HOW SOILS WEAR OUT

Plan to Keep Them Producing Maximum Crops.

BY W. H. STEVENSON.

In our study of a practical soil management program, we should understand clearly that soils wear out; by this, we mean that soils tend to produce smaller and smaller crops with the passing years, unless they are fertilized. Every farmer knows that this is the case, but many seem determined to ignore this great law of nature. Their reward is found in crops of low yield and high cost per ton, bushel or bale.

Soils wear out because crops are "not made of nothing." The fact is, all of our crops remove definite quantities of plant food from the soil, and thus constantly reduce the store of plant food elements in the soil. For example: A 100-bushel corn crop, grain and stover, contains 148 pounds of nitrogen, twenty-three pounds of phosphorus and seventy-one pounds of potassium. Likewise, a fifty-bushel wheat crop, grain and stover, contains ninety-six pounds of nitrogen, sixteen pounds of phosphorus and fifty-eight pounds of potassium. On this basis we know that each year an enormous amount of plant food is removed from the soils of the country by crops. Statistics worked out for Iowa show that the total value of the three principal elements, nitrogen, phosphorus and potassium, removed in one year by the nine leading crops is in excess of $136,000,000. In this case, the nitrogen constitutes about eighty per cent. of the total value of the plant food removed, while the phosphorus and potassium make up about ten per cent. each. These are significant facts. They mean that even if most of the nitrogen is returned to the soil by the use of leguminous green manures, commercial materials must be bought to supply deficiencies in phosphorus and potassium.

PLANT FOOD RETURNED.

The plant food in the crops which are fed to live stock on the farm is at least partially returned to the soil in manure. But when due allowance is made for this return, from an economical standpoint, it is clear that the net loss of fertility from our soils is sufficiently great to demand serious attention and to require definite applications of plant food in a well-ordered system of soil management.

Again, soils wear out because they constantly lose lime, and in time become sour or acid. Crop production is generally not as satisfactory on acid soils as on soils that contain a goodly supply of lime. Legumes often refuse to grow where the soil is acid. Small grain crops and corn are not so sensitive to acidity, but they may be indirectly affected through a lessening of the production of available plant food.

The lime deficiency of soils brings our farmers face to face with one of the big problems of the times. It is a big problem because vast sums of money will be required for the purchase of the needed limestone and because a huge amount of heavy work must be expended in transporting the limestone and distributing it on the land. But there is no practical way of treating acid soils except by applications of lime materials; therefore, farmers generally should resolve now, without further delay, to deal with the problem of soil acidity in a business-like and energetic fashion. Any other plan will result in smaller crop yields and increased costs of production.

IMPROVES THE SOIL.

Soils wear out because they lose organic matter rapidly when they are cultivated. The importance of organic matter in soils is due to the fact that it contains much plant food, provides bacteria with conditions which are necessary to make the plant food constituents available for use, and improves the physical condition of the soil.

In order to make and keep soils highly productive the organic matter supply must be increased in light colored, light textured soils and must be maintained in darker colored types and in the heavier types. All soils, whatever their color or texture, must receive regular and ample supplies of organic matter if their productive capacity is to be kept on a high level. Three natural fertilizing materials may be used on the farm for this purpose. They are manure, green manures and crop residues.

Farmers find the problem of providing an adequate supply of organic matter one that keeps them on the jump. On many live stock farms the supply of manure rarely meets the demand; then green manures are often used as a supplement. This practice is sound enough, but generally involves considerable expense for seed, labor and rent of the land.

On the grain farm, crop residues and green manures must be depended on for the needed organic matter. Here, again, the real problem is one of expense, labor and the difficulty, experienced by many farmers, of growing successfully, the right green manure crop.

