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KENTUCKY FRUIT NOTES

W. D. Armstrong, Horticulturist, Editor

Note.—The next copy of this bulletin will come out in late December, or early January.

EDITOR'S NOTE

The following article appeared in the Woman's Home Companion last fall and is reprinted here by their permission. It caused more favorable comment among fruit growers and the general public of the United States than any such discussion in several years. Thanks to the National Apple Institute for their influence in helping to bring such information before the growers and the public. The membership of the National Apple Institute consists of the leading apple growers of the United States and it is indorsed by the American Pomological Society and State Horticultural Societies. Through its efforts over two million reprints of this article have been distributed to the American Public.

We believe that our Kentucky apple growers can obtain ideas from this article that can be used in promoting local sales of their apples. This type of publicity, we feel will go a long way toward restoring "Old King Apple" to the table in thousands of homes where it has been crowded out by other foods which have been more highly advertised.

Also read the article in this issue dealing with the proper use for the various apple varieties.

AN APPLE A DAY

By IRA A. MANVILLE, M. D.

Again and again in the progress of the science of nutrition, laboratory experiment has justified an age-old practice followed by generations of housewives. Thus the balanced ration of today is the bread and butter of yesterday, the porridge and milk, the meat and potatoes so long associated together. Each one of these traditional groupings of food represents the trial and error development of desirable practices.

Now recent studies in the food and vitamin values of the apple in our diet echo with the voice of authority the habits of a thrifty past that made apple jelly and dried apples to carry the uses of this fruit through the winter. The kindly neighbor who took a glass of jelly to the sick was contributing more wisely than she may have known to the invalid's recovery.

Apple jelly, like the fruit (and like many other, but not all, fruits and berries) contains pectin. Nowadays everyone realizes that pectin is the substance that makes a fruit juice jell.

Less commonly known is the importance of pectin to the intestinal tract. As the chief source of bulk in the intestinal contents, pectin, with its ability to take up a large amount of water, forms a mass that stimulates essential intestinal activity without injury to the mucous membrane lining.

Long-established customs of serving fruit with meat have also been justified and explained by recent experiments. Carefully checked and controlled investigations shows

that roast pork with applesauce is more readily digested than roast pork alone. Salmon with lemon juice and turkey with cranberries showed the same effects: the fish and fowl eaten without the fruit were less readily digested.

Briefly the conclusions reached were that when apples, or other fruits of similar food content, were added to the consumption of meat less hydrochloric acid was required from the stomach and the digestive process was both easier and quicker.

Thus the apple has not only a nutritive value but a therapeutic one. Young children whose stomachs do not secrete as much hydrochloric acid as do the stomachs of older people need such foods as the apple in order to maintain an acid reaction in the stomach. Such a reaction is important because it promotes the digestion of protein. Again, it induces conditions favorable to the absorption of iron and of calcium, two minerals especially valuable to the health.

In hot weather fruits are particularly valuable. Fruits, berries and vegetables, foods high in water, offer better regulation of body heat in the hottest time of the year. Fruit juices are now very generally used in illness and are considered almost indispensable in fevers. The foods rich in vitamins and pectin are excellent sources of the substances that combat poisons in the body.

The rhyme, an apple a day keeps the doctor away, with its ancient implication of therapy, goes back scores and probably hundreds of years. The old Devonshire form:

Ate an apfel avore gwain to bed
Makes the Doctor beg his bread

echoes an ancient custom of saluting apple trees on Christmas Eve. In some sections of England this ceremony is still performed. Processions visit the principal orchards of a parish, select one tree in each orchard, salute it and sprinkle it with cider to insure a plentiful crop.

Such reverence the modern scientist may well think is no more than the apple's due. In our daily diet it not only promotes good digestion, fights off toxic conditions, helps regulate the intestines, releases vitamins and minerals to the body processes, but it improves our teeth and gums and the general sanitary condition in our mouths.

The resistance of the apple against the teeth, its crunchiness and crispness, afford the necessary exercise in chewing that so many of our foods, soft and bland in texture, fail to yield.

The skin receives from the apple an indirect but real benefit. Aside from the fact that good digestion is reflected in clear skins and indigestion in blotchy or poor complexions, the food values of the apple regulate the amount of acid in perspiration, and as one's skin is affected by too acid perspiration, a second service is thus rendered.

