

FARM AND ORCHARD

Notes and Instructions from Agricultural Colleges and Experiment Stations of Oregon and Washington, Specially Suitable to Pacific Coast Conditions

APPLE SCAB AND CODLING MOTH.

By Professors H. S. Jackson and H. F. Wilson of the Oregon Agricultural College.

The time to spray for the apple scab and codling moth is at hand, and since these pests are, generally speaking, the most important troubles of the apple for which spring and summer spraying is necessary, it was thought advisable to issue at this time this bulletin of information regarding their life history and methods of control. The spray for these troubles may be applied in part at the same time, hence for convenience of the growers are treated together.

The proper time for treatment of fungus diseases or insect ravages is always determined by the life history of the organism causing the trouble, hence the life history of each will first be given, followed by the combined method of treatment.

Life History of Apple Scab.

Apple scab is caused by a fungus which attacks both foliage and fruit. On the foliage the spots are at first more or less circular in outline, olive green or brown in color, becoming darker and irregular in shape as they mature. The leaves are frequently more or less curled or wrinkled. When the spots are abundant, the leaves fall prematurely. Considerable defoliation may take place where infestation is abundant.

On the fruit the fungus produces more or less circular spots of the greenish black color. The vegetative stage of the fungus develop under the cuticle of the apple fruit finally rupturing it by the elongation of the threads which bear the spores. The ruptured cuticle may frequently be seen clinging as whitish membranous shreds about the edge of the recently developed spots. As the spots become older all trace of the fungus may become obliterated and only evidence of the former spot is seen in a large or small rough russeted spot. Frequently the fruit is distorted when mature as the result of early scab infections. Where scab spots are abundant the fruit may become cracked. Scab in any degree of severity on the fruit renders it unsightly and unmarketable.

The spores of the fungus are produced in the spots on leaves or fruit in great abundance and are disseminated by the wind, thus spreading the disease to other leaves and fruit, either in the same or other trees. Several generations may thus occur during the season. One finds the scab spots first appearing in the spring on the under side of leaves on the lower branches. Spores produced in these spots serve to spread the disease to young fruit and to other leaves.

The development of the scab fungus is found to be very much influenced by weather condition. Moisture on the surface of leaves and fruit is essential to the germination of the spores and the consequent infection of the plant. On that account scab is found to spread most rapidly in spring, early summer and fall in the Northwest. The disease spreads little, if any, during the dry season. The mycelium of the fungus present on the leaves which fall to the ground in the fall does not die, but develops in these leaves during the winter as a saprophyte and in the spring produces spores quite different from those borne in the spots on living leaves and fruit, both in the manner of formation and in the shape and size. The spores found in the spots on leaves and fruit are one-celled, rarely two-celled, and are borne on the ends of short threads, while the spores developed on the dead leaves in spring are always distinctly two-celled and are borne in little cylindrical sacs called asci. Eight spores are always developed in each sac. A considerable number of these sacs are borne in hollow more or less pear-shaped receptacles imbedded in the tissues of the leaf. These receptacles containing the asci, known as perithecia, project from the surface of the leaf when mature as little black elevations. These are barely visible to the naked eye. At maturity an opening appears in the projecting elevations. The asci elongate through this opening and the spores are ejected forcibly, and, wafted by currents of air, may be carried to the young leaves of the apple, where they germinate and produce the first scab spots.

This ascus spore stage of the fungus which develops on the fallen leaves is sometimes called the "sexual" or "perfect" stage. The stage which develops on the living leaves and fruit is called the conidial or "summer spore" stage.

The ascus spores are disseminated about the time the blossoms open. So far as is known all primary infection of the leaves and fruit in the spring takes place following the dissemination of the sexual spores.

Life History of Codling Moth.

The codling moth spends the winter in the larval stage within a silken cocoon under the bark or in crevices of the tree, or under rubbish on the ground. With the warm days of spring they undergo a complete change, and transforming to pupae later emerge as adults. In this stage the insect is seldom seen as it remains quiet during the day and flies about at night depositing eggs upon the leaves and fruit in the evening about dusk.

The eggs of the spring generation of moths are deposited during June and July and the first young larvae hatch out about June 20th to July 1st. As soon as the larvae hatch out they seek an entrance into the fruit, and in the case of the first generation, mostly enter through the calyx end. They feed and develop for about sixteen to twenty days, until mature, and then pass through the same stages as the over-winter larvae, namely: pupae and adult. In the Willamette valley the earliest individuals of this brood of moths begin to appear about the last of July and deposit their eggs upon the fruit and leaves. The egg deposition continues until late in the fall. The eggs begin hatching about August 1st, and the larvae enter the fruit from the sides. These are the over-wintering forms, and when full grown they leave the fruit, and seeking protected places near by, spin winter cocoons.