Red clover grown in the rotation often serves as a partial green manure if the first crop is harvested and the second crop plowed under. Better still is the practice of removing only the clover seed, plowing under all the rest of the crop. By this method considerable nitrogen and much organic matter may be added to the soil. When clover is cut for hay and removed from the land, there is no addition of nitrogen to normal soils, and it has no green manuring effect, but when well inoculated it does not remove any nitrogen from the soil, and if used for feed and the manure returned to the land, beneficial effects may be secured. Biennial sweet clover is now used extensively as a green manure crop.

On the live stock farm, the straw, stover and other residues are generally used for feed or bedding, and returned to the soil in the manure. On the grain farm the straw may be allowed to decompose partially before application, and the cornstalks and stubble may be plowed under, but in both systems of farming these residues should never be burned or otherwise destroyed.

We have found that all soils naturally tend to wear out under cropping. It is the business of the farmer to put into practice methods of soil management that will return to the soil as much plant food, lime and organic matter as has been lost.

The Senate Chamber, Ottawa, the "Red Chamber" of the Parliament buildings, in its renewed and graceful proportions after the rebuilding following the incendiary fire during the war.

THE ONTARIO GARDEN

TRANSPLANTING IS NECESSARY.

Unless plants grown inside are transplanted at least once before being set out in their permanent positions in the garden they will become weak and spindly. This thinning out and moving about, hardens them, makes the stalks sturdier and develops the root growth. When they are put out after one or two transplantings, and especially if they are hurried along with a little nitrate of soda, they will make far faster growth than if they had never been moved from their original position until set out. Of course this only applies to those plants such as tomatoes, cabbages, cosmos, zinnias, marigolds and similar ones which are usually started indoors. When sweet peas, melons, cucumbers and plants which are usually planted direct in the garden, are given a start behind glass they should be disturbed as little as possible and moved carefully outside when the weather permits.

KEEP GROUND CULTIVATED.

The most important benefit derived from cultivation is the conserving of moisture, especially in the country where a hose and water are not available. The hoe and scuffler break up the surface of the soil and thus prevent the sun from drawing up and evaporating the moisture in the soil. It is particularly advisable to loosen up the soil after every rainfall. In the early part of the season deep cultivation can be practiced, making this more shallow as the season advances and the root growth develops.

A CUTTING GARDEN.

The regular flower gardens surrounding the house and lawns are spoiled if all the bloom is kept removed for supplying decorations indoors. Of course it is not advisable to let bloom go to seed, but in these gardens which one can see from the house windows and along the walk leading down to the street it is much nicer to have the flowers in full bloom and depend on another garden at the back for filling up your vases. Then again there are some flowers, such as sweet peas, batchelor's button, gladiolus, nicotine and others which have beautiful blooms but very ordinary foliage. These will supply abundant cut flowers if grown in straight rows in the vegetable patch where they will get plenty of cultivation and are more accessible for cutting purposes.

THE WINDOW BOX.

Now that the window boxes are made and the hanging pots purchased one must get busy and prepare to fill them. Use some old broken crockery or cinders for drainage in the bottom, then a layer of well rotted manure, tramped down tight, then two or three inches of rich garden soil, sifted fine. Bedding plants can be purchased ready grown from the nearest green house man or can be grown indoors by yourself. Trailing flowers such as German ivy, climbing nasturtiums, and some trailing foliage plants should be used along the front as well as clumps of Alyssum and Lobelia to add a touch of color. Back a few inches stick in some special window box Petunias, Geraniums, Sprengula Ferns, and a bit of brightly colored ribbon grass. This is only a guide as there are scores of flowers which do well in a box. Fertilize frequently and water daily.

KEEP LETTUCE MOVING.

