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Agriculture.

PESTS OF THE TOBACCO CROP.

A Paper of Special Interest to North Carolina Tobacco Growers.

Very severe damage is annually done in tobacco fields by insect pests and to a lesser degree by parasitic fungi. Much of this damage may be prevented by proper attention. Tobacco, like other crops, must be sprayed or dusted with an insecticide. The best treatment for tobacco, and one that is entirely safe, is the following:

Paris green, 1 pound.
Flowers of sulphur, 3 to 5 pounds.
Powdered soap stone or air slaked lime, 100 pounds.

DIRECTIONS.

Mix thoroughly and apply to the plants while wet with dew or rain. The first treatment should be applied soon after the plants have been set out. The second two or three weeks later, and a third two or three weeks after the second. If the weather is wet, more frequent treatments may be necessary, but usually three treatments will be sufficient for the crop and season. No treatment should be given within 15 days from time of harvesting crop. The best instrument for applying the above powder is a so-called "powder gun." Addresses of dealers in powder guns will be furnished by the undersigned to those who want them. The above powder may also be put on by jarring from a coarse sack held in the hand, or by two sacks attached one to each end of a pole long enough to reach across two rows. The pole may be carried on a mule's back. Only a slight dusting is necessary, but the powder should be evenly distributed on leaves so that no insect can gnaw any leaf without eating the poison. No possible harm can come to the tobacco or those using it from this treatment which is similar to that given fruit for many years without the least danger or complaint.

The worst and most destructive pest of growing tobacco is the flea beetle, *Epithrix parvula*. This is a small, oval, brownish beetle about 1/8 inch long. It eats small, round, pin holes in the leaves which then admit a saprophytic fungus which enlarges the holes. These holes ruin the value of the leaf for many purposes and in every case render it light and chaffy. The larva or grub of this beetle also feeds upon the roots of the plants and does much damage. Besides tobacco, this insect feeds upon Jamestown weed and horse nettle, and to some extent on "ground cherry," tomato, potato, egg plant and pepper and other plants of the tobacco or solanaceous family. If the Jamestown weed, horse nettle and other solanaceous weeds in the vicinity of a proposed tobacco field are heavily poisoned with Paris green a week or ten days before setting out the tobacco plants, the chances of damage to the tobacco will be greatly lessened. These weeds act as nurses and supports for the beetles before the tobacco comes on the field. The tobacco is so much more juicy and tender that the insects soon quit the weeds for the cultivated crop. After the tobacco has been set out all these solanaceous weeds, horse nettle, Jamestown, ground cherry, etc., should be cut out. After the crop is gathered the stumps should be plowed under at once or heavily poisoned to prevent them from breeding insect pests which will damage succeeding crops.

Next in importance to the flea beetle, we must place the horn worm, *Protoparce Carolina*. The remedy advised for the flea beetle will at the same time serve for the horn worm provided it is applied in time. But if the worms get large before being poisoned they must be hand picked. Pickers should carry a small bucket holding some water and a little kerosene oil. Throw the worms into this as soon as picked.

The bud worm or boll worm, *Heliothis*, is often very destructive to young tobacco by eating into the leaf buds. The best remedy for this insect is a mixture of Paris green 1 part and finely ground corn

meal, 100 parts. Dust this on the buds. This worm will not eat tobacco while it can get corn. Tobacco is not a good crop to follow corn in rotation.

The leaf miner *Gelechia Solonella*, is a small greenish caterpillar which eats out the green part of the leaf, leaving the outer skins in tact. It makes irregular or blotch mines in the leaves. Many tobacco growers mistake this for a kind of rot due to wet weather. This little insect does considerable injury in some localities. It infects all the other plants of the tobacco family above named and these serve to propagate it.

Remedy: Destroy solanaceous weeds as soon as the crop is set out. Watch the crop and as soon as any mining is noticed, pinch the spot and thus kill the inclosed caterpillar. Frequent stirring of the soil close to the plants will destroy this insect while it is in the ground transforming from the worm to the winged insect. The mining is always worst on the lower leaves.

Cut worms of several species often do very great damage by cutting off the young plants as soon as these are set out. Remedy: Mix 50 pounds of wheat bran with one pound of Paris green or white arsenic. Add to this 4 ounces of sugar or a quart of molasses and enough water to slightly moisten the whole. A few days before the tobacco is to be set out place a tablespoonful of this mixture at intervals of 10 feet throughout the field. After the plants are set place a teaspoonful of the mixture near each plant. It may be necessary to repeat the treatment but usually once is enough. Cut worms will eat sweetened bran before tobacco. Grasshoppers sometimes injure tobacco in some way. The above bait is the best remedy for these insects.