Confusing as the whole subject of acidity and alkaline conditions is to the layman, it is nevertheless understandable that a balance between these two states is necessary. In the stomach we need to have sufficient organic acid present to facilitate gastric digestion; on the other hand a steady intake of minerals into our system is necessary in order to maintain our alkaline reserves and to prevent too much acid throughout the complicated processes of metabolism.

The apple, like many other fruits, contributes to both needs. It softens, we might say, the de-

mands that protein foods make on the stomach acid; and it supplies in a form that can readily be utilized minerals and vitamins in generous amount.

Apples—and fruit in general—have a value beside their ability to supply calories. Along with their content of minerals and vitamins they offer the body what we may term a detoxication agent. Everyone is familiar nowadays with the word toxic as applied to a physical condition. The marvelous mechanism of the human body is equipped to meet and defeat many poisons or toxic substances which enter it or which result from natural physiologic processes. Vitamin C, we know, plays an important part in reducing or removing a toxic condition. The reverse also seems to be true; accumulated toxins in the body tend to destroy vitamins A and C and thus increase the amount of these vitamins needed for protection. Hence it is doubly necessary to include in our diet foods capable of supplying these vitamins.

Fruits such as apples are really more than food; they are true agents of health endowed with prophylactic and protective powers.

—Reprinted from Woman's Home Companion for November, 1938.

INCREASE APPLE CONSUMPTION BY PROPER VARIETY USE

An increase in the consumption of apples is a matter of concern to every grower. One of the drawbacks to heavier consumption is that the consumer often is disappointed in his purchase because the variety is not suited to the use he wishes to make of it. For example the Delicious, no matter how fine, is a poor cooking apple. Perhaps the consumer has found that Delicious is excellent for eating and because it makes inferior sauce, decides that he is not fond of apple sauce. Many buy apples by appearance not realizing that they have a variety name or that their value depends on the use that is made of them. Education of the public to the uses of different varieties of apples is a big task involving many agencies but the growers must initiate this instruction.

When apples are sold to consumers the uses of each variety should be pointed out. Sometimes a card giving the name of the variety and its use may be attached to the package if sold through dealers. No doubt, other methods will suggest themselves. While organized advertising probably is the most effective means of education, growers should not overlook smaller possibilities until an advertising program can be established.

Each variety, too, has a season when its quality is best. Few apples are at their best when harvested because a ripening process takes place after being picked and stored. Before proper maturity the flesh is hard, starchy and hard to digest. After *passing* maturity, the flavor wanes and finally becomes insipid.

Apples keep best when stored in a cool moist place. A warm dry room causes them to ripen quickly and to soon lose their quality. Cold storage is a great aid in keeping apples for use over a long period.

The following table gives the uses and season of best quality for the main varieties grown in Kentucky. It is compiled from local experience and available literature.

HOW AND WHEN TO USE APPLE VARIETIES

Variety	Eating	Baking	Pies	Salad	Sauce	Season
Yellow Transparent	Fair	Fair	Good	Fair	Excellent	July–Aug.
Maiden Blush or Polly Eades	Fair	Fair	Fair	Fair	Excellent	Aug.–Sept.
Paducah	Fair	Excellent	Good	Fair	Good	Aug.–Nov.
Wealthy	Fair	Fair	Good	Fair	Good	Aug.–Nov.
Grimes Golden	Excellent	Fair	Good	Good	Excellent	Sept.–Dec.
Jonathan 9.9	Excellent	Excellent	Excellent	Good	Good	Sept.–Jan.
Red Delicious	Excellent	Fair	Fair	Excellent	Good	Oct.–March
Golden Delicious	Excellent	Good	Good	Excellent	Fair	Oct.–March
Stayman Winesap	Good	Excellent	Excellent	Good	Excellent	Nov.–Feb.
York Imperial	Fair	Fair	Good	Fair	Good	Nov.–March
Rome Beauty	Fair	Excellent	Good	Fair	Good	Dec.–April
Winesap	Good	Good	Good	Good	Good	Jan.–June
Ben Davis (Gano)	Poor	Excellent	Good	Poor	Fair	Jan.–June

TIMELY HINTS TO FRUIT AND BERRY GROWERS

Strawberry Growers

MULCHING PREPARATIONS: Arrange for mulching straw for your berries; figure on 1½ to 2 tons per acre. Haul it to the field early, break the bales so it will soak up the early fall rains germinating any grain left in the straw. Be ready to apply mulch when temperature goes below 20° or 18° to prevent injury to crowns. Records show this can be expected in western Kentucky by late November or early December and in central Kentucky earlier, depending on the season.