The secret of growing tender lettuce is to keep it moving. It must not be allowed to pause from the time it comes through the soil until it is ready for the table. Of course where the head lettuce is started inside and moved out in the open later, there is a little pause following the transplanting, but this will not amount to much if about a third of the leaves are snipped off after moving and if the ground is well fertilized and one which is quickly available. A little nitrate of soda, about a scant tablespoonful disolved in a gallon of water and sprinkled around the plants is sufficient for one square yard of garden, will be found very useful to keep all types of lettuce moving. One should not run away with the idea that there is only one type of lettuce and when this is done salads must be given up. Leaf lettuce is the easiest to grow and comes on quickly. The next in order is the head type, which should be loosely tied up to blanch the hearts when well grown. For late summer use try some of the cos type. This is sometimes known as Chinese cabbage. It is self-blanching, though a little assistance is appreciated, and it is easily grown. A little chicken wire or rough lattece work will protect lettuce from the birds. This crop requires rich soil, should be sown only a fraction of an inch deep and for best results should be thinned.

THE BEST ANNUALS.

In a most valuable bulletin by Isabella Preston, the Dominion Experimental Farms at Ottawa have offered the public, free for the asking, some very useful information on annual flowers. Special lists are given in which the annuals are classified under various headings, such as shade loving, edging, fragrant, tall, short, etc. In the opinion of Miss Preston the twelve best annuals for general planting all through Ontario are: Alyssum, Calendula, Candytuff, Coreopsis, Cosmos, California Poppy or Eschscholtzia, Mignonette, Nasturtium, Portulacca, Shirley Poppy, Sunflower, and the Sweet Pea.

ASTERS HAVE A PLACE.

For cutting material during September and October one would be at a distinct disadvantage without asters. Each year brings out new types and colors, and now with tiny singles to great globs of color as big as chrysanthemums, there is a remarkable range from which to choose. In Ontario asters should be started indoors for best results and on this account most people prefer to buy their stock from the nearest greenhouse man. To prevent disease plant in a different location from last year, and give them a position where they will have plenty of room and sun. They require rich soil and plenty of cultivation. They are very subject to attacks of root maggots. These can be prevented by dipping the roots in a mixture of corrosive sublimate just before transplanting to outside. This is the same treatment as is now generally employed with cabbages. To keep away cutworms, another troublesome pest, cultivate well and put a paper collar about the stem, sticking this down into the ground about half an inch.

Map Showing Grand Falls.

The above map shows the location of Grand Falls in relation to the award recently made by the privy council. The shaded area surrounding Grand Falls was in doubt as to ownership, but the text of the judgment indicates that it belongs to Newfoundland. Grand Falls is in this area. Hamilton river and part of the inlet are shown on the map.

Automobiles killed many of my chicks each season. They had a habit of wallowing in the road by our house. I found a way to prevent this loss by building in one end of my poultry yard a shallow box, 10 x 12 feet, and filling it with clean sand and gravel. Upon the sand I scattered some grain to attract them, and in a short time the chicks found this a good substitute for the highway, and my trouble was ended. —D. H.

Foolishness is the beginning of anger. Repentance is the end thereof.

HOW TO VARNISH A FLOOR

The Right Way to Perform This Task.

BY BERTON ELLIOT.

Sounds simple, doesn't it—the revarnishing of a floor? Just pour some varnish into a receptacle, dip the brush in and go ahead.

But that's not the way to do it if you want the job done right.

Let us take, for instance, an average oak floor that has not been refinished for a year or more, in a home with a couple of husky youngsters. The youngsters will have seen to it that some of the varnish has been scuffed off in doorways and other favorite routes of travel, and there will be some places worn clear down into the wood and weatherbeaten to a dirty, grayish color.

Here's the way to put this floor in good condition again:

First, scrub the floor as it has seldom been scrubbed before, using one of the grit cleansing preparations. Remember that any dirt remaining on or in the surface will get varnished under.

Next examine the worn spots. Any that have been worn down to a dirty, weather-beaten appearance should be bleached with oxalic acid. Dissolve in boiling water as much as can be dissolved, pour the solution on the bare spots, allow to stand for about half an hour, then wipe up, and rinse off with clear water. If the surface is extremely bad the solution may be left on overnight. In some cases, a second application may be necessary.

WHEN TO USE A FILLER.

