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# WISCONSIN HORTICULTURE

OFFICIAL ORGAN OF THE WISCONSIN STATE HORTICULTURAL SOCIETY

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*Rubus Odoratus*, or Thimble Berry, of Northern Wisconsin. The luxuriant foliage and showy blossoms of the Thimble Berry are attractive and real, but the fruit is deceptive, a thin layer of pulp barely concealing an enormous receptacle.

### Standard Fertilizer Analyses for Truck and Vegetable Crops.

Most vegetable crops leave smaller humus residue in the soil than do field crops. A good crop of oats leaves a stubble which plowed under adds a large amount of organic matter to the soil. Sugar-beets, on the other hand, are frequently harvested top and bottom, one part going to the silo and the other part sent to the sugar factory. Similarly, a thick and vigorous grass sod plowed under may add as much humus to the soil as a coat of manure, while a crop of celery is entirely removed from the soil, and makes no return for the organic matter destroyed during its growth. Vegetable crops, as a class, are very "hard" on the soil, and make the problem of maintaining organic matter very important.

In years past manure has been largely used on vegetables, sometimes in extravagant and wasteful quantities. Today, however, this source of supply has been diminished, for the "gas tractor leaves no organic residue." Vegetable fertilizers must, in general, be those which furnish nitrogen in "food" quantities, and the other plant foods in such supply as will grow both the main crop and the cover crop needed to maintain humus.

At the outset we must make a distinction between vegetables grown under field conditions—canery sweet corn, peas, tomatoes, etc.—as against vegetables grown under intensive market-gardening conditions. Heavier fertilizer applications must be used under the latter conditions, with of course, certain changes in analysis.

#### POTATO FERTILIZERS.

Take potatoes as an illustration. Regardless of where grown, quick

growth is always desirable, and a good percentage of nitrogen needed. Potato fertilizer should also always contain potash—for the potato is preeminently a potash-loving crop. When grown as a main season crop, as from New Jersey north and west, a fertilizer which has been largely used in past years is a \*5—8—7 for the sandier soils, 4—8—6 and 4—8—4 for the loamy soils. Naturally, there have been variations from the foregoing analyses, a very popular fertilizer in New Jersey just now being 4—8—3 and 4—8—5. As we go farther west the amount of nitrogen is decreased. In Michigan, with more nitrogen naturally in the soil, and seemingly less phosphoric acid, the analysis for field crop potatoes changes to 3—10—4 or 3—10—2. Occasionally, when used with manure, a 3—12—0 can be used to advantage.

#### WHERE QUICK GROWTH IS ESSENTIAL.

On the Eastern Shore of Virginia and in the Norfolk trucking regions potatoes are grown to reach the earliest spring market. Quick growth is essential. The difference of but a few days in reaching the market often makes the difference between a profitable price and a "glut-in-the-market" price. In these regions a 7—6—5 has for years been very profitably used. We are free to admit that experiments show 5—8—5 to be really more effective in producing early potatoes than a 7—6—5, although as it happens the total crop is seemingly increased by the use of a large quantity of nitrogen. At the same time, a 7—6—5, which has been used for years, is in itself a concentrated fertilizer, and therefore, must continue to be offered

\* 5 parts nitrogen, 8 phosphorus, 7 potash.

until such time as farmers generally find it to their advantage to use a fertilizer lower in ammonia. Should this fertilizer be used in Aroostock County, Maine, however, or in the Wisconsin potato region, it would probably result in too vigorous a growth of tops, and a corresponding failure of the crop to "bottom out" well.

In Maryland, Kentucky and other states south, potatoes are often grown late in the season, planted in July or even in August, and harvested very late in the fall. This requires fertilizer of a different analysis. Since the crop is planted at a time when soil nitrogen is in its most available condition, less is needed in the fertilizer. This could be accomplished by cutting in half the acre application, but in doing this we would also cut down the potash and phosphoric acid. It is better to retain the normal application, but to reduce the nitrogen in the fertilizer. Under these conditions a 2—10—6 fertilizer has given extraordinarily good results. It is, therefore, tentatively listed in the "standards" as a special analysis for a special purpose.

#### TRUCK-CROP VEGETABLES.

For vegetables grown under "extensive" conditions, fertilizers of the 3—10—4 series are used to excellent advantage—the various members being 3—10—6, 3—10—4, 3—10—2 and 3—12—0. These contain more nitrogen and the acre application is also higher than for staple crops, so that the amount of nitrogen is increased in two ways.

The selection of fertilizer from this group depends principally upon the soil, but partly upon the crop. All root crops respond to potash. Therefore, beets, sugar-beets, mangels, carrots and parsnips should usually have fertilizer

carrying at least 2 per cent of potash, under normal conditions probably 4 or 6 per cent. Should manure be applied to these crops, it is probably more profitable to cut down the acre application for fertilizer rather than to select a fertilizer carrying no potash.

The same group of fertilizer does nicely when cabbages are grown under field conditions, usually for kraut factories. When, however, the same crop is grown under market gardening conditions, as it is on Long Island and in many other sections of the country, a larger amount of nitrogen is desirable. This gives us our second series of vegetable fertilizers—4—10—6, 4—10—4, 4—10—2.

#### FERTILIZERS FOR BEANS AND PEAS.

Navy beans and Canadian field peas, when grown under field conditions, had best have a grain fertilizer containing 2 per cent of ammonia. These two legumes are not nearly as active nitrogen gatherers as are soybeans and cowpeas—hence the desirability, under normal conditions, of including nitrogen in the fertilizer used.

Since the acre value of most vegetable crops is high—much higher than is the acre value of our field crops—the cost of the fertilizer for growing vegetables is generally of relatively minor importance. Before the war it was considered good business on the part of vegetable growers to use potash, as well as the other plant food elements, in liberal quantities, on the basis of insurance—for in this, as in so many other things, it is better to be safe than to be sorry. There is no doubt that as price conditions stabilize, and as production gets on a normal basis, vegetable growers of the future, as in the past, will adopt this attitude.

### Buying the Right Fertilizers

Summary of Bulletin No. 22 State Department of Agriculture, C. P. Norgord Com., State Capitol.