DROUTH RESISTANCE: In planning your next spring plantings look around and compare the way the leading varieties in your section came through the recent late summer drought. Also notice what effect a good cover crop, turned under ahead of this spring's planting, had on the way the planting came through the season.

YELLOWS FREE BLAKEMORE: If you are interested in the Blakemore variety, inspect, if possible, the patch your new plants are dug from to see if there is any Yellows or (Yellow plants) in the planting. Remember that over 95% of the Blakemore plantings in Kentucky and other states have yellows in them and that there are only a few strains of so called Yellows free plants. One of the best of these is the McUmber Blakemore developed in Tennessee. Another is the United States Department of Agriculture Blakemore developed and distributed for trial by the United States Department of Agriculture. Both of these strains are on the market at little more than regular plant prices. Yellows infected plants would be expensive to receive as a gift, much less to pay for. A Blakemore planting in Marshall County had its 1939 yield cut from 20 to 25 percent because of a heavy infestation of yellows. This grower also set a new patch using his own plants, "because he had them," and now has many skips and yellow plants in the new planting as a result.

Through cooperation of the Experiment and Extension Service cooperative tests of three strains of yellows Free Blakemore have been set up with growers in the following counties: Muhlenberg, Crittenden, Butler, Caldwell, Lyon, Livingston, McCracken, Graves, and Marshall. These are also

being tested at the Experiment Stations at Lexington, Princeton and Quicksand. Growers in these respective counties can get the names of the cooperating growers from their county agents.

Fruit Growers

PEACH TREE BORERS: Peach growers, who have not done so, should treat their peach trees for peach tree borers. The P.D.B. method, long the standard treatment, should have been applied in all parts of Kentucky except the western part by early October. There the treatment is usually effective throughout the whole month of October.

Those not treating with P.D.B. are advised that the newer treatment consisting of Ethylene Dichoride Emulson can be used later in the fall during cooler weather when P.D.B. is no longer effective due to the coolness. Readers are referred to the April and August issues of *KENTUCKY FRUIT NOTES* for discussions of this new treatment.

FIELD MOUSE INJURY is expected to be serious this winter because of the many mice known to be present in orchards. A standard precaution is to remove weeds and grass from around the trunk of apple trees for a distance of three feet. Examine the sod and the soil about the tree for mouse runways. If fresh droppings are found in these runways it means they are in use. Poisoning can best be carried out by using both poison grain and poisoned fruit baits according to directions furnished by the United States Biological Survey. These can be had, also baits can be bought from Mr. G. C. Oderkirk, United State Biological Survey, Experiment Station Annex, West Lafayette, Indiana.

REPAIR THE SPRAY RIG, should be the slogan of every fruit man. Repairs made during the open weather of early fall may prevent costly delays in the late winter and early spring spraying.

ORDER NURSERY STOCK: The grower who figures his nursery stock needs early and places an early order will usually get the varieties he orders. When this stock arives in late fall and early winter and is properly planted it has a fine chance to grow and do well.

ADVANTAGES OF FALL PLANTING

C. S. WALTMAN

The dry weather of the past several weeks has developed a degree of maturity in nursery stock which puts it in a condition that will be nearly ideal for transplanting this fall and the best time for this work is from mid November until early December. Late fall, or early winter, is one of the best times to set fruit trees in any section of the country where the winters usually are not severe.

There are several facts regarding the growth of plants that are of interest and that have a definite bearing upon the results obtained after trees are set.

