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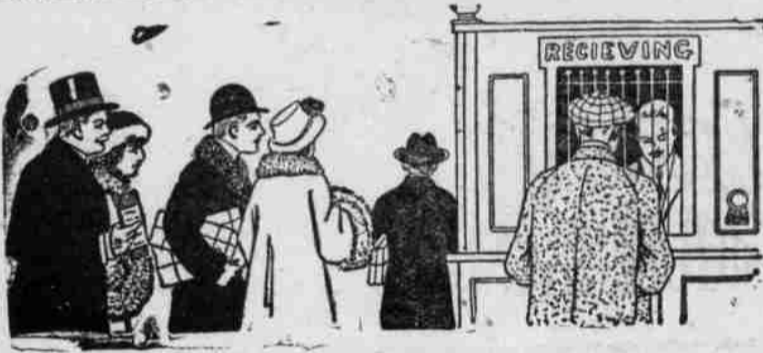
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Spring Injury to Fruit Trees Due to Nitrogen Hunger

(Prepared by Oregon Agricultural College) Spring injury of fruit trees in Oregon is due to acute nitrogen starvation during the most active vegetative period in the life of the tree, according to a theory recently developed by Dr. A. B. Cordley, dean of agriculture and director of the experiment station. One of the most important pathological conditions of fruit trees in humid sections of the Pacific northwest is the ailment commonly known as "winter kill," or "sour sap" because of the nature and time of the injury. The designation, "spring injury," is suggested by Dr. Cordley.

"The extent and importance of the injury varies with the location and the seasons," reasons Doctor Cordley, "but nearly every year the injury is serious in some or all parts of the humid sections. Last spring a 70-acre pear orchard loaded with fruit spurs for a 10 to 15 thousand dollar crop was so badly injured that fewer than 300 bushels of fruit were sold. The orchard has been so impaired that its value has run down from \$600 or \$700 an acre to \$250, as inventoried by the owners. The loss in crop and orchard has been to date not less than \$25,000 to \$35,000.

"Many thousand acres of orchard have suffered in like degree."

Injury is usually more serious, Doctor Cordley points out, on heavy soils with poor air and water drainage, but is also sometimes serious with trees on thin or gravelly soils on hillsides. The disease frequently affects most seriously the largest and apparently the healthiest trees and the greatest injury occurs during the period of greatest activity, from a short time before the blossoming to three or four weeks after, during the first 10 or 15 years of the tree's life. Injury is invariably most serious following an early spring succeeded by several weeks of cold, rainy weather.

Symptoms of the trouble are discoloration of the cambium followed by a failure to set fruit even though the trees bloom profusely. The leaves wither and fall, twigs or branches die, and the entire tree may be killed to the ground.

Some investigators have thought that the injury is due to excess of water or deficiency of available oxygen. Frost injury has been advanced as a cause of spring injury. Serious spring injury occurs when it could not be due to frost and is not at all in proportion to the intensity of the cold. Dean Cordley says the temperature in the orchard sections of the humid northwest rarely or never falls low enough in April or May to cause serious injury to the trees, although it may occasionally damage the fruit. If acute nitrogen starvation is the cause of the injury, the most vigorous trees in the most active vegetative period would naturally suffer most severely, since their needs are greatest.

Though nitrogen may be present in the soil in normal amounts it may not, Doctor Cordley thinks, be available for the use of the tree during the critical period of its greatest activity.

Since nitrogen is available only in the form of nitrates which are readily soluble, it may have been leached from the soil at the time of spring injury—when the trees need it most. Hence it is possible that even though nitrates were present the preceding summer and fall in normal amounts, trees may have suffered from acute nitrogen starvation during the very brief but critical period. Some analyses made for Doctor Cordley indicate this condition. In the more friable, better drained and less acid soils the processes of nitrification doubtless serve to keep up a constant though often an insufficient supply of nitrates and spring injury rarely or never occurs in orchards on such soils.

The rate at which nitrification takes place is determined by the conditions of heat, air, and moisture prevailing in the soil. Thus it comes about naturally that the most serious spring injury occurs upon cold, acid, and poorly drained soils.