**In any system of farming** a certain amount of plant food must be purchased in order to keep the soil fertile.

**There are three kinds** of plant food in which soils may be deficient and which are sold in commercial fertilizers, — Phosphoric acid, containing phosphorus; ammonia, containing nitrogen; and potash, containing potassium.

**The fertility of the soil** cannot be profitably maintained by commercial fertilizers alone, but must be used as an addition to lime, farm manures, legume crops, and other crop residues.

**A so-called complete fertilizer** contains nitrogen, phosphorus and potassium, but does not return all the plant food removed. The amount of nitrogen or ammonia added in the average application of the ordinary fertilizer returns only a small fraction of that removed by the crop. The nitrogen content of the soil must be largely maintained by legume crops or by legume crops and barnyard manure. By adopting a proper rotation the nitrogen content of the soil can be maintained in general farming without the purchase of commercial fertilizers containing nitrogen.

**In order to obtain nitrogen through legume** crops the soil may require inoculation. Cultures for inoculation can be obtained at low cost from the College of Agriculture.

**The phosphorus or phosphoric acid content** of the soil can be properly maintained by the purchase of fertilizers. The principal phosphorus containing fertilizers are rock phosphate, bone meal and

acid phosphate. Farm manure is low in phosphorus and a phosphate fertilizer should be used even when an abundance of manure is available.

**Potash is five or six times** its normal price and its extensive application at present is profitable only in exceptional cases. Many soils contain unlimited amounts of potash which can be made available by the use of organic matter such as green manure and barnyard manure.

**Many crops will not grow on sour or acid soils** even if abundant amounts of nitrogen, phosphoric acid and potash are present. Limes correct or neutralize acidity. The value of lime depends upon the amount of acidity overcome by unit weight. A large amount of impurity or water in lime means lower value. Limes should be bought on the basis of their neutralizing value (per cent of calcium carbonate or equivalent) and water content.

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Be sure every dahlia tuber planted has at least one eye at the tip.

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The boy or the girl interested in a garden, poultry, or pets, as a rule, becomes a self-respecting business man or woman. Large flats and small yards do not tend to make good citizens of the children compelled to be sheltered by them.

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Sweet peas should not be hilled, as there is danger from stem rot if this done. It is well to leave the rows a little bit hollow to catch and hold the rain. Sweet peas should be planted early since they make their best growth in cool, moist weather.

## CRANBERRY CULTURE

Edited by Mrs. S. N. Whittlesey, Cranmoor, Secretary Wisconsin Cranberry Growers Association

Some interesting and not generally known facts relative to the cranberry industry of southwest Washington are gathered from the annual report of E. F. Perry, horticultural inspector for district No. 7 which comprises the counties of Pacific, Grays Harbor, Mason, Thurston, and Lewis. The report says:

"The cranberry industry of the North Beach District, Pacific county, and a strip of land lying south of Aberdeen, Grays Harbor county, are rapidly developing into one of the leading horticultural interests of the northwest.

"We believe this wonderful horticultural product demands some special attention from the state department at this time.

"The cranberries of Pacific county are located on the north beach peninsula, a strip of land in the extreme southwest part of the state of Washington, bounded on the east and north by Willapa Harbor, on the south by the Columbia river and on the west by the Pacific ocean.

"The topography of this peninsula is a very interesting study. The underlying strata is composed wholly of clean sand and the greater part of the peninsula is a series of low ridges. It is between these ridges that the cranberry marshes are found, high enough above sea level that they are not overflowed by salt water at high tide. The soil is composed of decayed vegetable matter, the accumulation of ages of the rank growth of ferns, grasses, mosses and flags. The cranberry is a na-

tive of this district. When the first white men visited the peninsula, the Indians were gathering the berries. The district inspector has been informed that it was 1909 or 1910 that the first bogs were planted with cuttings sent from the east. The development of the industry has been quite rapid, and the yields from the bogs now in bearing are very satisfactory. The experimental stage is now passed. The industry has now reached the commercial stage. The crop for the district in 1917 was about 3,500 barrels and in 1918 about 15,000 barrels. One grower from a little less than one acre harvested about 206 barrels. There is a series of bogs of great acreage located on the peninsula near Willapa Harbor, in Grays Harbor county, south of Aberdeen. These bogs have just begun to be developed. This locality has about the same topography as in Pacific county and the soil and climatic conditions are of the same character.

"This last season the crops in Grays Harbor county were very satisfactory, several hundred barrels being harvested from a small acreage. Some 250 acres will be ready for development this next season. The cranberry bogs of western Washington will of course require control measures to protect them from destructive insect pests and fungous diseases. These problems are now being worked out by special experts from the United States Department of Agriculture, so far with fine results,

after which it will be up to the states and counties interested to protect the industry by means of proper sprays applied at the proper time."

Probably there is no way of preventing the formation of scum which is universally found on cranberry vines in the spring. It is a growth or accumulation that comes from long submersion in the more or less stagnant water of the winter flooding. The longer the vines are kept under, the greater the amount of scum, and the more difficult to remove. Instead of holding the winter flood till late in May as was the general custom years ago, many successful Wisconsin growers now let the water down, exposing the vines in March or early April. The vines then have the benefit of spring rains which wash off and remove this scum before it has become so thick and tenacious, leaving the vines in a clean and healthy condition, and before there is any start of new life or growth. Early in May bogs are reflooded and kept under a week or ten days from the ponds or reservoirs which have also been freshened and improved by the rains of early spring.

An excellent treatise on currants and gooseberries has been issued by the U. S. Department of Agriculture. It appears about three months too late to be of the highest value this year but it is well worth reading and preserving. Ask for Farmers' Bulletin 1024, Currants and Gooseberries. A postal card request will bring a copy.



### Spray Materials

Prof. R. B. Cruickshank, Ohio State University

New materials and methods for the control of insects and diseases are constantly appearing, and if any of these offer the fruit grower a saving in money or time they become a matter of immediate interest.

