of valuable nuts most years, such a tree of a worthwhile adapted variety is valuable property on any farm.

PECAN SPRAYING W. D. Armstrong

Though pecans bloom late in the spring and often escape frost injury, the crop may be lost by the nuts dropping off when quite small. Also, sometimes the nuts grow to near maturity and then fall with a small hole bored in the shell. Injury to the nuts when small is often caused by the pecan nut casebearer and the injury late in the season is caused by the pecan or hickory weevil.

Where an orchard spray machine is available, both of these pests can be controlled easily by sprays of DDT. A spray of 4 pounds of 50% wettable DDT per 100 gallons applied in early June when the nuts are about half an inch in length will help against the casebearer. Where the weevil is a problem, one or two sprays of 6 pounds of 50% DDT per 100 gallons, starting in early August and repeated after the next heavy rain should be helpful in crop years.

SOME SLANTS IN GROWING BLACK RASPBERRIES O. M. Farrington

(Mr. O. M. Farrington, of Lexington, Kentucky who has had outstanding success in the growing of black raspberries for several years was asked to describe his methods, which he does in the following article. - A. J. Olney)

Black raspberries are found growing wild from the Cumberland highlands of eastern Tennessee northward. In the south, "Blacks" are found growing mainly in partial shade in mountain cliffs and coves, while in the north open glades are the home. From this, it appears that black raspberries are not lovers of extreme heat. Growing "blacks" under ordinary field culture has not proven successful in Kentucky. One or two good crops followed by rapid deterioration of the planting, mainly due to anthracnose, is the trend of most plantings.

For eleven years I have had a small planting of New Morrison, Quillen, and Eriston black raspberries just outside Lexington, Kentucky. Every year I have had excellent yields of large berries and the original "patch" is still in good condition. Usually I have sprayed with lime sulfur when the leaves were starting. Most years I have cleaned out the old wood after fruiting but not every year. Always there have been some signs of anthracnose but the infection has never been severe enough to materially affect yields or quality of berries. Frankly, I think the cultural practices followed have brought about the good results.

The ground has never been stirred or cultivated after planting; instead the berries have been mulched heavily. I have used any type of plant material available, such as grass clippings, weeds, straw, leaves, shavings, sawdust, gladiolus stalks, and other waste material. Mulching, to be successful, must be heavy and complete. (Three to six inches of sawdust would be good and would require a minimum of replacement).

Black raspberries respond to heavy fertilization. I top-dress every spring with 6-8-6 or 4-12-8 fertilizer and usually make a supplemental application of ammonium nitrate after growth has started, but before blooming. Extra nitrogen, especially if irrigation is available during dry weather, will greatly increase yields and quality of berries.

I am still experimenting as to the best pruning practices. It seems sure that both culture and pruning should be pointed toward producing heavy canes. I have found that rapid and continuous growth of new wood gives healthy canes for the next crop. Here is where mulching pays.

Summer topping of new growth and selective thinning of new canes, if properly done, will give some very fine heavy-branched canes. The secret of getting low branching of canes is to "double top" the new canes during the summer. That is, top the canes about a foot higher than the desired final height. Then after the new cluster of branches has started in the top, cut again below the cluster and usually most of the buds down the stalk will all force out, forming laterals to the ground. Under mulch and heavy fertilization, I have experienced severe breaking of new canes, usually at ground-level during rain squalls, unless the new canes have been tied to support wires. This is especially true with branched canes with heavy top growth. Free-growing untopped canes usually escape severe injury.

Spring pruning should be severe. I prefer heavy bare canes with no side branches, or if side branches are left all small branches (smaller than a lead pencil) are cut flush with central cane or main branch. The "double topping" referred to above or heavy thinning out and heading back of laterals in spring, or both, tend to retard the harvest season. Hence, if earlier berries are wanted, these practices should be kept to a minimum. A cluster of small branches at the top of a cane usually means small fruiting branches and severe damage from anthracnose. For support, I tie all canes to wires (either 1 or 2 wires, similar to those for grapes).