Tobacco is very free from fungous disease, but such diseases as we find are very hard to control. *Waterloo* or *Waterloo* is in some years wide spread and then disappears from the locality. Its course is unknown. "Frog's Eye" or white speck is due to a fungus similar to that causing shot-hole in leaves of peach and plum trees. The sulphur prescribed in the powder mentioned at the head of this article is intended chiefly to prevent this damage and will do so if applied in the right way.

Soreskin is a pretty common disease. It seems to be due in the first place to an injury to the stalk, near ground caused by the boring of a small beetle worm, which eats into corn stalks in the same way. This beetle is called *Diabrotica*. It is greenish with 12 black spots in the back. A fungus afterward comes in and causes the interior of the tobacco stalk to rot. Remedy: None so far known to be practicable. Pull up and destroy the diseased plants. They are worthless. The undersigned desires samples of diseased tobacco plants for study and also of the insects found upon the plants. Correspondence is invited from tobacco growers in all parts of North Carolina. Address,

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Some farmers have wives whom they work like slaves, and soon these once fair specimens of God's work grow gray and wrinkled. If the drudgery continues, death follows and the farmer is left wifeless. There is something in this life to work for besides money. Wealth is a nice thing to have, but health is far greater and more necessary. A man or woman in good health is a millionaire though penniless. At the rate some farm women go about their endless tasks they are quite likely to lose the latter and miss the former. There should be rest, recuperation and enjoyment in the farm home. It can be made the happiest place on earth if its owner so elects.—D. C. Wing.

No other depositories of power than the people have ever yet been found which did not end in converting to their own profit the earnings of those committed to their charge.—Thomas Jefferson.

SREDDING CORN.

The following timely editorial from the Southern Cultivator and Dixie Farmer of May 15, 1900, is full of good sound common sense and is well worth a second reading by those Progressive Farmer readers who have both papers.

Maj. Alvord in a careful address at Raleigh before the North Carolina State Dairymen's Association, assured his hearers that Southern farmers are wasting half the corn crop. He based his statements on careful experiments where weights and digestions were used to make the determinations. It is hard to take this home and acknowledge what has been shown, that the method of pulling "fodder," and plucking ears wastes half the food that is grown, but if we study the accumulated data it will be found too near literally true for continuance in the old practice with a clear conscience.

But the Major's data was gathered from corn from which the leaves were stripped with good judgment when the ears were filled and at about the time when the stalks should be cut for best interest of the crop. After that the changes which take place are translocation from stalk and shucks to kernels. This does not cease immediately on cutting up corn. In the cut corn if properly timed there is less danger of robbing the ears by too early work than from stripping the leaves as in fodder pulling.

This is a subject that it is well to begin studying now. Decide what course you will pursue in the corn harvesting season next fall. The Progressive Farmer will have other articles on the subject during the summer. The Southern Cultivator article is as follows:

Farmers have been so long accustomed to pulling fodder that it is difficult to stop doing so. Hence we begin in time this year to call attention to this subject. Fodder has been pulled to save for dry food for horses. Many think they must continue to pull for this purpose. They think that without fodder they would not know how to feed. They do not know or remember that a vast majority of horses and mules never saw fodder. That none ever saw it until a few years ago comparatively. The corn from which we pull fodder was not known to the farming world until a recent period.

Even now its cultivation is confined to a small area. And a very small part of those who grow corn ever pull fodder. This practice is confined almost entirely to a few Southern States.

Horses do as well with hay for roughage as with fodder.

There is no use pulling fodder simply to get roughage for horses and mules. There are so many hay grasses that make this kind of food cheaper.

A LOSING BUSINESS.

There is no necessity to pull fodder, neither is it a losing business. Habit has taught us to believe that we must pull the fodder to save it. That we would lose something if we did not pull the fodder. This is a mistake for several reasons. In fact it is a loss to pull fodder.

The blades are so necessary to the life of the corn that it makes the ears lighter to pull them off for fodder. All growing processes stop at once when the leaves are stripped from the stalks. The grains are never full while the blades are green.

Fodder is always pulled before the blades are all dead. The loss of weight is always about equal to the weight of the fodder. It is much greater when the fodder is pulled a little green as is very often done. Here there is a positive loss in value. The cost of pulling and saving the fodder must be added to this loss. Fodder costs more than it is worth. First it costs about 75 cents to save a hundred pounds of fodder, and the damage to the corn is about the same, often fully \$1.

So we see each hundred pounds of fodder costs about one dollar and fifty cents.

We see then that a farmer who pulls fodder is actually injuring

himself. Throwing away money. CUT THE ENTIRE STALK.