Arsenate of calcium, as a substitute for arsenate of lead, is beginning to attract attention. Manufacturers have been gradually improving it for the past few years and it promises perhaps to be a spray material which will do the work of arsenate of lead at less cost. Calcium arsenate runs 10 to 12 per cent higher in arsenic oxide than lead arsenate powder and at least 50 per cent cheaper. Using the calcium arsenate at the rate of 1 pound to 50 gallons, this would mean a saving of about 15 cents per 50 gallons of spray. Calcium arsenate has been found to be effective against codling moth perhaps does not stick as long as lead arsenate, does not injure foliage when used with either liquid or dry lime-sulphur, Bordeaux mixture or lime. In Maine, for the past two seasons, the percentage of merchantable apples has been decidedly in favor of the arsenate of calcium as compared with arsenate of lead. A general and universal recommendation of this material would be dangerous, but it is certainly worthy of trial by growers as it holds the possibility of a considerable saving.

### Dry Lime Sulphur

Shewin-Williams' dry lime-sulphur is also attracting attention because of greater convenience in handling. It is a true lime-sulfur depending upon sulphides and pol-

ysulphides for its fungicidal and insecticidal properties. New York reports about 10 per cent more scab with dry lime-sulfur as compared with the standard liquid solution; Michigan reported about the same difference last year in the face of a heavy scab infection and 1 per cent difference this year with a light scab infection on the checks; Wisconsin's tests this year shows good scab control, compared with liquid lime-sulfur and Bordeaux mixture and the check trees were three-quarters scabby; Ohio has been able to control scale and scab, but has had no opportunity to give it a severe test. In several instances it was suggested that it ought to be used one-half again as strong as recommended by the manufacturers for the best results. In fact in Maine, when used at about 3½ pounds per 50 gallons in two seasons, it did slightly better than liquid lime-sulfur. On account of its greater cost it will probably not be used this year by large growers, but it appears to have a place for the man who uses less than a barrel of lime-sulfur during the season.

Dusting is also a matter of interest just now because of its time saving factor. Results in different States show wide divergence as regards efficiency, and the cost of materials is high. However, dusting is being done by more and more men each year. I believe large growers will provide themselves with dusting outfits for emergencies at least on account of their speed. The spray gun, however, has done much to check that tendency in Ohio in the past two years.

Keep garden tools bright and sharp. They will work easier.

### By, By, Barberry

No. 278, A.] [Published May 19, 1919  
CHAPTER 189, LAWS OF 1919

AN ACT to create section 1494—9a of the statutes relating to the eradication of the harmful species and varieties of barberry and other plant species which act as hosts or carriers of dangerous plant diseases or insect pests.

The people of the state of Wisconsin, represented in senate and assembly, do enact as follows:

Section 1. There is added to the statutes a new section to be numbered and to read: Section 1494—9a (1) No person, firm, or corporation shall receive, ship, accept for shipment, transport, sell, offer for sale, give away, deliver, plant, or permit to exist on his or its premises any plant of the harmful barberry, or any plant of a species that shall be designated by the department of agriculture in published regulations to be a host or carrier of a dangerous plant disease or insect pest.

(2) The state entomologist of the department of agriculture and his deputies are hereby empowered to eradicate and such plant found growing in the state. If the owner shall refuse or neglect to eradicate such plants within ten days after receiving a written notice, the expense of such eradications shall be assessed, collected, and enforced against the premises upon which such expense was incurred as taxes are assessed, collected and enforced and shall be paid into the treasury of the state.

(3) The term "harmful barberry" shall be interpreted to consist of any species of Berberis or Mahonia susceptible to infection by Puccinia graminis, commonly called black stem rust of grain, but not including Japanese barberry, B. thunbergii, which does not propagate the rust.

(4) The penalties provided in section 1494—10i and all other applicable provisions of section 1494—1 to 1494—10i, inclusive, shall govern and apply to the enforcement of this section.

Section 2. This act shall take effect upon passage and publication.

Approved May 15, 1919.

COPY LAW.

One of the most successful market gardeners about the twin cities began years ago to give his boys and girls when they were small, an interest in his business, and as men and women they carry on the business today, not one of them wanting to leave it.

## AMONG WISCONSIN BEEKEEPERS

The Wisconsin Beekeepers Page  
Prof. H. F. Wilson Editor

### Buying Bees

By S. B. Fracker, Acting State Entomologist

When David Harum and his horse-trading friends of the old days found a perfectly good specimen of horse-flesh going lame, he proceeded to dispose of the animal as soon as he could. A favorite outdoor sport of that time was horse trading in which the winner was the man receiving the highest price for the poorest animal. The methods used for concealing heaves, lameness, and disease were the stock in trade of horse-owners and were considered perfectly honest—unless practiced on Sunday!

While the art of horse-trading has now given place to the business of automobile selling in which the same conditions are intensified, the desire to dispose of livestock on the farm when something begins to go wrong with it is still strong. Is beekeeping an exception to the rule? After gathering honey from an apiary for five, ten, or twenty years, do a few unprofitable seasons and a succession of winter losses, followed by "spring dwindling," cause many beekeepers to try to sell out at a good price? When something "seems to be wrong" do they want to "get out from under?"

### Foulbrood Distributed by Sales of Bees

One of the results of this trait of human nature is that American foul brood, the most serious

trouble with which beekeepers have to contend, has become scattered thruout the state. Disease centers are now known in almost every county in the state except near Lake Superior. Weather conditions and other causes are often blamed for losses really due to disease and whole townships have been found in which beekeeping had been practically wiped out without a single beekeeper suspecting the cause of the trouble.

From the first appearance of disease in Jefferson county over forty years ago it has been transported in all directions, sometimes for long distances. More trouble is experienced in the southern and eastern counties than in others but with foulbrood so widely scattered no beekeeper can consider himself immune.

With one infected apiary in a township the spread is rapid. Mr. Smith, finding beekeeping pays well, buys up a few more colonies from the next county and brings them home. The next year his bees are not doing so well and the following winter many colonies fail to survive. After trying one more season, usually not suspecting the cause of the trouble, he advertises an apiary for sale and distributes infected supplies and hives to six neighbors. They in turn find honey production unprofitable and pass their troubles on to others. In two townships in Richland county, in which these conditions were studied, practically every case of foul brood had arisen thru the purchase of bees or used bee supplies.

### New Inspection Law

A law prohibiting the sale of bees or used bee supplies without a permit or inspection certificate from the apiary inspector of the state department of agriculture has just been enacted at this session of the legislature. Foulbrood is now so prevalent that no beekeeper can afford to purchase any bees or supplies except from apiaries known to be healthy. Nor should honey purchased on the open market ever be fed to bees.