The usual application of bordeaux for apple tree anthracnose just after the fruit is picked may have a beneficial effect in reducing the late spread of the disease on the foliage and hence a reduction of the "sexual" spore stage in the spring.

Codling Moth.

Much good can be done by scraping the rough bark from the trees in the winter, and by the practice of clean culture; especially is this true of old neglected orchards.

Be careful not to carry infested fruits into the store house in the fall, as the larvae find many excellent places therein to spend the winter.

EXPERIMENT STATION NOTES

By R. W. Thatcher, Director Washington Experiment Station.

The reason for the lack of fertility of pine land soils is not due to the pitch which such land contains, but to an absence of a supply of available nitrogen. The foliage from evergreen trees adds very little to the supply of nitrogen in the soil, while the trees themselves constantly take it from the soil. In soils which have been burned over, the heat burns out a good deal of nitrogen in the upper layers of soil. The ashes are not injurious, but are highly beneficial to the soil.

The real difficulty is that the growing of pine and fir trees on soil poor in nitrogen takes away so large a proportion of the available nitrogen that when the soil is first brought under cultivation it will rarely produce satisfactory crops. After two or three years of cultivation the soil gets into better condition and the nitrogen becomes more available and better crops are obtained. The only remedy for this condition is thorough cultivation supplemented by the use of some fertilizer to put available nitrogen in the soil to start with. For this purpose, barnyard manure is best. Clover would be still better, but clover itself will rarely grow on this soil without artificial fertilizer to start with.

The best commercial fertilizer to use on this kind of soil is dried blood, applied either in the fall or early spring. If field peas would grow at all on this soil, they would make a most excellent fertilizer if seeded early in the spring, plowing them under as soon as they have attained their maximum growth.

Repeated attempts have been made to use potassium cyanide as a squirrel poison. The difficulty is to get the odor of the cyanide disguised so that the squirrels will eat anything that has been treated with the chemical. All attempts which I am familiar with have failed. The use of cyanide in the holes late in the season might be effective if some means could be devised for generating the hydrocyanic gas from it. This will require the presence of some acid in the hole to come in contact with the potassium cyanide, or otherwise the poisonous gas will not be given off. The chief difficulty with all these gas poisons is that the holes are so long and crooked that there is difficulty in getting the gas to penetrate far enough to reach the animal before it is absorbed by the soil.

Wherever sagebrush and cactus flourish, there agricultural crops will also grow. If the prevailing vegetation is greasewood or salt grass, the amounts of alkali are sufficient enough to injure most agricultural crops. If the alkali is excessive, however, no vegetation of any kind will grow on the land.

Another indication of alkali is the presence on the surface of the ground of a white crust in the latter part of August. Alkali is simply an injurious excess of soluble salts, and at this season they are brought to the surface by excess of evaporation, and will always appear on the surface in the early fall. White alkali includes any of the soluble salts. "Black alkali," as it is called, is sodium carbonate, and causes the vegetation on the surface of the ground to turn black because of its corrosive effect on vegetation.

Siberian Wild Flowers.

Siberia seems to have a set program for her flowers, which are beautiful in variety and coloring. September gathers the blue flowers to her bosom; and under her languid and caressing touch blossom myriads of dainty bluebells on long and tender stems.

In the rocky soil of the hilltops blue scabiosa shares its playground with drak blue snapdragon, and in the shady spots of the road grow, tall and hardy, purple blue chrysanthemums. Earlier in summer yellow holds sway—buttercups, daisies and violets, and after them red-pinks and very deep briar roses. Delicious jam is concocted from the seedpods of the wild rose.

When summer comes an array of jars and glasses and a big kettle join hands with hat boxes and shoe bags and travel countryward. A temporary stove is built of stones not far from the house, and here simmers slowly the year's provision of preserves and jams and jellies, absorbing at the same time great doses of sun and fresh air.—America.

Treasured Trees.

Two trees to be seen in the main street of Thorshavn, the capital of the Faroe Islands, have an interesting history. Trees resolutely refuse to grow in these islands, except in some few sheltered spots, and the inhabitants therefore prize them greatly. When the road was made it was decided to leave the trees in the middle of the carriage way rather than be guilty of the crime of felling them.

