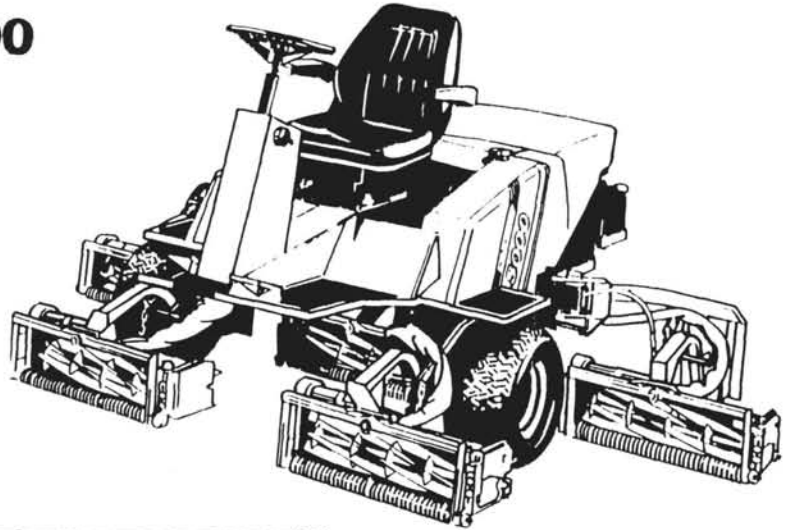


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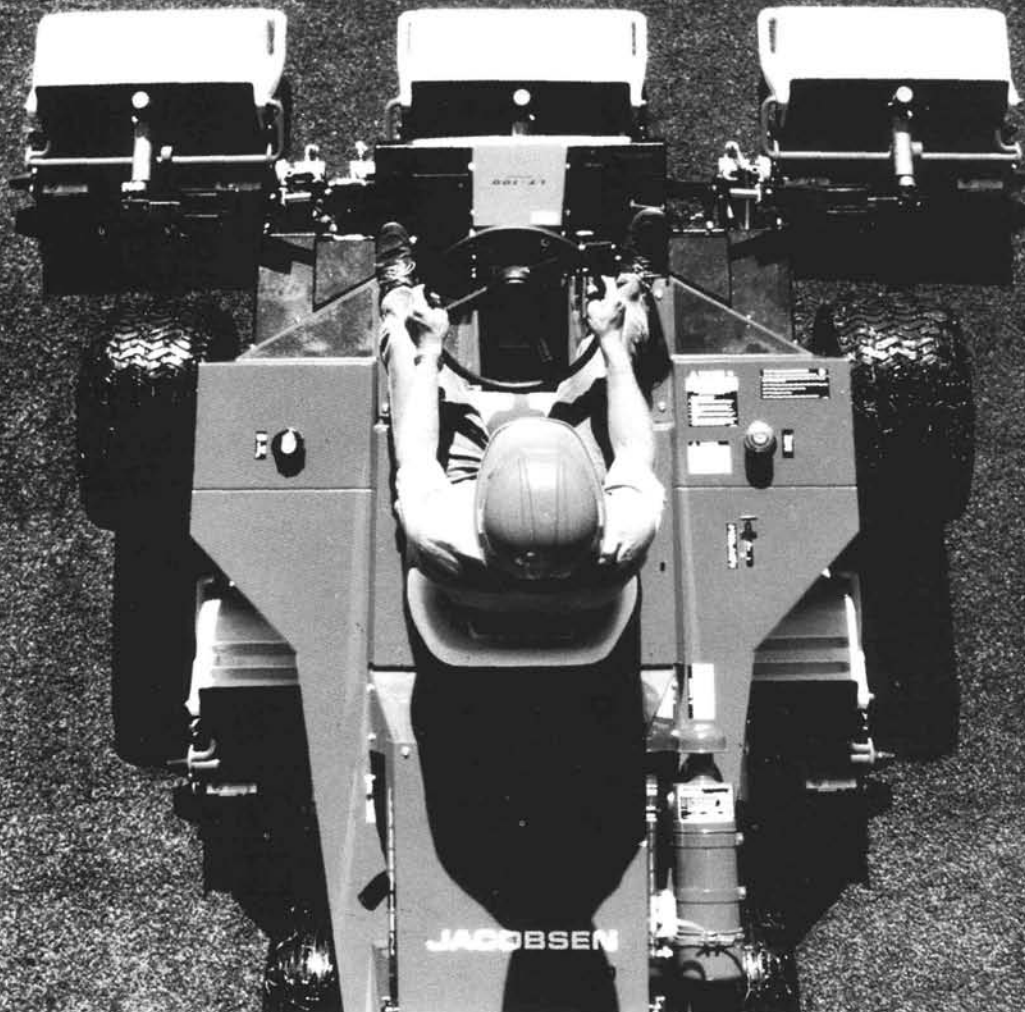
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Midwest Breezes



Upcoming Events — Mark Your Calendar

October 2 — ITF Golf Day at Flossmoor & Ravisloe C.C.