American foulbrood can be thoroughly cleaned up in an apiary and that has been accomplished hundreds of times in all parts of the United States. Only the brood in the comb is diseased and the adult bees do not carry the infection to a new clean hive if they are compelled to use all the honey in their honey-sacs at the time of transfer in the manufacture of comb. The cure results, however, in the loss of the comb and frames and necessitates burning out or boiling the old hives. Can any apiary owner afford to run the risk of purchasing old combs and hives when the most likely result will be either the loss of the bees thru disease or the somewhat expensive and laborious treatment?

### Wisconsin Holds Records

Wisconsin holds two beekeeping records, of one of which she can well be proud. For many years the census shows a honey production per colony higher than that of any other state east of the Rocky mountains and sixty percent higher than the average for the country as a whole. In 1900 and 1910 she was the seventh state

in total honey production and thirteenth in the number of colonies from which this production was derived. During the last few years, on the other hand, the U. S. department of agriculture reports that more samples of American foul brood were secured from Wisconsin for diagnosis than from any other state. Unless the present campaign results in lowering the latter record, the former cannot be held for long.

When hog cholera breaks out on a farm it usually cleans up that place by killing all the hogs. In the meantime, the neighbors have an opportunity to vaccinate all their own animals and otherwise protect their property from infection. Foulbrood in bees does not work so rapidly and the infected apiary may remain a disease center for years especially if neighbors will buy the infected hives. Why a beekeeper will invest in the hives and combs of an apiary in which the bees have died or become weakened when he would not think of purchasing the unwashed bedding of an acquaintance who had succumbed to smallpox is one of the great unsolved mysteries.

#### Suggestions

Insist on an inspection certificate for every colony of bees, hives, or used apiary appliance purchased.

Don't try to sell bees or supplies without a bill of health from the inspector.

If "things don't look right" or you find dead brood, write or send a sample of comb to the State Entomologist, State Department of Agriculture, State Capitol, Madison, Wisconsin.

Get ready to attend the BEE-KEEPERS' SCHOOL AT MADISON, August 18 to 23. Dr. Phillips and Mr. Demuth will be the instructors with a few local men on the program.

The Maple Honey Co. of Antigo, Wis., is a new corporation formed in Wisconsin to produce and handle honey on a large scale. 1,000 colonies of bees are soon to be working.

Mr. Kenneth Hawkins, formerly with the U. S. Bureau of Entomology, Beekeeping Dept., is now located at Watertown, Wis., and is in charge of the bee department of the G. B. Lewis Co. Mr. Hawkins, through the Lewis Co., is at the service of the beekeepers. Credit for the beekeeper's page in our paper is due to him.

The past year has been one of great disaster among Wisconsin beekeepers. Last season the honey flow did not appear in the southern part of the state and no crop was secured. Following this failure the bees were not given sufficient stores or else the stores were bad and a good many hundred colonies of bees died during the winter. Better beekeeping would have prevented this.

#### Various Bugs

A member asks about: (1) A worm that eats plum leaves, "leaving only the skeleton of the leaf," and complains that poison does not kill them; (2) About plum curculio; (3) and Buffalo Treehopper; (4) Also raspberry insects.

Dr. S. B. Fracker, state entomologist, answers as follows:

(1) From your description I should judge that the worm attacking your plum trees is the Cherry Slug (*Caliroa cerasi*). While common on apple and cherries, this insect does not usually trouble plums. It should certainly be controlled by arsenate of lead which kills all the cherry slug on cherries within a few hours. Either you are not using the arsenate of lead strong enough or your spray pump is not efficient enough to cover thoroughly the surface of the leaves.

(2) The spraying program given for plums will control the curculio in the home garden. In order to prevent reinfestation of the trees, be sure to gather the fallen plums and destroy them.

(3) The Buffalo Treehopper is an insect about one-fourth of an inch long, of very peculiar shape impossible to describe. It is usually more injurious on young orchard fruits than on raspberry canes. When weeds and grass are growing beneath the trees or adjoining them, the insect often does a good deal of damage by making slits in the twigs and branches of the young trees and many even seriously injure trees of bearing age. There is no control measure except freeing the neighborhood of the weeds on which the young hoppers develop.

(4) Several different insects of entirely different life history attack raspberry canes by making punctures and depositing eggs in the canes. The two most common in your part of the state are the snowy tree cricket and cane borer. In every case the only satisfactory control measure consists of the destruction of the cane attacked.

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### Fort Atkinson for the Summer Meet

The summer meeting of the State Horticultural Society will be held in Fort Atkinson in August. The dates have not been fixed yet but will be announced in the July number of this paper.

The meeting has usually been held the third week of August and it is quite likely that week will be selected.

Altho Fort Atkinson's invitation for both the 1917 and 1918 meetings were turned down in favor of other places the Fort people were good sports and finally won.

The selection promises to be a perfectly good one. So far as the

records show no Society meeting has ever been held in Fort Atkinson or nearby. It is the home of a big nursery; small fruit growing is well advanced in the neighborhood altho tree fruit growing is not an important industry. For real "pep" and completeness of detail in organization as well as in final results, no city or town excelled Fort Atkinson in War Garden work. After the War Garden committee had, by persuasion or force, induced everybody without exception to plant a garden, they set a hen in every back yard and raised innumerable broods of chickens. While the local committee has not yet reported, we have no doubt they have a hen or two on for us.

### Apple Buyers Convention

The Annual Convention and Apple Exhibit of the International Apple Shippers Association will be held in Milwaukee, August 13th to 16th.

The association is composed of apple buyers thruout the United States and Canada and maintains its home office in Rochester, N. Y.

The very able secretary, R. G. Phillips, knows at the beginning of the buying season how many barrels and boxes of apples there are in the country, where they are and their condition.

In the beginning of the organization there was a certain air of exclusiveness about it, only buyers were welcome and there were many sessions, some open to the public and some not so open.

Of late years, however, the whole attitude of the organization has changed and growers as well as buyers are welcome. In fact, many of the members, Senator Dunlap for one, are growers as well as buyers.