The root system is the absorbing system and practically all water which enters the plant is taken in through the roots. The absorption of water, by the roots, takes place chiefly through special structures known as root hairs. These tiny hair-like growths are very numerous but are found almost wholly on the younger roots and are located a short distance back of the growing tip of the new root. The absorption power of roots depends upon the extent of their area that comes in contact with the soil particles, so it naturally follows that the greater amount of new root growth, the more root hairs there will be formed and, consequently, the greater becomes the chance for

the plant to obtain the amount of water that it needs.

The practical bearing of the point I have just mentioned, upon the transplanting of fruit trees and other plants, is important. The transplanting of most deciduous fruit trees is usually accompanied by the loss of a considerable part of the large and of the fibrous roots and by the destruction of practically all of the root hairs. When this occurs, new fibrous roots and new root hairs must be produced before active absorption can begin.

The removal of a large portion of the small feeding roots, at the time nursery trees are dug, results in an unbalanced condition between the top and roots. The top, therefore, should be pruned back about one-third, or even one-half, to correspond to the smaller root system. This will cut down the water requirement of the plant and give a much better chance for roots to form.

Growers are likely to place a rather high premium on a large and extensive root system in nursery trees, thinking that they will surely absorb enough water to maintain the moisture supply of the top until new roots are formed. A fairly extensive root system on a young tree probably is an asset but it is not because these roots, which are devoid of root hairs, are of any material aid in the direct absorption of water.

During the fall and winter months, the above ground portions of a plant are almost wholly inactive. Except in the case of some few kinds of fruit plants, there is no active growth taking place, even in late summer and early fall. This cessation of growth is nature's way of preparing the plants for winter and is commonly spoken of as the hardening, or dormant, period.

Unlike the tops of trees, the roots have no period during which growth cannot occur, unless soil and temperature conditions are of such a nature as to actually stop it. Freezing temperatures within the soil will of course stop root growth, but, undoubtedly, with practically all plants, root growth continues for quite a long time in the fall after the tops have become inactive, because the soil cools off slowly.

This explains why, in climates that are not too cold, fall transplanted trees are more likely to give a good stand than trees that are set in the spring. Through late November, and early December, the temperature of the soil is usually still high enough so that root growth can be initiated in trees that have been set and, with the root system fairly well established, water can be absorbed in the spring as rapidly as the new shoots and leaves use it. On the other hand, spring set trees must wait until new roots are formed before they can take up moisture. If soil conditions remain unfavorable for root formation and, if atmospheric conditions are favorable so that vegetative growth of the top is stimulated, the growing roots are quite certain to wilt and die and the tree will be lost. It frequently happens during the spring that conditions become favorable for top growth before, or simultaneously with, favorable growing conditions for roots.

The points that I have already mentioned indicate why it is very difficult to transplant trees after their buds have once started in the spring. It is simply a case of the growing top demanding water which cannot be supplied in sufficient quantity by the roots because they are practically without absorbing organs. This condition is not encountered when trees are set in the fall.

There are certain kinds of fruit trees, particularly cherries, which are somewhat difficult to transplant, even under the most favorable conditions. With these fruits, it has been found that fall setting has resulted in a better stand of trees than when they were planted in the spring.

This recommendation, for fall planting, applies to fruit trees but not to the small fruit plants, such as strawberries, raspberries and blackberries. These are shallow rooted and should be set in the spring.

Now is an ideal time to prepare your land for fall planting. Orders sent to your nurseryman within the next few weeks can be filled from the choicest plants which he has to offer. The trees can be set at a time when other work is not especially crowding and then, when spring weather comes, your trees will be already established and ready to start into growth.

STATE FAIR FRUIT EXHIBIT 1939

The recent State Fair fruit exhibit added another bright chapter to the long list of outstanding fruit shows at the Kentucky State Fair. The fruit exhibited in all classes was of exceptionally high quality and would compare with that shown at any state fruit exhibit in the country. The different classes were well filled and the competition was close.

Three new features in the horticultural department this year were the class of bushel baskets of apples, the class of individual grower exhibit booths and the sweepstakes awards in six of the classes. Each of these attracted a great deal of interest and comment, especially the grower exhibit booths.