October 12 — MAGCS meeting at Prestbury C.C.

October 27 — MAGCS Fall Dinner Dance at Riverside G.C.

November 8 — Midwest Turf Clinic & Annual Meeting at Medinah C.C.

November 28-30 — Turfgrass & Ornamental Chemical Seminar, Purdue University. Contact Jeff Lefton (317) 494-9737.

December 4-7 — Ohio Turfgrass Foundation Conference. Contact John Street (614) 292-2601.

December 12-14 — NCTE at Pheasant Run Resort

January 10-11 — MAGCS & GCSAA Seminars at Pheasant Run Resort

January 22-24 — Midwest Regional Turf Conference, Indianapolis, IN

I would like to make a correction to my comments in the August issue of the "Midwest Breezes" section. I was writing about the seed industry and stated, "Last year there was a terrible burning and a few people were killed." It should have read, there was a terrible accident on the interstate highway due to dense smoke from the burning fields and people were killed in an auto accident.

Warren Bidwell reports that he is building a home at the present time (but he neglected to state where he was building), his mailing address for anyone interested is: 2609 Chadwick Road, Marietta, GA 30066-2139. Warren had been up to Alaska this year and is scheduled for appearances before the Pocono GCSA and the New Mexico GCSA in October.

MAGCS Fall Dinner Dance is scheduled for October 27th at Riverside Golf Club, with Dave Behrman our host. Cocktails at 6:30 and dinner at 7:30. Open bar after dinner will be sponsored by Nadler Golf Cars. There will be dancing as usual.

Michael Sauls is returning to the Chicago area as the new Superintendent at Butler National. Congratulations Michael!

Bob Olsen, from Olsen Distributors spent time in England as a guest of the Ransomes Company to help celebrate their 200th Anniversary! (I think Toro and Jacobsen have quite a few years to match that mark).

Congratulations are in order for Kerry Anderson and his wife on the birth of their first child, Eric Thomas, born August 18, 1989.

A belated Congratulations to Ed & Jean Stewart on their 41st Wedding Anniversary on September 11, 1989.

The MAGCS & GCSAA Seminar this January will be, "Golf Course Construction Techniques and Management". Instructors will be Dr. Michael J. Hurdzan of Hurdzan Design Group and Mr. Stephan Harrel, Wadsworth Golf Construction Company of the Southwest.

"October Day's"

October — A wonderful Month — "Hurray",

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At the August 29, 1989 Board of Directors meeting it was discussed and voted on to make a slight change to the guidelines in the awarding of the "Ray Gerber Editorial Award". The change being that at least six entries must be in consideration before an award is given. If there is less than six as there were this year with only three articles being published in the past year that would qualify, that number less than six would be carried over into the next qualifying year and be eligible for the award.

This year's articles that will be carried over to next year will be Roger Stewart's "Bentgrass in Retrospect;" David Blomquist's "Lightweight Fairway Mower Comparison;" and Dudley Smith's "In Defense of Kentucky Bluegrass."

The guidelines for the "Ray Gerber Editorial Award" are as follows:

1. Articles eligible for the award must be written by a member of the MAGCS who is currently a Golf Course Superintendent. All articles printed in "The Bull Sheet" meeting this requirement will be considered. Assigned articles written by the MAGCS Board Members will not be eligible for this award.

2. All articles will be judged during the time period of September thru August editions of "The Bull Sheet."

3. Judging of the articles will be based on the following criteria:

- Article provides useful technical data or information.
- The article is clear and easy to comprehend.
- Illustrations, tables, photographs, charts, etc., help explain or support the text and add to the articles value.
- The article is timely (information is current and is presented at the appropriate time of the season).
- The article is useful to the Superintendent in the performance of his duties and responsibilities.

4. Articles published first elsewhere and then published in "The Bull Sheet" will not be considered for the award.

5. There must be at least six (6) articles in a qualifying year to be considered. If less than six (6) articles in any one year, those qualifying will be carried over till there are six articles to be judged.