The I. A. S. A. might easily have given the War Boards which were formed for the purpose of fixing prices some valuable pointers had they been so minded. They could have warned them that any price fixing agreement would last just as long as it took the fixers to get back home and get into the field to underbid the other fellow.

The writer has attended the meetings of the I. A. S. A. for several years and has discovered no attempts in recent years at price fixing. Such a plan simply wouldn't work anyway and these big operators are wise enough to know it. The crop reports secured at the expense of the association are available only to members to which no one can seriously object. Aside from that there is no "inside" dope, there can be none.

These men who handle millions of barrels of apples buy them for cash, place them in cold storage in Chicago, St. Louis, Buffalo and other places and sell them as demanded by the small wholesalers and retailers. There is, no doubt, usually a profit in the transaction and these buyers are surely the "middlemen" so generously cursed by reformers. But until some one is wise enough to provide a better plan, possibly state owned storage plants, the cash buyers perform a valuable service to the grower. They provide a market for apples that is unlimited and the price, on the whole, is governed by the supply.

Wisconsin apple growers can well afford to attend this convention and get acquainted with the buyers.

Apple and plum trees make good ornamental trees for the back yard. Their fruits in the fall are more than ornamental.



### The National (Pack(ed)) War Garden Commission

The National War Garden Commission appeared suddenly and without warning along in 1917 with a flood of literature, expensively printed and lithographed garden pamphlets and posters, traveling representatives each supplied on arrival with "ready to use" newspaper interviews and, apparently, some millions of money.

If other states have been as well supplied with this literature as Wisconsin, it must have cost somebody a pretty penny. The booklets on gardening are cunningly built, some part of each is certain to apply somewhere in this broad country of ours,—can't miss. For the most part they are compiled from U. S. Department bulletins and are rarely of local value. The striking part of the whole plan is the glorifying of one Charles Lathrop Pack. No newspaper interview or contribution to the garden column mentions our saviour Pack less than three times. Rumor says that the whole enterprise is financed by Pack who has made a few millions and now wants his name immortalized. This may be an injustice to the gentleman but he certainly has *some* press agent. In spite of all this the Commission is undoubtedly accomplishing great good.

#### Scat

Will you please contemplate the city cat in all her cussedness. She weaves not neither does she spin but between excursions to garbage cans and associating with other disreputables of her kind she is climbing trees and porches to rob song birds' nests.

Of course this is true of every

cat except your own particular be-ribboned and cream fed pet but if you doubt that your darling kills birds just watch her. Never a cat lived but would kill birds and for this the cat is not to be blamed, its the cat's natural inheritance. The blame lies in keeping cats where birds are wanted.

The cat, unlike the dog, never develops affection nor any trait that is appealing.

Well fed cats are poor mouse-catchers. Starved cats prey on mice and sometimes on rats. A five-cent mouse trap will dispose of more mice than a cat.

Cat skins are now extensively used by furriers. Write to dealers for prices.

#### Fleur-de-Lis

The National Flower of France

I notice with great satisfaction that some Iris growers, specialists and dealers, have been very progressive in one respect in that they have cut out the word "German" in describing or referring to the bearded or flag Iris, Fleur-de-Lis, or Lily of France. A few growers have renamed it Liberty Iris, which is a happy thought and perhaps more appropriate than calling it German. The French long ago adopted the Fleur-de-Lis as their national flower and glorified it. The bearded Iris is widely known as the Fleur-de-Lis and it might be prudent to let it go at that for awhile. It is much fairer to France than to call it Liberty Iris. Some specialists have even cut out Germanica, as the botanical classification, which is also a good idea, for just as soon as it is referred to as Iris Germanica, people will call it German, a natural result. It is not German in origin. It was a mistake originally to call the species Germanica, and there has been confusion ever since. If the bearded Iris should be named after any country it certainly should be France, for it appears that there have been more named

varieties derived from France than from any other country, certainly, at least, as many. Not to give the French word Fleur-de-Lis a prominent place or specifically mention it as a heading would take from France the universal renown of being known as the home of the most beautiful species of Iris. So why not "let well enough alone," and why not let France retain this honor by restoring the poetical, romantic and charming French word of Fleur-de-Lis?

"O flower de luce, bloom on, and let  
the river  
Linger to kiss thy feet?  
O flower of song, bloom on, and make  
forever  
The world more fair and sweet."  
—Longfellow.

H. W. Groschner,  
In the Grower.

#### Old Arsenate

Q. "Will arsenate of lead bought last year be good for spraying this year or must I buy a fresh lot?"

Ans. Arsenate of lead does not deteriorate and may be kept indefinitely without loss of killing power.

During the months of June and July the editor should receive an average of two letters a day asking for a remedy for the striped cucumber beetle if the record for other years is equalled. All such inquiries are answered and this year the answer will be a marked copy of this issue. Read the article by Mr. Dudley.  
It answers your question.

Cut out the old canes of spiraea Van Houttei when they are through flowering or use some of the sprays for cut flowers. It is a good plan to prune all spring-flowering shrubs when they are thru flowering.

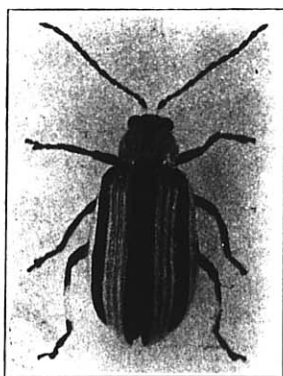
## THE INSECT PAGE

Conducted by the Department of Economic Entomology College of Agriculture

### The Striped Cucumber Beetle

(*Diabrotica Vittata*)

Life history and habits: As soon as cucumbers, squashes, melons and other cucurbits are up, the ravages of the striped cucumber beetle (see cut) will again be noticed. Indications point towards its presence in great numbers this



The Striped Cucumber Beetle  
(Enlarged 25 times)

year and the fight against this pest so hard to control, should be started just as soon as plants break through the ground.