But many will say we must have roughage for our stock, what shall we do about it? Well, you cannot only stop losing, but you save money and at the same time have more rough food. How can we do that? Simply cut down the whole stalk. Do this about ten days later than you would pull the fodder and you will save all the fodder and have full weight corn and have a great deal more to feed with. The stalk and the shuck and the sheath of the fodder blades that you do not get, are all just as good as the fodder. Cut the whole stalk and shock it so that it will stand firm until it dries thoroughly. This will take from four to six weeks. Then you can haul it to the barn and stack or shred it.

THE SHREDDER.

The shredder is a machine that fears the stalk to pieces and mixes it with the blades and shucks so as to make an excellent hay. Experiments have proved that this whole stalk hay is an excellent food. All stock eat it freely and thrive upon it.

The part of the corn stalk below the ear is richer in food value than the top. The hard casing of silx, which gives strength to the stalk, is very unpleasant to stock. It is often so sharp as to cut the gums. The shredder destroys this, and the cattle eat it freely in this ground condition. The shredder, will at the same time, take off the ear, either shucked or slip-shucked. If desired it will shell and sack the corn.

Nothing is lost, the entire stalk is made into food. Thus you have more than double the roughage. The stalk is worth about the same as the ear crop. Why then should it be

Again, pea vines, oat straw, wheat straw, and any other hay material may be run through the shredder with the corn stalks or separate. This is a great item of saving to many farmers. Oat and wheat straw are about as good as fodder for stock. But when fed whole or partly cut there is a very large waste. Run through the shredder all is saved.

HOW SHALL WE GET THE SHREDDER?

Very many would like to use the shredder, but as they are small farmers, they are not able. What shall they do? One shredder can shred many crops. Several can combine and buy one. Or one man can shred for a community, for toll or cash.

While it is important to let the corn get thoroughly dry before shredding, when it is dry you can wait any length of time before shredding.

We cannot say in one article all that needs to be said about this great improvement in saving the corn stalk crop.

Do not pull any more fodder. It is a costly and losing business.

CHEAP AND GOOD HAY.

Correspondence of The Progressive Farmer.

It may be possible to raise both inferior and good hay at a profit, but to do so it is necessary to make a distinction at the beginning. It certainly will not pay to raise cheap hay for market. There is always a superabundance of it in every city, and it is marked down to such low prices that little or no profit can be gained on it. On the other hand there are places on the farm which will produce cheap grades of hay for home use at a profit. For instance there are often fields of land that lie after the middle of June, and old corners of the farm where the soil is rather poor where a fair stand of sheep hay can be raised to advantage. It is better to have this soil producing something than to let it remain idle for a month or month. If no crop is sown weeds will inevitably take possession of it, and they are far worse than nothing.

One can sow grass seed on such odd fields in the land to produce a rough sort of fodder to take the place of the more expensive and salable hay or grass. Of course fine clover or timothy seed would not do for planting there, but Hungarian, Orchard, and similar grasses would produce good results. A mixture of

several of the rough and tough cheap grass seeds would give better results than any single variety. Sow this cheap grass seed as early as possible, and let it reach a good stand before cutting it for hay or feeding for summer fodder. The Hungarian grass in particular is a hardy grower after it gets a good root in the soil, and it will grow through hot and dry weather. Fed alone to horses or cattle it may prove too powerful a diuretic, both in fattening and in keeping the bowels open. This cheap fodder or rough hay is not intended to make the sole food of the animals, but merely to supplement other foods to save the better hay for market purposes.

Of course when you come to raising hay for market there is nothing to take the place of your timothy and clover. Fine timothy will always command the best prices because livery and private stablemen prefer it to all other grades. Fine bright timothy hay will command from fifty cents to a dollar or two a ton more than any other hay, and it is useless to try to make marketmen believe anything else is just as good. Timothy has the reputation, and we must abide by the results and recognize it if we hope to get the top prices. But unless the land is adapted to the production of a big stand of timothy, it will often pay better to raise other fine grass even though they command a little less per ton. The difference is made up in the heavier yield. S. W. CHAMBERS.

SUMAC AS A MARKET CROP.

Correspondence of The Progressive Farmer.

The tanners of the United States use annually about 25,000 tons of dried sumac leaves in the process of transforming skins into leather. Of this amount about 8,000 tons are imported, chiefly from Sicily. The Italian sumac is produced by a species which is cultivated for market.

The American sumac is entirely the product of wild plants. Of these there are three species—*Rhus glabra* or white sumac; *R. copallina* or black sumac and *R. typhina*, or staghorn sumac. There are in addition two species, both very poisonous, which are not used in tanning. These are *R. toxicodendron*—Poison Ivey and *R. venenata*—Poison Elder. All the sumacs are common on light dry soils from Nova Scotia to Florida and from the Atlantic to the Alleghanies.