Plant Nutrients Other Than N, P and K₁

Roy L. Goss and S. E. Brauen₂

₁Presented at the 39th Northwest Turfgrass Conference, Rippling River Resort, Welches, OR, September 22-24, 1985.

₂Extension Agronomist and Associate Agronomist, Western Washington Research and Extension Center (WSU), Puyallup, WA.

Since carbon, hydrogen and oxygen are supplied by the atmosphere and water, they will not be a part of this discussion. Nitrogen, phosphorus and potassium are considered as the three major plant food elements and have been discussed previously. Calcium, magnesium and sulfur are usually considered as intermediate and secondary elements since they are required in lesser amounts than the major elements but in greater amounts than the micronutrients. Sometimes iron may be considered as a secondary nutrient although it can be classed as a micronutrient as well. Since there are 16 elements required for plants to achieve full maturity and reproduce, this discussion will be concerned with 10 of them.

BALANCE AND INTENSITY

Most turfgrass managers are aware that there is a specific balance of nutrients that is best for optimum growth of any plant. Therefore, intensity comes into play. As we increase the level of one nutrient, other nutrients can become out of balance and can limit the growth or performance of the plant. Therefore, we must carefully consider both balance and intensity in turfgrass nutritional programs. I am afraid that for golf courses in particular too much emphasis has been placed upon speed of the green and has resulted in starvation of the grass. Not only has this resulted in nutrient imbalances, but also insufficient quantities of nutrients available to keep the plant healthy and vigorous to compete with weeds, mosses, plant diseases and insects.

Let us consider some of these nutrients and their functions and a little of what we know about their balance and intensity.

MICRONUTRIENTS

Micronutrients or trace elements are required in very small amounts and frequently the margin between deficiency and toxicity is quite narrow especially with such elements as boron and molybdenum. Toxicities or deficiencies of micronutrients can be induced when the pH is rapidly changing up or down, applied irrigation water high in the element, application of fertilizer compounds which form soluble toxic substances, and leached or accumulated spray materials. Guessing as to what is needed and applying a shotgun mixture is a very dangerous practice.

On the practical side of management, the use of micronutrients places a burden of responsibility of the turfgrass manager. The cost of micronutrient analysis is not cheap. Both tissue and soil micronutrient analyses can be misleading and need a great deal of improvement. Most normally developed soils are usually adequately supplied with micronutrients although deficiencies of one or more are common in most regions. In the turfgrass sciences, the advent of greater usage of sand rooting profiles in putting greens, bowling greens and sportsfields, micronutrient deficiencies are becoming more common and must be carefully considered.

Let us consider some of the micronutrients and a few of the factors that may affect deficiencies.

Boron. Factors favoring deficiency include high soil pH, unfavorable calcium:boron relationship, low organic matter, low moisture, and highly leached soils. Boron is extremely important in nitrogen and carbohydrate metabolism and in water relations in the plant.

When high levels of nitrogen are used or phosphate levels are low, more boron will be required. If the level of available boron is low, high levels of potassium application can induce boron deficiency. In general, some soil testing specialists consider that values of 1.3 to 2.00 ppm present high soils whereas tissue levels of 9 to 10 ppm are adequate. Visual deficiency symptoms for boron include greenish yellow color, dying prematurely, and abnormal tillering.

Copper. Copper deficiencies can be induced by high soil pH, high organic matter content, high concentrations of iron and manganese and highly leached soils. Copper plays an important role in plant growth as an enzyme activator and as a part of certain enzymes which function in respiration. Copper usually does not move from the older parts of the plant to the younger leaves, and this is why lack of copper shows up on younger growth. Copper will leach readily from sandy soils, but is tightly held by soils with high clay content. Soils high in organic matter maintain a tight hold on copper and the availability is decreased. Soils high in organic matter are, therefore, more likely to respond in additions of copper. Turfgrass deficiency symptoms include a withering and graying of the leaf tips, turning backward of the leaves, and dying of tips and newly emerging leaves. In general, high soils levels would register approximately 1.5 to 3 ppm, depending upon methods of extraction, while tissue levels of 17 to 20 ppm would be considered normal.

Iron. Iron deficiencies can occur with high soil pH, high soil phosphates, excessive copper, zinc and manganese, excessive soil moisture, and excessive lime. Iron is very essential for the formation of chlorophyll and for photosynthesis. It is also an activating element in several enzyme systems. Lime chlorosis is common in soils with excessive amounts of calcium carbonate (lime). In general, soluble applications of ferrous sulfate or ferrous ammonium sulfate will restore green color at least temporarily under these conditions. Usually soil levels of 25 to 50 ppm are considered high, depending upon the method of extraction. Tissue levels, however, are much more highly concentrated and can run as high as 280 ppm or higher.