The beetle (adult) spends the winter in masses of weeds and rubbish, appearing again about the Middle of May. From this time until cultivated members of the cucumber family are up the insect feeds on wild cucumber and various weeds, meanwhile laying quantities of eggs thereon. Eggs hatch in from 7 to 10 days, the worms (larvae) immediately eating the stems of the food plant, there well protected from enemies to remain and feed until ready to transform into the resting (pupal) stage. In this stage also the in-

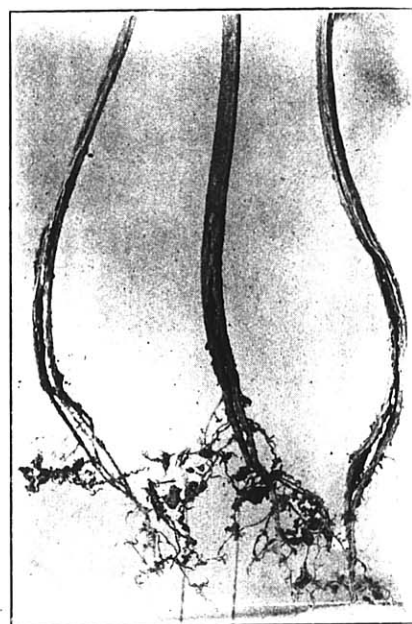
sects are safe from attack in their earthen cells several inches below the surface of the ground. It is practically impossible to use control measures while the beetles are feeding and breeding in waste places, consequently the thousands of eggs laid on weeds developing into beetles in some 50 days or about the middle of July fly to commercial crops to augment the over-wintered beetles already there.

By far the greatest feeding damage to cucurbits occurs just after they have come up. After the vines have commenced to run the feeding damage by beetles is seldom severe and as soon as blossoms appear they feed largely in them to the neglect of the leaves. It must be remembered, however, that more eggs are being laid and the larvae although unseen are destroying the stems and roots of the vines (see cut).

To add to the feeding injury caused by the adults and larvae, what creates the greatest loss of all are the diseases transmitted to the vine by the beetles—the mosaic disease and bacterial wilt. Thus control of the insects becomes of supreme importance and has been found to be as baffling as it is important.

Control: Cucumbers, melons and squashes can be protected from damage in small gardens by the use of cloth and screen wire cages kept over plants from the time they come up until they fill the cages. So far this is the only practicable means of preventing damage that has been established.

A great many substances such as lime, tobacco dust, wood ashes, sulfur, naphthalene have been recommended to repel the beetles and arsenical sprays have been used to kill them, all with varying success. From three year's work at Madison on control of the cucumber beetles, in which a large number of substances—dusts and sprays—have been tested, the fact has been forced out that no treatment experimented with will com-



Showing injury to roots of cucumber by larvae.

sistently repel or kill the insects. In fact seldom has a dead beetle been found on or beneath any treated vine. Bordeaux mixture 4-4-50 combined with arsenate of lead 2-50 has proved to be the best spray in partially repelling and killing the insects and in delaying the appearance of the diseases. Therefore this spray is recommended as the best means of control on large vines, yet discovered. Dusts have in the main proved to be of little temporary value.

John E. Dudley, Jr.

### Watch for Potato Beetles

The hard-shelled striped potato beetles are already beginning to make their appearance and will soon lay their orange-colored eggs in masses on the under sides of the leaves of young potato plants. Almost before one realizes it, the pinkish-red larvae or "slugs" will hatch from these eggs and will begin to feed on the tender tips.

**Important.** Spray when the "slugs" first begin to hatch. Don't wait until the plants are partly eaten. Every leaf that is eaten reduces the potato yield.

**Sprays to use.** Lead arsenate, calcium arsenate and zinc arsenite are all effective and stick to the foliage better than paris green. The last two are cheaper than the first. They should be used at the rate of two pounds to two and one-half pounds of the powder to 50 gallons of water and 50 gallons should ordinarily cover an acre.

Paris green may also be used at the rate of one pound to fifty gallons of water with the addition of two pounds of slaked lime. Paris green often causes burning, does not stick to the foliage as well as the former three, and does not show white on the plants.

The poisons may be added at the same rate to Bordeaux mixture where this is used against flea beetles and blight.

**Applications.** The spray should be applied when the young first begin to hatch and should be repeated as necessary. Ordinarily two applications per season are enough.

**Cover all parts of the plants.** Unsprayed parts give the "slugs" a chance to feed for some time before they reach the poison.

L. G. Gentner.

### The Raspberry Beetle or Byturus

A small, slightly hairy, light brown beetle, about one-seventh inch in length is causing considerable damage to the buds and tender leaves of the raspberry in Wisconsin this year, especially about Madison. As soon as the blossoms appear they are also attacked, the stamens and pistils being eaten off, and thus often causing a total loss of the crop.

These beetles lay their eggs in the blossoms and as soon as the eggs hatch the young grubs carry on the destructive work started by the adult beetles. When abundant many of the grubs adhere to the berry at picking time, making it necessary to carefully handpick the fruit intended for table use.

These beetles need not cause any alarm if proper control measures are applied as soon as they are noticed. **Spraying** is the best method to get rid of this pest, using 2 pounds of **powdered arsenate of lead** to 50 gallons of water. It should be applied very thoroughly, especially to the young growing tips. **NOW** is the time; the beetles are already working, so make a thorough examination of your red raspberries (they do not seem to attack the black varieties) and if you find the beetles do not delay the spraying.

Charles L. Fluke, Jr.

### Cutworms are Injuring Plants

Already many young plants are being cut off by cutworms. This is especially true on land that was in sod last year. Growers should watch their fields and gardens closely and where the injury shows up should immediately broadcast poison bran mash in late afternoon or early evening at the rate of about 5 pounds per acre.

The poison bran mash is made up as follows: Thoroughly mix one pound of Paris green or white arsenic or two pounds of lead arsenate with 25 pounds of bran. Dilute two quarts of low grade molasses with two or three gallons of water and add the juice and pulp of six finely ground lemons or one ounce lemon extract). Stir this into the bran, adding more water, if necessary, to make a crumbly mash.

A small number of plants may be protected by placing either stiff paper collars or tin cans with tops and bottoms out around the plants and pushing well into the soil.

L. G. Gentner.

### Controlling Asparagus Beetles.

Asparagus beetles may be satisfactorily controlled by dusting the infested plants with fresh air-slaked lime, according to entomologists at the Ohio Experiment Station. The treatment has the best effect if applied in the early morning when the plants are damp with dew.