Being a growth of waste lands which is gathered chiefly by women and children, the crop pays well, being nearly clear profit. Petersburg, Va., is the chief market for the sumac gathered in North Carolina. It is there cleaned and ground into powder in which, form it is sacked and compressed into bales before shipping to tanneries. The price paid to the gatherers varies from year to year. It depends much on the quality of the leaf. The most common price is 80 cents to \$1 per 100 pounds of clean leaf. The usual custom is for the grinders to supply sacks for packing the dried leaves. On its arrival the sacks are opened and their contents graded and paid for according to quality or grade. Freight is paid by the grinder, but the amount is deducted from the price of the leaves.

The sumac grinder, after cleaning, grinding and baling the leaves, sells the product to the tanners for from \$50 to \$75 per ton. The imported Italian sumac in the same condition and market sells for from \$65 to \$100 per ton.

The white sumac, *Rhus glabra* is preferred by tanners. It brings a higher price than other species when shipped unmixed. But all three sumacs are taken and usually they are mixed by the gatherers. If three species of useful sumacs are very easily distinguished from each other and from the poisonous species.

Rhus typhina—Staghorn sumac—is our most common species. It is found only on dry gravelly or stony hillsides. It grows from 8 to 16 feet high. The leaves are composed of 13 to 25 leaflets, dark green above and light green below. The branches and young leaflets are densely covered with short, velvet-like, black

hairs. This species is the least valuable of the three, and sells for the lowest price.

Rhus copellina—black sumac, is the least common of the three useful species. It grows on a moister soil than the other two species. It rarely grows above five feet high. The leaves are composed of 7 to 19 leaflets. The leaflets are slender and have entire edges. The common leaf rib or rachis is wing margined by a thin, green, leaf-like growth. The color of the leaves is much darker than in the preceding species. Black sumac contains a comparatively high percentage of tannic acid, but because it contains also a good deal of coloring matter the leaf cannot be used for the finest work. Its price is more than staghorn, but less than white sumac.

Rhus glabra, white sumac, is next to our most common species. It is also the most profitable. It grows from 5 to 10 feet high. The leaves are compound, containing from 13 to 31 leaflets, which are rather larger than those of the staghorn species. They are green above and woolly white beneath. The branches and leaflets of the shrub are while young very smooth and covered by a powdery white bloom, like cabbage leaves.

Rhus coraria, Italian sumac, resembles in its habit our black species. It does not grow wild in this country.

The Italian sumac being a cultivated product, is picked and cured with far more care and skill than the wild American sumac receives. There seems no good reason, however, why North Carolina farmers who have dry stoney hillsides should not plant sumac and by giving the crop some cultivation. With care in harvesting and curing the leaf, obtain a price equal to that paid for imported sumac. Either the white or black species may be cultivated, but not the staghorn sumac.

For the benefit of those who gather the wild sumac for market, the following instructions are given:

1. Sumac for market must be gathered between June 15th and October 1st. The earlier pickings are the most valuable. No pickings can be made after the leaves begin to turn red. Red leaves are worthless.
2. The whole leaf should be broken from the twigs. The common leaf-rib or rachis may be taken.
3. The leaves as soon as possible after gathering should be spread in the sun for one or two hours until they are thoroughly wilted. They should then be taken to a covered, rain-tight shed and spread thinly. They must be turned several times a day and exposed as much as possible to dry wind. The quicker the leaves dry the better the color and the higher the price they will bring. A wooden fork or rake must be used to turn the leaves as iron causes rust spots and ruins the leaf for tanning. The leaf is dry enough to pack when the mid-rib or rachis will not bend but snap short under tension.
4. All trash and foreign leaves should be carefully picked out of the dried sumac and the latter then packed as tightly as possible into clean burlap sacks, which the sumac grinders usually furnish for the purpose. Guano sacks or feed sacks must not be used. A sack when filled should contain about 50 pounds. No care need be taken to prevent breaking the leaves. Broken leaves are as good as any. The sacks should be sown up, not tied. Dealers prefer to have sumac shipped in car load lots to save freight. Persons who collect sumac for market will be furnished with names of purchasers by writing to the Department of Agriculture, at Raleigh.

I repeat, there seems no good reason why North Carolina farmers who have dry stoney or gravelly land should not cultivate sumac as profitably as the Italians. The produce of a cultivated plantation is about two tons of first-class dried leaves per annum. The plants are perennial shrubs and one plantation lasts indefinitely. The cultivation is very simple and inexpensive. The

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