Manganese. Deficiency symptoms can be induced by high soil pH, low organic matter content, high soil moisture, and nutrient interaction. Manganese plays a vital role with enzyme systems usually involved in the breakdown of carbohydrates and nitrogen metabolism. Deficiency symptoms on grasses include chlorotic leaves and often characterized by lesions and small brown or gray specks near the base of older leaf blades.

Zinc. Conditions favoring deficiency include high pH soils, high phosphate, low organic matter, exposed subsoils, high base exchange capacity and particularly very high organic matter soils such as those described as muck. Zinc is essential for transformation of carbohydrates and regulation of the consumption of sugar in the plant. The availability of zinc at pH values of 6.0 is low, and as the pH increases, the availability of zinc decreases. Therefore, heavy applications of lime can significantly reduce the availability of zinc. Although deficiency symptoms for zinc

(cont. page 15)

(Plant Nutrients cont'd.)

are not common, older leaves can appear grayish in color while part of the leaf may be gray to bronze-green. Soil test values of 3 to 8 ppm are considered high for zinc while tissue analysis may reveal 40 ppm as being adequate levels.

Molybdenum. This is one of the only micronutrients where availability is reduced by decreasing pH value. Values below a pH of 5.5 coupled with low phosphate levels can induce deficiency symptoms. Molybdenum is very important for the reduction of nitrates in the synthesis of protein by all plants, and, therefore, nitrogen cannot be properly metabolized in the presence of molybdenum deficiency. Molybdenum deficiency symptoms are not easy to detect in grasses which exhibit generally a pale green color. Soil test values for molybdenum range from 0.2 to 0.4 ppm in the high range, whereas tissue levels may run approximately 5 ppm.

Chlorine. Although many physiologists consider chlorine as being an essential element for plant growth and reproduction; deficiency symptoms are rare. Many fertilizer materials contain chlorine and it would be unusual to develop chlorine deficiencies in most of our turfgrasses.

In conclusion, highly leached sandy soils and especially with high pH values could develop micronutrient deficiencies. Rather than to guess or to use the shotgun approach for micronutrient applications, it is much best to conduct soil or tissue tests to determine micronutrient needs. Use caution in tissue tests!

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MAGCS Seeks 1990 Monthly Meeting Sites

The Midwest Association of Golf Course Superintendents, through its Arrangements Committee, is in the process of establishing a tentative monthly meeting schedule for the next year, 1990. It is, once again, our goal to arrange a geographically balanced schedule with a variety of golf courses for all MAGCS members to enjoy. If you are interested in offering your time and your club or facility for such an event: complete, clip and return the form below to:

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(Turfgrass Variety Cost cont'd.)

releases. Conversely, when an accession succeeds and is properly marketed, it becomes a valuable asset.

The foregoing does not include the "ability to do the job" in terms of technical know-how, knowledgeable personnel at each level of development and suitable land sites. Also required are small lot seed processing equipment and plot machinery. Obviously a development program for more than one, or even a few varieties, must operate on a continuing basis for reclaiming costs.

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by Tony Rzadzki, Asst. Supt.
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ball breaks. I imagine that this pivot feature is quite essential in some engineer's mind. Well maybe it is, but when your machine is chronically down and you are waiting for a part that breaks as consistently as the sunrise; then "the mother of invention" must step in.

Last month as usual, I wasn't told that part #18-7530 had failed once again. It was 6 in the morning and a Sunday too! I told my operator to go — find something to do — and come back in half an hour.

What usually happens to part #18-7530 is that the pivot ball assembly pulls loose of the bar and remains bolted in the rake head or main bracket, leaving the rake assembly dangling there. Well in a half an hour part #18-7530 was history. We don't even replace it or stock it anymore.

Take the bar off of the machine, and drill out a 21/64" with a 5/16" x 2" bolt. That's it. Place washers where the bar will pivot against the rake and double nut or lock nut the bolt snugly but loose enough to still move and pivot the rake as it should.

By the way, the pivot ball assembly (without the ball in it) is very hard steel. Be sure that your drill bits are sharp and drill slow. Be patient, the money that you'll save is worth a little extra time in the shop.

Maybe if enough of us do not need to buy part #18-7530 then the Toro engineers will redesign this part. Then maybe our future children (or grandchildren, knowing how expedient Toro engineers are) can benefit from our endeavors.

