

The Agricultural College Is a Friend to the Farmer

Page of News Notes and Interesting Articles Written by College Experts



VIEW OF OREGON AGRICULTURAL COLLEGE AT CORVALLIS, OR. ITS SOLE AIM IS TO AID AGRICULTURISTS.

Poisonous Plants Are Numerous in Northwest

(Special.)
SOMEWHAT contrary to the general belief poisonous plants are fairly numerous in the Northwest. One hundred and thirty-three different specimens, poisonous or under grave suspicion, have been listed by the Oregon Agricultural College botany and plant pathology department.

The long list of plants regarded as poisonous at some time of year or other and to some form of animal life, includes bacteria, fungi, ferns, and both monocotyledonous and dicotyledonous plants. Some are grasses, some generally regarded as weeds, some are shrubs and some water plants. The reasons for their poisonous actions, as related to their methods of growth and other vital processes, are described by Mr. Lawrence as follows:

Among the several differences between plants and animals, the ability to manufacture organic food from inorganic food materials is perhaps the most important. Upon this one physiological process depends the life of all plants and animals. This is the chief characteristic of the commonly cultivated plants.

Plant Poisons.

Another important difference lies in the retention of the by-products of plant metabolism. The construction of plant food and its incorporation into the protoplasm are both building-up processes, in which there is a storing of energy chiefly obtained from the sun. These up-building processes are followed by the partial or complete release of the energy thus stored. If the release of energy is only partial, intermediate decomposition products will be formed, such as tissues, temporary food substances and permanent by-products. To the latter class belong most of the medicinal substances, perfumes, flavors, spices and poisonous substances, formed in plants.

Plant poisons may be grouped as those affecting the skin by contact, causing chemical and mechanical irritation; digestion and urinary organs; and the blood and nervous systems of animals.

Virulent Stages.

A few of the more important poisonous plants found in this region are the water hemlock (*Cicuta*), and larkspur (*Delphinium*). These are perhaps the most serious on account of causing a rapid death. Other ones are loco (*Astragalus*), digitalis and lobelia (the latter when found in hay). In general, stock do not eat poisonous plants when plenty of good grass or other edible plants are at hand. If animals are hungry they may eat almost anything, not making any distinction between poisonous and nonpoisonous plants. It is at the time when such plants as lobelia and fern are found in the hay that poisoning is most likely to occur.

It is perhaps only just to emphasize that many plants are poisonous only in certain seasons at certain stages of their development or in certain conditions (as wilted, mouldy or frozen plants after thawing). Generally the poison is found only in certain parts of plants, as tuber, leaf, seed or fruit. The deadly poison of the *Cicuta* is found chiefly in the root; in the leaves of the larkspur; in the bulb of the death camas; in the seed of the lupine; in the bark, leaves and flowers of black locust, etc.

A page of interesting items from the Oregon Agricultural College at Corvallis will alternate in the farm weekly with a page of news notes from the Washington State College at Pullman. This will afford an interchange of views from the two big agricultural colleges of the Northwest that should prove of benefit to the reader, for the institutions deal with similar problems.

Aiding Old Prune Trees to Bear

BY C. I. LEWIS,
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(Special.)

AN increasing number of Oregon prune growers find that as their trees age the fruits fail to grow so large as when the trees were younger and more vigorous, and are inquiring how the old trees, 25 years old or more, can be improved. It is only by the best of care that the old trees can be kept vigorous enough to maintain fruit as large as that of the young trees. Good pruning and the best cultural methods with soil fertility maintained are necessary in a special degree after the trees enter upon the later stages of their life. The size of the prunes depends upon several factors, but the leading factors are good tillage, plenty of plant food, and annual pruning.

You have already noticed, probably, that the large fruit is borne on the vigorous young wood, and it is only by having a large amount of young, vigorous wood coming on each year that you can hope to maintain the vigor of your trees and at the same time produce large crops of good-sized fruit. I would encourage you especially in the annual pruning. If these trees have been abandoned in their pruning, or you have neglected it to a certain extent, there are one or two things you could do. One thing would be to cut them back heavily and force out practically a new top. I know one orchard in the Willamette Valley that is 18 years of age, that was cut back heavily, new tops have been built on the trees, and the trees after two or three years are now bearing heavy crops of extra large prunes.

Pruning.

If the trees, however, are in fair shape, I wouldn't advise such severe cutting, but would suggest that you thin out some of the spurs. The chances are that you have a great many weak spurs. You can take little hand shears and reduce the number of these spurs on your trees, and get splendid results. The tendency for the older trees is to bear too many specimens and of course this reduces the size. This same principle pertains to apples, pears and other fruits. Often by reducing the number of fruits to the tree, you increase the average size. With the apples, it is generally a matter of thinning out some of the branches. With old pears we find that thinning out some of the spurs often gives splendid results.

The first suggestion I would make with regard to fertilizers would be along the line of cover crops and shade crops. For Western Oregon I recommend cover crops, sown in late August or early September. For your section, if you have irrigation water, you can practice growing shade crops. This is, grow clover or alfalfa among your trees and irrigate both the trees and the shade crop. This will cause your trees to pick up if you are careful in your irrigation and use sufficient amounts of water. If you don't have sufficient amounts of water, I wouldn't advise the use of clover and alfalfa among the trees.

Fertilizing.

If you can get a good, abundant supply of barnyard manure there would be nothing better to increase the vitality of your trees. Your wood ashes, especially hardwood ashes, is very valuable, and should be saved, as should also hen manure, which is splendid for building up the soil in our prune orchards.