The scarcity of available nitrates in the soil is caused by leaching the accumulated nitrates or by conditions which inhibit the process of nitrification at the time when a new supply of nitrates is most needed. Should this spring injury theory prove to be the explanation of sour sap, it may also explain, thinks Doctor Cordley, cherry tree gummosis which he considers differs little from spring injuries of other trees. It would also explain the cause of the rapid yellowing of thousands of acres of grain on poorly drained soils. It may likewise account at least in part for the slow early season growth of spring planted crops on colder soils.

Proof of the correctness of the theory would likewise suggest the remedy—such measures as may be necessary to provide a necessary supply of nitrates to carry the trees through the critical period of a week or two before blossoming until the soil conditions become favorable for nitrification.

The quickest and most readily available method of supplying nitrates is a light application of nitrate of soda some 10 days before the trees blossom. The liming of acid soils, drainage, early cultivation and the growth of cover crops also tend to favor nitrification.

If the natural processes of nitrification are to be relied upon, Doctor Cordley thinks the soil must be put in the best possible condition to promote this process prior to the time of blossoming and kept in that condition until danger of injury is past. Unless this is possible, he says he can see no alternative but a light application of nitrate of soda.

Fennel Pondweeds Clog Water Canals

Aquatic plants choking the canals of Hermiston and other irrigation districts of Oregon are fennel pondweed and not, as frequently thought, either ditch grass, moss or alga, reports W. E. Lawrence, assistant botanist of the station at the agricultural college, after a preliminary investigation.

Professor Lawrence was assigned to the problems of determining and controlling the troublesome plant on request of farmers and ditch supervisors who have been greatly damaged by the pondweeds. These plants grow from seeds germinated in the silt collected at the bottom of the canals. They grow quite dense when well established, several score to each square foot of channel bottom. They are much branched and of height sufficient to reach the surface of the water, but are bent by the force of the current till the tops are kept just beneath the surface, where they form a tangled mass that greatly obstructs the current.

The carrying power of the ditches is sometimes reduced 40 to 60 per cent by the pondweed, says Professor Lawrence. This serious reduction occurs after the waters begin to warm up in the spring, and is greatest by late spring and early summer when water is most needed for the crops. The effect of this reduction on the crop yield and quality causes a heavy financial loss, especially in dry seasons.

Another loss results from the time, labor and money spent in efforts to remove the weeds. The most effective method, says Professor Lawrence, is turning the water out of the canals for five to seven days in hot dry weather, that the sun may kill the weeds. This interruption to the water supply is likely to prove most serious and was not provided for in the water users' agreements.

Possibilities of control of the pondweed by chemicals will be investigated by Professor Lawrence as soon as he can find time for this work.

A plant somewhat similar to the fennel pondweed of the irrigation ditches is the horned pondweed found in the drainage ditches of the same districts. It is controlled in the same way.

with partial success for removing aquatic growths from canals in other districts. Hay rakes, drag harrows, mowing machines and chemicals have all been tried in various irrigation districts of the United States, but none have proved entirely satisfactory. The cutting or dragging parts of the machine are clogged by the weeds, and it is difficult to regulate the depth and width of action.

Running an acme harrow on the canal bottom has proved to be the most satisfactory method so far reported, says Professor Lawrence. This tool has a series of turned knives which can be set to run at depth and angle necessary to cut the weeds off about two inches below the bottom of the canal. The weeds are then washed by the current down to some bridge or other suitable operating place, where they are thrown out by men with pitchforks.

So thick do the pondweeds grow and so rapidly does the acme harrow do its work that several men are kept busy by a single harrow drawn by two horses, one on each bank of the canal. Operation of the acme harrow does not interfere with the flow of water while the work is going on, and the silt it stirs up gradually redistributes itself along the leaky places in the channel.

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THE SWANS OF YPRES

Ypres was once a weaving town. Where merchants jostled up and down. And merry shuttles used to ply; On the looms the fleeces were Brought from the mart at Winchester, And silver fox from Burgandy.