ANGORA GOATS VALUABLE AS PASTURE SCAVENGERS

One Animal to Acre Will Keep Briars, Weeds and Bushes Completely Subdued on Land That Is Inclined to Grow Up in Wood.



Angora Goat and Does.

My experience with the Angora goat for the past five years has proved that one goat to the acre will keep the briars, weeds and bushes completely subdued on land that is inclined to grow up in blackberry briars and hickory, oak, red bud, dogwood, sumac and similar growths, writes Rufus Lester of Wayne county W. Va., in the Orange Judd Farmer. At the same time, the land will yield as much pasture for horses, cattle, hogs or sheep as it would if the goats were not on it. All kinds of stock seem to do well in the same pasture with the goats.

For the goat to be of best service the underbrush should be cut out or fire should run through the woods, so as to kill the small timber. The large timber should be griddled so as to kill it, and the goats will then keep the sprouts down until the roots of the timber die out and blue grass will soil the land. This will require about

three years. The Angora goat is not afraid of dogs and can protect itself well against their attacks. They are fond of hunting each other in play, but I never saw one attempt to fight another.

It requires some kind of fence to keep the goat in which he cannot stand on the top of or climb up. The best fence for Angora goats is the woven wire fence. This fence need not be over 40 or 42 inches high. The fence must be close to the ground, so they cannot crawl under. When their hair is long enough to protect them goats will often crawl through a barbed wire fence, if the wires are not very close or the posts close together with the wires well stretched. Goats will not jump over any fence, they want to climb up, and then they will jump down, or they will jump up on top of the fence and then down; but they never jump over a fence like a mule or steer.

FRUIT TREE PLANTING POINTS

Should be Placed in Ground White Dormant in Well Drained Soil With Hole Large Enough to Spread Roots.

(By PROF. JOHN W. LLOYD, Illinois Farmers' Institute.)

1. When to plant fruit trees: While they are dormant; while the ground is in a workable condition; late in the fall after growth has stopped, or early in the spring before it has begun.

2. Where? In well-drained soil. 3. How? Dig an ample hole; spread the roots out in their natural position and pack fine earth around them. It is handy to separate the clods from the fine soil in digging.

There is always a balance between the roots and branches of a tree, so if many roots have been cut off in digging the tree from the nursery, a corresponding amount of the top must come off. If trees are planted in the fall some precaution should be made against their being heaved out of the ground by alternate freezing and thawing. This can be done by spreading a thick layer of straw or manure around the tree.

There are four essential points in the care of fruit trees. They are: 1. Tillage. 2. Fertilization. 3. Pruning. 4. Protection from enemies.

Tillage is just as necessary in tree raising as in corn raising, and for the same reasons: To avoid the competition of other plants, to conserve moisture and to render plant food available.

Intelligent pruning is also very necessary to raising fruit. Each bud on a tree is capable of giving rise to a branch, and if every branch is allowed to grow the tree will become too dense. We must thin out the branches in the tree tops or we will have little fruit. It takes moisture to develop an apple and sunlight to color it; so the foliage must not be too thick. Pruning is also employed to make the tree assume the desired shape. It should also distribute the large branches equidistantly, as nearly as possible. It is

always best to grow a good strong branch on the southwest side of the tree, where the hot suns and strong winds come from.

In pruning, we should cut the limb in such a way that it will heal quickly. To do this the limb should always be cut as close to the body as possible and parallel with it. A saw should be used, and the wound must be coated over with white paint or something similar, to prevent weathering and infection from bacteria or fungus growths. Another important thing is to keep trimming off the ends of the limbs on young trees.

There are three kinds of enemies that trees must be protected from. The first of these includes rabbits, mice, etc. A tall piece of heavy paper tied around the base of the young tree, or a piece of wire screening will settle this matter. The second class of enemies contains the insects, of which the scale insects are the most dangerous. The scale insect can be controlled by spraying with a lime-sulphur wash and the chewing insects by spraying with paris green. The third class of enemies consists of fungus diseases. These can be controlled by spraying with Bordeaux mixture, which is composed as follows: Four pounds copper sulphate, four pounds lime, 50 pounds water.