After thoroughly dry go over these bleached spots and any other places where the varnish may be worn off to the bare wood, with a paste wood filler. The use of filler is necessary on oak, chestnut, ash and other open-grain woods. Maple and pine, which are close-grain woods, do not require a filler.

Wood filler comes in heavy paste form, to be reduced with turpentine or benzine to the consistency of thick cream. It is applied with a brush, allowed to stand for a few minutes, and then wiped off, across the grain, with a piece of cloth or burlap. Natural or transparent filler should be used on natural or light floors, and a colored filler such as dark or golden oak on the darker-stained floors.

The next step is to sandpaper the entire floor, to cut the gloss of the previous varnish coating, and level off the worn and filled spots. Brush up the loose sand particles immediately before starting to varnish.

READY TO BEGIN.

Now we are ready to start applying the varnish. The room should be good and warm, or the varnish will not flow out and level itself to a smooth, even film. A few boards at a time should be done clear across the room. The varnish should be applied in thin coats. In case it drags a little under the brush, add a little turpentine. When varnishing keep looking across the floor for skipped places. If any are seen brush over them quickly before the varnish commences to set. On a good varnish job one should be able to get down close to the floor and look acrsos it, toward the light, without seeing a single skipped spot.

If the floor is in excellent condition and has been revarnished frequently, one coat will be sufficient; however, two coats are always preferable, especially on floors subjected to unusually hard wear. When two coats are applied allow forty-eight hours for drying if possible, especially in damp weather or if the room is cold overnight; then sandpaper the first coat lightly and apply the second coat.

A CORNER FOR YOUNG CANADA

Party Dresses.

Janet went through the pile of bright-colored scraps that Grandma had sent her for dolls' dresses thoughtfully.

"The red piece would make a lovely cape," she confided to Nancy Anne, who sat stiff and upright at a little table in the playroom. "And the blue silk ought to make a dress. I do hope that there is enough of it. It's good that skirts are short."

In the midst of these pleasant reflections, that every little mother knows about, there was a patter of feet heard on the stairs, and the next minute Juliet Rivers rushed into the playroom.

"I'm all out of breath," she said, panting. "I ran so fast. Oh, dear, what lovely scraps. I've bought some sewing over. Gwendolyn is nearly in rags. What do you think of this for a dress?" And the fly-away Juliet opened her workbox and brought out a piece of yellow material. She gave it a shake and flourished it gayly before Janet.

"I think that it is beautiful," said Janet, "And I'm so glad you brought it, for now we can work together. I'm going to make Nancy Anne a dress out of this blue."

Both little girls got out their thimbles and needles and scissors.

"The pattern, Janet. Have you still got that cute pattern Auntie May cut for us?" asked Juliet.

"Yes, I've got it right here in my workbox. I'm sure it will fit Gwendolyn, too."

The little pattern was cut for a simple one-piece dress. Snip, snip went the scissors, as Juliet hurriedly cut into her yellow material.

"Oh, but you ought to pin the pattern on the cloth first," said Janet, watching her. "Look, you're cutting that crooked. Oh, my, it will never fit around the neck!"

"Pin the pattern on! What a waste of time! I guess I can hold it on," said Juliet. "I'll be through in a second, and you can pin yours on, if you want to. I expect to take Gwendolyn home in her new dress." She finished the cutting with an extra hard snip of the scissors that made a slit in the skirt.

"Oh, now, you'll have to piece it," said Janet. "What a nuisance!"

"Piece it? Never heard of that," said Juliet, holding up the queer-looking dress. It had little resemblance to the pattern, but it seemed perfectly satisfactory to Juliet. "Now, then, I'll have this all sewed up before you even get that pattern pinned on," she continued.

Janet smiled. She wished she could work fast, too, but somehow she didn't want this lovely blue silk dress to look like Julie's yellow one when it was cut out. So she pinned securely and cut carefully around the edges. And Juliet threaded her needle and sewed energetically with great long stitches.