On large areas plants to serve as baits may be allowed to grow at intervals in the rows. These plants may be treated each week by dusting with arsenicals or the plants may be cut and burned. Plants dusted with poison must not be used for food.

On new beds spraying or dusting with arsenicals will kill both the adult and larval forms of the beetle. The dust commonly used for this is four pounds of arsenate of lead to one barrel of air-slaked lime or plaster.

Watch the red cedar trees for signs of cedar apple, a yellow or orange colored mass of material. This is one form of the rust that has injured many apple orchards. Cut this off the trees and destroy it or take the whole cedar tree if you would have good fruit.

### "Lady Bugs" Beneficial.

In the Market Grower's Journal of April 1, F. H. Bateman, of Camden County, N. J., speaks of "lady bugs" eating his cucumbers. There are several bugs that eat cucumbers but not the "lady bugs." The true "lady bug" eats nothing but plant lice. The "lady bug" is not a bug at all but a beetle that is the most helpful insect we know anything about. The most common kinds are orange with black spots and red with black spots. There are others that are black with two red spots. The government thought so much of the "lady bugs" that they imported some from China, propagated them and distributed them for the control of scale. If farmers would only study nature a little and find out what bugs and birds help them, they would be better off.

Neal Demarest, N. J.

### A Good Spray Pump Wanted

Q. "Kindly give me the name of a good spray pump for home garden use. Compressed air sprayer desired."

Ans. There is no good compressed air sprayer either big or little. The large orchard sprayers geared to the wheels of the wagon were much in favor at one time but have been wholly discarded. Other types having compression tanks, etc., are also on the discard or on the way. Most of the small compressed air sprayers are so cheaply built that they develop leaks before the first season is over. These pumps usually consist of a metal cylinder, a bicycle air pump and a short hose. The container is partly filled with spray material, the top clamped down and pressure obtained by operating the little air pump. By hard labor about 50 lbs. pressure can be secured, most of which is lost before the tank is empty.

The most practical and efficient type of pump for home garden use is the "bucket" pump, a small direct action pump set in a pail and provided with clamps, foot rest, etc. Usually about six feet of hose is furnished with the pump which is enough only for vegetables, currant bushes, etc. For spraying small trees and for economical work in the garden an extra section should be added.

For orchard use nothing smaller than a barrel pump should be used.

### The Spray Gun

Prof. R. B. Cruickshank, Ohio State University

Perhaps the one outstanding saving effected during the past season was by the use of the spray gun. The spray gun happened in the nick of time and proved to be a godsend to the hard pressed grower who had sufficient pioneering spirit to buy one even in the face of what seemed to be a big price. The spray gun has definitely proven its value, to the fruit grower with a power sprayer, in three fundamental ways—in the saving of time, in the saving of labor, and in the saving of spray material.

People are usually slow to adopt new practices, especially when those practices are opposed to current conception, but the spray gun has been taken up by growers all over the country in a brief time. It came, it was seen, it conquered.

Of course, doubts and objections were advanced. In the first place, some said that it could not do the amount and quality of the work claimed for it. It sounded too good.

One objection raised was that it

would not force the spray into the calyx at the time of the first codling moth application. We had been using angle nozzles and laboring under the supposition that the material must be sprayed into the blossom cup with considerable force. Probably that is correct with the ordinary nozzle, but the spray gun seems able to diffuse such a fog of spray throughout the tree that plenty of poison is lodged in the place where it will be most unhealthy for the apple-worm. Answers to a questionnaire which I addressed to a large number of growers recently were practically unanimous in that they had fewer worms than usual.

Another point of practicability raised was the possible injury to the fruit and leaves, due to very high pressure used. There have been but few instances of any such injury, and in all cases this has been traced to the fact that the gun was held close up and the spray dashed into the foliage on "high." If the operator is working rapidly and does not care to shut off the gun too much, he should endeavor to spray the lower side of the tree at some distance, gradually going higher as he approaches the tree.

The matter of the amount of spray has also been answered in a way complimentary to the spray gun. Except in the early work before a man becomes accustomed to it, the usual answer is that the gun uses less material than the nozzles. Some growers have experienced an economy in spraying even fairly small trees.

I believe that where lack of control of orchard pests has been experienced, the cause may be assigned to application at a time just aside from the critical one, to the use of too low a pressure or to



lack of thoroughness on the part of the operator. All these apply equally to the rod and nozzle. The great danger in the use of the spray gun verily appears in its great capacity. It may lead men to an undue elation and an unconscious carelessness, resulting in the trees getting the proverbial "lick and a promise." I have found but two men in Ohio who, after a fair trial of the gun, are willing to go back to the rod and nozzle. The first man's reason was that "he couldn't work fast enough to keep up with the gun;" and the second one's was that "the spray men could not keep from getting themselves drenched and so preferred the long rods." In opposition to this objection most men have found that it was easier to keep out of the mist.

### Power Sprayers

The spray gun is efficient only as an accessory to a power outfit that is capable of maintaining about 200 pounds pressure. Some men use them with less, most men prefer more.

This immediately brings up the question of the power sprayer to the man who does not possess one. We believe in Ohio that a man who has as few as five acres of orchard can afford to buy a power outfit. I have known men to make them pay and pay well on three acres. The introduction of the spray gun had added another argument for the power sprayer. In comparison with a barrel outfit, the power sprayer is more rapid, more efficient, a saver of time, temper, labor, and material. The man who is still handicapping himself with a barrel sprayer has no cause to complain about the scarcity or high price of labor. For

him the power sprayer offers a definite economy.

The tendency even in the hilliest of orchard sections is toward the larger more powerful machines. If there is a question as to the advisability of buying a duplex or a triplex machine, it should be well considered before choosing the lighter one.

### Must Increase Plantings

Taking the United States as a whole there has been very little planting of apple trees since 1910. Comparatively few young trees, therefore, are coming into bearing at this time. This is shown by an investigation of the commercial apple industry recently made by the United States Department of Agriculture. Indeed, the largest single commercial apple-producing section of the United States has reached its maximum production, and unless the planting rate increases a decline is to be expected.