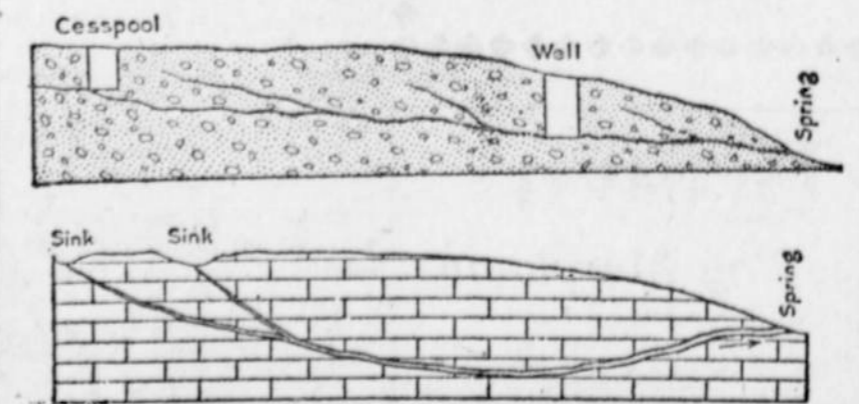
Best Lubricant for Machinery.

Where the pressure is heavy the lubricant should be thick in order to resist being squeezed out under the load. For light pressures oil should be used. Thus for a wagon heavy greaser is best, while for a cream separator of high speed a thin oil is necessary in order that its viscosity will not add to the friction. Solid substances in a finely divided state, such as graphite, are often used effectively to reduce friction. This is regarded as a good practice in handling the bearings of a windmill, which can only be looked after occasionally.

Peaches on Grape Vines.

It is reported that near Greensburg, Ind., a large grape vine in some manner became inoculated with a seedling or shoot from a peach tree and last season grew a half dozen well-formed small peaches.

UNSUSPECTED WATER DANGERS



The diagrams show the possibility of wells and springs being polluted by material conducted through tubular water passages in clay soils or even through limestone rocks.

A New Jiriksha.
A one-wheeled Jiriksha, on the monocycle principle, is being introduced among the Chinese of the Malay states. It is said to be safe, and to have many advantages over the old-fashioned vehicle. The wear and tear is reduced to a minimum, the work on the pullers reduced and speed increased.

America's Sweet Tooth.
If America's annual candy supply were loaded on one train there would be over eight thousand trucks full of boxes, buckets and glass jars. This load of sweetmeats for the sweet tooth of the American girls costs the consumers about \$125,000,000 every year.

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It always gives satisfaction.

Olive Oil for Leather.
Leather furniture, especially when placed near the register, is liable to dry and crack. An excellent method of keeping it from looking old and showing cracks is to go over the leather with a soft rag dipped in olive oil and then going over the whole surface again with a dry rag. It is not necessary to go over the leather more than once in three or four months, just enough to keep it soft.

SOUR STOMACH
"I used Cascarets and feel like a new man. I have been a sufferer from dyspepsia and sour stomach for the last two years. I have been taking medicine and other drugs, but could find no relief only for a short time. I will recommend Cascarets to my friends as the only thing for indigestion and sour stomach and to keep the bowels in good condition. They are very nice to eat."

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Cause of Faintness.
Fainting is a loss of consciousness due to the diminution of blood supply to the brain. It occurs most frequently in weak, sensitive women, but may occur also to men as well. It usually occurs in crowds or in crowded halls, theaters and churches where the atmosphere is close and the air foul.

Non-alcoholic Sarsaparilla
If you think you need a tonic, ask your doctor. If you think you need something for your blood, ask your doctor. If you think you would like to try Ayer's non-alcoholic Sarsaparilla, ask your doctor. Consult him often. Keep in close touch with him.

We publish our formulas. We banish alcohol from our medicines. We urge you to consult your doctor.

Ayer's
Ask your doctor to name some of the results of constipation. His long list will begin with sick-headache, biliousness, dyspepsia, thin blood, bad skin. Then ask him if he would recommend your using Ayer's Pills.
—Made by the J. C. Ayer Co., Lowell, Mass.—

In Praise of Ice Cream.
Sunday dinner without ice cream is an imposition on the whole family. Say, brother, did you ever notice the expression of the faces of the children when they were ready for ice cream, and canned peaches were brought in? There is a chance for mutiny and rebellion right there. When the family is feeling grouchy just serve them vanilla ice cream and pour hot thick chocolate over the ice cream. Then life is worth living.

Her Period of Quietude.
It is said to be customary in Bulgaria for a newly married woman to exchange no conversation with any outsider during the first month following the wedding. She is permitted to open her mouth only for the necessary purpose of eating and drinking and is allowed to reply to her husband when the latter chooses to address her. To this custom is attributed the fact that the honeymoon in Bulgaria lasts an entire month.