For several years I have done no summer pruning or topping of new wood. This resulted in long heavy canes with side branching well out on canes. The spring pruning consisted mainly of topping canes to desired height (about 36" to 42" high). In old (5 to 10 yr) plantings, I have left from 8 to 15 big bare canes with little or no branching, per bush. Under this culture, yields were high (up to 10 pints per bush) and a much longer fruiting season resulted. Canes on the outside of the cluster will throw fruiting branches from all buds down to the ground. Berries on these extra heavy, low, fruiting branches ripen later.

In summary: Heavy mulching to reduce soil temperature and stimulate an undisturbed shallow root system (which is natural for raspberries), rather heavy fertilization, growth of large heavy canes and support of fruiting canes have given me and several of my neighbors excellent results at Lexington. Based on this

experience, I am of the firm opinion that well-mulched and well-fed black raspberries can and will live with anthracnose and produce heavy yields even without a spray program. Furthermore, I feel that with some modification, this method or "system" could be adapted to commercial plantings, especially in those sections of the state where mulching material is available. There are countless "mountains" of sawdust on or close to good raspberry land, as well as a certain amount of manure and other organic matter of various kinds.

NEW AND PROMISING APPLE VARIETIES

AT THE KENTUCKY AGRICULTURAL EXPERIMENT STATION

C. S. Waltman

1. Melba - Three trees of this variety were set in the Experiment Station orchard in April of 1944 and 1945 and have borne two crops since then - in 1949 and 1950. Two bushels were borne by three trees in 1950.

The variety is a seedling of McIntosh from Canada and is a very high quality dessert apple. The fruit is a bright crimson over a pale, waxy yellow ground-color and is of good size and very attractive. The flesh is white, tender, fine grained, pleasantly mild sub-acid, highly aromatic and of very high quality. It has a relatively short picking season. The fruits bruise easily but appear to be well adapted for roadside sales or home use. The ripening time is from July 15 - 20.

2. Early McIntosh - This variety has been growing in the Experiment Station orchard since 1935. It has borne well but is inclined toward alternate bearing unless heavily thinned.

The fruit is very attractive and resembles McIntosh which is one of the parents. The apples are nearly solid red and of good size and round - oblate in shape. They are less aromatic than McIntosh and somewhat more acid but pleasant flavored and of good quality. The trees are vigorous and hardy and have well formed branches similar to McIntosh. The ripening time is from July 15 to 25.

3. Macoun - This is another variety of the McIntosh family and is proving to be a very satisfactory kind for Kentucky. It originated from a cross between McIntosh and Jersey Black. The fruits resemble McIntosh in shape but are darker, almost solid dark red in most specimens.

There appears to be a tendency for Macoun to set heavy crops in favorable seasons and unless fruit thinning is done, alternate bearing may result. The trees grow excellently and appear hardy and well formed, and fully capable of carrying heavy loads of fruit.

The flesh is pure white, fine grained, more solid than McIntosh in texture, aromatic and of excellent quality and very attractive. The average size is not quite equal to McIntosh but there is less tendency for the fruit to drop prematurely. The big point in favor of this variety for Kentucky conditions is its ripening date which is on the average fully two weeks or more later than McIntosh. Ripening time is Sept. 5 to 25.