That region is western New York, which, early in the sixties, became and has since remained the center of commercial apple production in the United States. Western New York has produced regularly about one-fourth of the normal commercial apple crop of the country. But most of the present bearing trees were planted in the late sixties and early seventies and are now nearly 50 years old. Vigor and productivity continue longer in western New York than anywhere else in the country, perhaps, yet they can not be maintained indefinitely, and the center of production may be expected to shift. Similar declines are taking place in what is known as the New England Baldwin belt, including portions of Maine, New Hamp-

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shire, Vermont, and Massachusetts, but as this has never represented more than 5 per cent of the total commercial production it is of relatively less importance.

#### Other Production Centers

In latter years two comparatively new commercial apple regions have come into large production—the Pacific Northwest and the Shenandoah-Cumberland region of Virginia, West Virginia, Maryland, and Pennsylvania. The former is producing now almost as many commercial apples as New York, and the latter is producing about half as many. Roughly speaking, New York, the Pacific Northwest, and the Shenandoah-Cumberland produce about five-eighths of all the commercial apples grown in the United States. The Shenandoah-Cumberland region is yet only approaching its maximum production. In the Northwest there was considerable planting of unsuitable lands, but western production is being stabilized and will continue to be an increasingly important factor in the apple industry.

Other regions of considerable commercial apple production are the Piedmont district of Virginia, the Hudson Valley, southern Ohio, western Michigan, southern and western Illinois, the Ozark Mountain region of Arkansas and Missouri, the Missouri River region of Iowa, Missouri, Kansas, and Nebraska, the Arkansas Valley region, California, and Colorado.

Investigation of commercial apple production was begun by the Department of Agriculture in 1917, and a survey has been made of every important apple-producing county in the United States. As a result of this investigation, a carefully organized system has

been perfected for issuing regular monthly reports during the growing season, forecasting commercial apple production. This service has been extended to peaches, and soon will include pears and other fruits.

—Weekly News Letter.

#### Cash for Blueberry Plants

After a thorough investigation of the matter, Wisconsin Horticulture believes some of its readers will be interested in assisting the following work to a limited degree.

For several years past, Mr. F. V. Coville, of the United States Department of Agriculture, and Miss Elizabeth C. White, of New Lisbon, New Jersey, have been cultivating blueberries and working to produce new and better varieties. To get new varieties they find the very best wild bushes and then cross-breed these wild plants. The seeds resulting from the cross breeding grow into all sorts of new varieties, just as seedling apples are seldom like the tree they came from. Many of these new varieties of blueberries are poorer than their parents, but about one in a thousand turns out to be much better than either parent and makes a promising new variety.

About ten years ago the Department of Agriculture published Mr. Coville's first work on blueberry culture. His most surprising discovery was that blueberries cannot live in a well-balanced, fertile soil. They require a sour or acid soil and are actually killed by the application of fertilizer which would be the best possible food for ordinary plants. Some years ago a wild blueberry plant was found in Massachusetts with ber-

an inch in diameter, but it was killed by people who attempted to force its growth with concentrated fertilizer.

Since 1911 Miss White, at New Lisbon, New Jersey, has been raising new varieties and the best wild plants that could be found. She is now trying to find a number of wild plants for use for this work. She already has a few plants that have berries three-quarters of an inch through, and

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hopes to secure hybrid berries an inch in diameter. She will pay \$50.00 for especially fine wild plants with very large berries.

But it is not only the size of the berry that counts. Miss White is willing to pay smaller prices for plants that have many berries of slightly smaller size if these berries are of unusually fine flavor. Some bushes bear much more heavily than others. On some bushes the berries stick so tight that when they are picked a piece of stem pulls off with the berries, or the berry is torn and the juice leaks out. On other plants the berries come off the stems just right. Berries from some bushes spoil soon after they are picked, while others will keep for a week. Some berries are black and others of a beautiful light blue color. There are doubtless thousands of bushes in the country with berries three-quarters of an inch or more in diameter, and many other bushes with berries just a little smaller but of unusually fine quality, but it is only by having people on the watch for them that these fine bushes can be discovered.

Miss White will send full directions, with measuring gauges, and bottles of formaldehyde for mailing large berries that are discovered.

### Pruning—Why and How.

J. V. Beyer

Is it possible that a tree would have two kinds of sap, one kind to make wood and another kind to make fruit? My readers must admit that this is not possible, no more so than that the humans or animals would have two kinds of

blood in their bodies, one kind to make flesh and fat and another to make bones and tissues.

If this is true that the same sap in a tree that makes wood also makes fruit, then all we have to learn is how to direct the sap so the tree must make fruit, and that that is what we are pruning for. If we are watchful we will find that most trees will prefer to make wood rather than fruit. There certainly is a reason for this, but I will not go into detail on this part of the subject, as this would lead me away from what I mainly wanted to speak to you about.

Another fact is that certain varieties of apple trees make more wood than others and therefore have to be pruned heavier. All the aforesaid points to the undis-

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puted fact that if we want **fruit** we **must prune**.

The next point to discuss is how to prune, merely cutting wood from a tree could not be called pruning by a professional. In pruning a tree, there are several important points to consider. As everything in the world is limited, so is the sap of a tree, therefore we must direct the sap to the main branches and allow no suckers to grow on the insides of large branches and even if the sucker is old enough to bear, for if we do we will find fruit on the main branches small and if large suckers are not removed in time (which can be seen on old trees which have not been pruned for years) the tips of the main branches will not bear at all and sometimes even die.

For my part, I think a great deal of the open head pruning. By this I mean allow no leaders to grow in center of a tree (apple-tree) but trim it so it will have the shape of an inverted open umbrella. This allows the free access of sunlight and air and also makes

spraying more simple and thorough, in this way the most important branches get uniform in strength and carry their fruit without braces. Others may say I am wrong but I tried this out and will not go back to the leader tree.

In connection with pruning something else comes to my mind that may be known to a great many treemen, but I have not seen an article where anyone made it generally known, and that is a handy pruning saw. I use an ordinary 18 inch sickle shaped saw and take the handle off the blade. Then round the edges off of a 10 or 12 foot pole using as a rule a piece of maple flooring, shape it down to two inches, cut a slit in one end of this pole the thickness of the sawblade and insert the above mentioned blade in this slit, care has to be taken to set the blade right in the pole before drilling the holes for the rivets, use the same three rivets to fasten the sawblade as were formerly used in the short handle. With this saw I never have to

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