Who is weaving there tonight? Only the moon, whose shuttle white Makes silver warp on dyke and pond. Her hands fling veils of lily-wool On riven apte and open roof. And on bargard marsh beyond.

No happy ghosts or fairies haunt The ancient city, huddling gaunt. Where wagons crawl with anxious wheel. And o'er the marsh land desolate Wind slowly to the battered gate. That Flemings call the gate of Lille.

Yet by some wonder it befalls That, where the lonely outer walls Brood in the silent pool below, Among the sedges of the moat, Like lilies furled, the two swans float; The Swans of Ypres, men call them now.

They have heard guns and many men Come and depart and come again; They have seen strange, disastrous things. When fire and fume rolled o'er their nest; But changeless and aloof they rest, The Swans of Ypres, with folded wings. —Anonymous, from Punch.

Sahara Desert Once Well Watered and Fertile Says Professor of Egyptology

The Sahara desert was once well watered and fertile, and hunters from the Sahara plateau, moving gradually down through a rift in North-eastern Africa, located where Egypt now lies, according to Dr. James Henry Breasted, professor of Egyptology and oriental history, University of Chicago.

Doctor Breasted said that this all happened about the time of the stone age. Egypt was then one huge lake, but it gradually drained out into the Mediterranean, leaving the Nile valley. Here the hunters were afforded every natural resource and founded a civilization which outstripped Europe. It was about 4,000 or 3,000 B. C., that Egypt had a stable government controlling millions of souls.

The grain of Egypt was 1,000 years older than that found in Asia, says Doctor Breasted, and cattle undoubtedly had their origin in Africa. The stone age founders of Egypt early developed from hunters to farmers and used the oldest metal instruments made by human agency. They evidently discovered the metal there; and a system of writing was evolved in Egypt thousands of years before Christ.

Majority of Big Animals Are Extremely Lazy Even in Their Native Haunts

Though not generally known, most of the big carnivora are extremely lazy, in their native haunts—only exerting themselves when in need of food, and often going without it for sheer indolence.

Animals of the zoological gardens obtaining their food without any effort on their own part grow stupid and ill for lack of exercise. The peeing up and down, just before meal time is not sufficient. Besides, animals are like people; they need change of scene and air. For this reason the animals in a circus or show are really more fortunate than their brothers in the zoological gardens.

The trick animals get plenty of exercise during performance, and the constant change of scene keeps them interested. Even such fierce animals as leopards, tigers and lions enjoy going through their tricks from sheer relief of the monotony of their cages, and often the big cats are quite playful during the time of their training, not from any love of man, but from a love of motion.

NOTES OF SCIENCE

A Missourian is the inventor of a seed planting attachment that can be added to any farm cultivator.

South Africa has more than 32,000,000 sheep, producing annually more than 170,000,000 pounds of wool.

The bowl of a new medicine spoon has a hinged cover to retain its contents, easily lifted when desired.

To enable a man in one room to watch a cash register in another a device termed a detector has been invented.

Scheme to Fool the Taste When Swallowing Medicine

Yet another attempt has been made of devising some scheme whereby a patient may take a disagreeable medicine without tasting it. In the new idea a tiny cup is provided which is dipped inside an ordinary tumbler. The medicine is placed in the inner cup, and the tumbler filled with water. The inventor's idea is that the patient simply drinks the water, whereupon the medicine also flows out, and floating upon a film of water, is swallowed down, without coming into contact with the tongue.

Many Are Color Blind.

One man in every 60 in England is partially or wholly color blind, so at least the tests for the English mercantile marine seem to show. A noted professor maintains that the proportion is even larger.

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Effective Sunday June 29th
The Valley & Siletz Railroad runs a train leaving Independence at 7:45 a. m. going through to Cannon Beach arriving there 10 a. m. Leaving at 4:45 p. m. arriving Independence at 7 p. m. leaving at 7:25 p. m. for Hoskins. Sportsmen will have an opportunity to whip the Lockman Train will leave Hoskins Saturday at 6:30 p. m. arrive in Independence 7:45 p. m.

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