4. Milton - This is another variety of the McIntosh type which ripens nearly a month earlier than McIntosh. The fruits are fairly large, well formed, pinkish red, with a heavy bloom and very attractive. The flesh is white, tender, crisp, juicy, and of excellent quality. The fruits do not possess quite the distinct aroma of McIntosh but the flavor is fully as good and more sprightly. The ripening time is July 20 - 30.
5. Kendall - Another progeny of McIntosh which ripens at about the same time as its parent. This apple, handsomely covered over the entire surface with dark red and a rich bloom, presents a very attractive appearance. The fruits average larger than McIntosh and possess the same white, fine grained, juicy flesh. The quality is very good and more sprightly than McIntosh and keeps somewhat better in storage. The ripening time is Aug. 15 - Sept. 5.
6. Cortland - This variety resulted from a cross between McIntosh and Ben Davis and the fruits possess distinct McIntosh quality. It was introduced in 1915. The average size is larger than McIntosh, and generally more uniform. Fruits have more color and the red coloring is lighter and brighter, commonly showing rather distinct stripings and splashings of red. The flesh is firm, not as juicy as McIntosh but still of very good quality, and the apples hang better on the tree and handle and ship better than McIntosh. From young trees bearing their first fruits this season, the ripening time was Sept. 12.
7. Webster - This variety is proving to be an excellent late-summer cooking apple for Kentucky. The fruits are large, well colored with deep red, and are very attractive. Several bushels of this variety were kept in cold storage and sold during late December of 1950. The variety has borne regularly and ripens at a time when there is a shortage of apples of good culinary quality. The variety is a triploid and for this reason, ample provision has to be made for cross pollination to insure a good set of fruit. The ripening time is Sept. 1 - 10.
8. Red Gravenstein - This variety is one of the highest quality, late summer culinary apples which can be grown and its only draw-back is its tardiness in coming into production. The trees are vigorous and produce splendidly shaped branches which are very symmetrical. The fruits are solid dark red and very attractive and are especially recommended for those who desire apples of high culinary quality. The ripening time is July 25 to Aug. 10.
9. Haralson - This is a variety of Minnesota origin and has been grown there for a number of years. It has been grown in Kentucky only during the past ten or twelve years and it has performed quite remarkably. In Minnesota it is grown as a late-keeping, culinary winter apple and is noted as a kind which possesses particularly hardy buds. In Kentucky, the variety ripens from September 15 to 25 and should be used at that season or soon thereafter to have it at its best condition. It is not recommended for storage here. The tree is an upright grower, vigorous and productive, and an annual producer. The fruits color fairly well and in the better colored specimens are frequently nearly solid red. There is a tendency, however, for many of the fruits to be lacking in solid red, especially where the set of fruit is heavy. It is not recommended as a dessert apple, but the culinary quality is very good and its

regular and heavy production makes it desirable for trial.

10. Prairie Spy - Another introduction from the Minnesota Fruit Breeding Station. Trees of this variety were set in the Kentucky Experiment Station orchard in April of 1944 and have now produced two crops. This past season, one of these trees bore twenty-one pecks and another ten pecks. The fruits are large and uniform and color fairly well with stripings of red. The ripening time is Sept. 10-25. Because of its early bearing and large fruits of good quality, it is recommended for trial. The fruits are pleasantly sub-acid and are desirable for both culinary and dessert use.
11. Minjon - Another Minnesota introduction which has performed remarkably well in Kentucky. Two trees of this variety were set on April 8, 1944 and bore their first crop in 1949. One tree bore seven pecks and the other fourteen pecks of very beautiful, dark red, well-developed apples. The fruits have much the appearance of Jonathan but are much darker red and more completely and uniformly colored. Jonathan responds very poorly at Lexington and it is hoped that Minjon will give much better results over a period of years. In Minnesota, it is classified as a very hardy variety ripening earlier than Jonathan. It is one of the most attractive apples which we have grown here and the trees have grown splendidly and borne fruit at an early age. The ripening time for Kentucky is Sept. 1 - 12.
12. Joan - Two trees of this variety were set in the Experiment Station orchard on December 28, 1944, and bore their first crop this past summer. One produced one bushel and the other three pecks. The variety was developed at the Iowa Experiment Station from a cross made in 1906 of Anisim on Jonathan and was introduced in 1932. The fruits are large, very attractive, solid brilliant red, angular and roundish-conic in shape. The flesh is white, rather coarse, tender, juicy mild, sub-acid and good quality. In cold storage, the fruits will keep well until January 1st and through November in common storage.

The trees grow vigorously and are well formed, hardy, productive, and annual croppers.

This past season the apples were harvested on September 20.