"Aren't you going to make French seams?" asked Janet. "You know, Auntie May taught us how. You just run up one side and then turn the dress inside out and run it up again, so that it looks quite neat."

Juliet looked puzzled. "I guess not. It takes too long," she said.

The little girls worked away quietly for some time. Then Juliet exclaimed:

"Mine's done!" And she slipped the dress over Gwendolyn's head. It sagged off one shoulder, and hitched upon one side. Juliet looked at it ruefully.

Janet stitched away at her little dress. She turned seams and put in a nice hem and finished off the neck the way Auntie May had taught her. And when Nancy Anne was all decked out in that blue silk she was a doll every little girl would look at twice.

Just then Mother came into the playroom. "I thought your babies might like a party," she said, setting down a plateful of thimble cakes and two tumblers of milk.

"Oh, Mother, thank you, thank you so much!" cried Janet. "They will just love a party. And they can wear their new dresses. Oh, isn't this fine, Juliet?"

Juliet, of course, was delighted over the party. But when she placed Gwendolyn in her queerly made yellow dress beside Nancy Anne in her neat blue silk some of the party feeling left her.

"Gwendolyn doesn't look fit for anything but the rag bag," she said, soberly. "I guess if anything is worth doing at all, it is worth doing well. Ater this I'm going to take pains, and pin patterns on first and sew a nice seam."

"And now let's pass the cakes," said Janet, laughing.

Fertilizing Clay Soils.

Manure is very beneficial to heavy clay soils, which are often deficient in organic matter, especially when they have been poorly farmed. In a section dealing with clay soils, in a bulletin of the Dominion Department of Agriculture on Crop and Farm Management in Eastern Canada, it is stated that, where an ample supply of manure is not available, a dressing of 200 to 300 pounds of superphosphate per acre, broadcast on clay land just before sowing a cereal crop, generally results profitably. Superphosphate may be applied with profit even when manure is available when the clay land is badly run down. The plowing under occasionally of a second crop of clover will also materially aid in improving such soils. Potash fertilizers are rarely profitable for application to clay soils, as this fertilizer is usually abundant in soils of this type.

Harrowing Emerging Crops.

A number of experiments have been made during recent years at the Beaverlodge, Alberta, Experimental Sub-Station with the harrowing of cereals, sunflowers and other crops with a light lever harrow just as they are peeping through the ground. The superintendent of the sub-station, in his latest report, states that the ultimate effect upon the crop is usually beneficial. The object is, of course, to destroy germinating weeds. To make the operation successful the grain should have been drilled at a fair depth and, at the time of harrowing, should be showing single shoots just emerging. The harrow must be light and the surface of the ground fairly free from rubbish. It is best to do the harrowing on a warm day when the ground is dry on top. If then, a shower follows in a day or two, the immediate adverse effect on the grain is very slight.

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A Costly Pest.

The house fly (musca domestica) is a costly pest. The fly paper cost to the people of Canada each year is nearly a quarter million dollars, while the new wire screen purchased each year costs us in our fight against the fly nearly $1,000,000. This is not all, in spite of the fly paper and wire screen the fly makes the people of this country pay over two and a half million dollars each year in counteracting intestinal disorders and dysentery. The cost of caring for tubercular and typhoid patients adds another $10,000,000 to the charge account against the fly as the agent for the dissemination of these diseases.

These tremendous costs could be largely avoided by simple sanitary measures. The fly breeds in filth, principally in horse manure. Carelessness in leaving manure exposed and neglect to use borax and hellebore on exposed manure results in the fly pest continuing to take its toll. One pound of borax spread over each 16 square feet of manure space or 1 round of hellebore to 20 square feet will kill about 90 per cent. of the larvae. Such will greatly reduce the pest and cut down the losses in a corresponding degree.

In Jasper National Park, Alberta, there are about 640 miles of standard trails by which tourists may visit the outlying scenic attractions.