We are conducting a number of experiments in this state in prune orchards, to determine the value of commercial fertilizers for such fruit, and until we have had a chance to carry this work a season or two farther along, I would urge the prune

growers of the state to be somewhat conservative. If you feel, however, that you would like to try under your individual conditions to determine what your trees need, I could suggest for you a simple experiment which should determine this point.

While the chemist can tell you if certain plant foods are missing, or if certain injurious salts are present, he couldn't tell you the exact availability of the plant food in your soil. You will have to test that out yourself.

Commercial Plant Foods.

Take from a dozen or two dozen trees. Have them in rectangular blocks, for each plot. On the first plot apply nitrate of soda at the rate of 100 to 150 pounds per acre. On the second plot apply sulphate or muriate of potash, in about the same amount. On the third plot apply high-grade superphosphate at the rate of 100 to 200 pounds per acre, or acid phosphate, at the rate of about 600 pounds per acre. Then take additional plots for the combination of two. On one plot use nitrate and potash; then nitrate and phosphoric acid; then potash and phosphoric acid; then all three. Then if you would like to try out something along the line of lime, take and try a little lime at the rate of about 2000 pounds per acre, on a small plot.

Have the fertilizers applied early in March, sowing it in under the branches of the trees and harrowing it thoroughly.

I very much doubt whether lime and phosphate in themselves would cause any increased color in the fruit. If you have too much nitrogen in the soil it will delay the maturity and probably the taking on of color. Phosphoric acid is supposed to be beneficial in helping form the seed of the fruit, and in that way would perhaps help early maturity. Perhaps early maturity would mean better color. It would probably be due to the early maturity, rather than any direct effect of either lime or fertilizer. The lime sets certain plant foods free and might have influence on the cell structure of the plant.

How Poisons Form in Plants.

The forming of poisonous elements in plants, explained by W. E. Lawrence, of the O. A. C. botany department, is a result of the natural processes of growth, from which in some plants it is inseparable. The construction of plant food from inorganic substances and its transformation into protoplasm are both building-up processes in which the stored energy is largely obtained from the sun. In these organizing and building-up processes there is a partial or complete release of energy thus stored. If the release of energy is only partial intermediate decomposition products are formed, such as plant tissues, temporary food substances, and permanent by-products. It is certain of these by-products that constitute the poisonous substances in the poisonous plants. In other plants the by-products may form medicinal substances, perfumes, flavors and spices.

Customer Always Right.

The Latin maxim that means let the buyer beware has as little place in the mercantile business of the world today as the language in which it was spoken, according to Dean J. A. Bexell, of the O. A. C. school of commerce, who believes that it is the seller that should beware. It thus becomes the duty of the seller to sell the customer what he wants, not what he can be made to take. The Wanamaker theory of selling, "the customer is always right," is a much safer and more profitable attitude that should be assumed by sellers of farm produce as well as of any other commodity.

Many Students Borrow From O. A. C. Loan Fund

ONE hundred and forty-eight students have borrowed from the O. A. C. student loan fund since it was established about three years ago. Many others have sought loans but could not be accommodated because the fund was exhausted. The loans were too small to make for the highest efficiency, having averaged but \$38. In view of the need of more loans and larger the necessity of increasing the fund is apparent.

The purpose of the fund is to aid worthy young people to complete their college work by lending them small sums of cash on suitable terms of interest and repayment. It was started by friends of the college, Honorable R. A. Booth being the largest contributor with a \$1000 gift. The Pierce fund of \$500 was also subscribed and Mrs. Clara H. Waldo added another hundred in cash. The faculty contributed \$855 and student organizations, notably the Barometer and Oregon Countryman, made up the bulk of the remainder. The short course class of 1914 gave \$144 and the whole fund now totals \$3853.33.

Although the fund is growing, it has not nearly reached the point where it can supply the demand for legitimate and much-needed loans, and friends of the college hope to see it brought to the \$10,000 mark.

Growing Own Vegetables.

Although no state in the Union affords better climatic or soil conditions for market gardening or truck farming than Oregon, yet it has always been a vegetable importing state. "Carloads of produce come to our markets annually from outside sources," says Professor A. G. Bouquet, the O. A. C. garden specialist, "although a large share of it could just as well as not be grown in this state. The smaller markets are the ones most neglected, the average grower directing his attention more toward such markets as Portland, always liable to market troubles, due to heedless consigning and to the marketing of poor produce. Oregon markets are in a somewhat crude condition but are now undergoing rapid development, and there are big opportunities in the vegetable business when rightly managed."

Lung Worms Trouble Calves.

Serious lung worm trouble of calves has arisen in some parts of the state where the calves are pastured on low lands during wet weather. These trouble are treated by J. L. Smith, county agricultural agent of Coos County, by hypodermic injections of turpentine into the trachea of the affected animal, or by causing the animal to inhale sulphur fumes by putting its head into a sack and holding it over a sulphur smudge. He also recommends that farmers remove calves suffering with lung worms to higher ground and give them more protection from the rough weather.

More Loam Required.

The compost recommended for potted plants in a recent issue of the O. A. C. Bulletin should have read two measures of loam soil, instead of one. The other components were correctly given as follows: One-half measure of sand and one measure each of well rotted manure and leaf mold. The double portion of loam is required to prevent acidity, which is very likely to develop when the compost is kept too wet. This danger of acidity can be eliminated by adding about one per cent of air-slacked lime to the compost.

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