The booth of the Bray Orchards, Bedford, Kentucky, put up by Mr. and Mrs. Joe Bray and Sons, won first. The Karcher and Harpring Fruit Farm of Jeffersontown, won second with their attractive booth. The booth of Mrs. Leota Kern of the Hillcrest Orchards, Sturgis, Kentucky, won third. This booth was arranged by Mr. and Mrs. M. Y. Nunn and featured the "stairway to health" and proper use of apple varieties as an educational feature. The booth of Mr. E. J. Fegenbush, Buechel, Kentucky, Jefferson County, won fourth. The other two booths which showed were the Miller Fruit Farm which featured roadside market packages, and the Kentucky Cardinal Farms, Henderson, Kentucky, which featured commercial packages of fruit, chiefly the bushel basket and standard apple box.

In the 20-tray–20-plate class, which is the largest entry by a single grower, and is composed of five varieties or more, the entry of Mrs. Leota Kern of the Hillcrest Orchards, Sturgis, won first; second went to Joe Bray and Sons, Bedford, Kentucky, Trimble County; third went to the Kentucky Cardinal Orchard, Henderson; fourth to the Karcher and Harpring Fruit Farm, Jeffersontown; and fifth to the Miller Fruit Farm, Valley Station, Kentucky.

In awarding the sweepstake ribbons on the bushel baskets, the award went to Joe Bray and Sons on a bushel of double red Delicious. They also won the award on the best plate of apples, showing Golden Delicious. Mrs. Leota Kern, Sturgis, won the apple tray sweepstakes, showing Golden Delicious. The high award on both plates of peaches and plates of pears was won by Wm. Michaelson and Sons, Valley Station, Kentucky, and in the grape class, sweepstakes honors

went to Mr. J. R. Buckman, Shepherdsville, Kentucky, on a plate of Concord.

A small exhibit featuring injury to our common fruits by most common insects and diseases was used again this year. This called the attention of the public to the various types of injury and showed some of the main steps in their control measures.

Professor C. S. Waltman, of the Horticulture Department, University of Kentucky, was again the judge in the Horticulture Department of the Fair, and commented on the general high class of the fruit exhibited this year.

THE DORMANT SPRAY

By W. W. MAGILL

Many of our leading commercial fruit growers of Kentucky will again use the "Tank Mixed Oil Spray" on their apple orchards and the same material plus Bordeaux for their peach orchards. For economy and efficiency I have no better suggestion to offer in the way of material. For convenience, some of the prepared emulsions have the advantage. I question the advisability of the barrel sprayer man trying to prepare the "Tank Mixed Oil," due to a lack of pressure and from lack of agitation.

For the grower who has always usel lime sulfur for the dormant spray and has been satisfied with the cost and results, I see no reason for recommending the change to any new praparation.

Peach Leaf Curl caused more injury in Kentucky the past spring than for any season in fifteen years. I personally know of a number of orchards where it alone was responsible for losing the entire crop after the peaches were ¾ inches in diameter. Many growers who had made an attempt to control it failed. Thru orchard visits and correspondence I checked up on twenty or more cases. The material used nor the time of application were responsible, but "thoroughness" in application was the whole story. If you had trouble in Leaf Curl control, I offer the following "Measuring Stick,"—for peach trees 8 years old and up it will require from 6 to 9 gallons dormant spray per tree to cover them sufficiently to control Peach Leaf Curl. How many gallons per tree did you use?

San Jose Scale has not been as serious this season as in 1938, yet much scattered fruit has shown scale markings when harvested. These tell-tale red dots on the fruit indicate that scale is on the tree and has spread to the fruit during the season. If more of these red dots are showing up on your fruit this year, it means scale is increasing in your orchard. Scale, like Peach Leaf Curl, takes thorough coverage if complete control is to be had. A 2% oil spray is usually strong enough for ordinary scale control but in severe cases a 3% oil spray should be used.

A free circular giving detailed directions for making the Tank-Mixed Dormant Spray may be obtained from your County Agent, or by writing the College of Agriculture, Lexington, Kentucky.

THE FIRE HAZARD

News of several disastrous orchard fires in the State has reached this office. This brings to mind the fact that fruit plantings are subject to severe losses from fire during dry season. The increase of use of sod and mulches in fruit plantings increases the fire hazard. Fire lanes plowed around orchards and through them at intervals will aid in keeping down fire losses.