If you have any questions feel free to call anytime, 668-3323, ext. 502.

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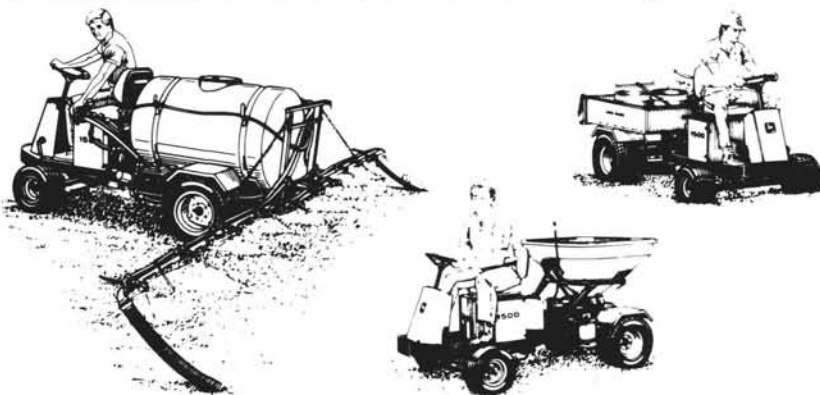
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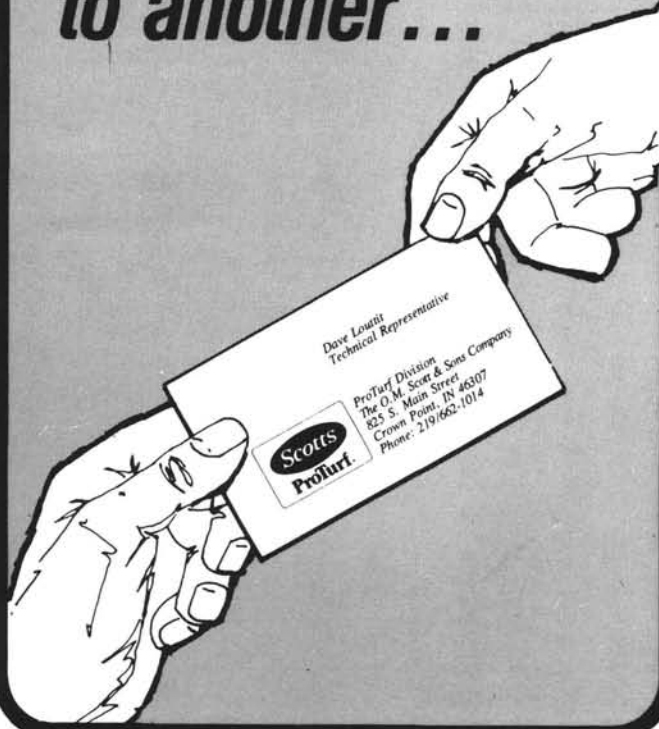
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Guess Again

The Summer Loved By All

We are a few weeks past the autumnal equinox and the barn swallows have started their long trek back to Argentina and all points south, although a few still remain and seem reluctant to go.

The Queen Anne's Lace and blue-flowering chicory that was blooming so profusely along the roadside on my way to Danville a few weeks ago, is now waning and has almost spent its cycle. Goldenrod, purple asters, lythrum and various wild sunflowers are still exhibiting some of their luster, but relatively few others. Milkweed is about ready to burst open their silvery green pods, and strew seeds to the wind. And green acorns hang on the oaks, soon to be released for harvest to the squirrels. Yes, summer slipped away.

I am sure most everyone in our area would agree, that it has been a good summer. Except for some isolated spots, we've had adequate moisture and tolerable temperatures, and definitely a contrast to last year's dry and very hot summer. We should not have any reason for complaints this year.

But as certain as death follows birth, we will soon complain about snow and frigid temperatures, which are bound to follow as seasons make their changes. And soon someone will say, "Yes, but we haven't had Indian Summer yet".

Who came up with the words, Indian Summer, is a mystery. It seems that the Indians did not coin that title, and from what I have read, do not take credit for it. They probably enjoyed the season, much like we do, and it gave them balmy days and time to harvest their various crops in comfort.

There doesn't seem to be a fixed date for Indian Summer. We all know it comes in the fall, and that's about as close as anyone can come. Sometimes it comes early, and sometimes late. Sometimes it waits for the first hard frost — the black frost or "killing" frost, as some call it. And, sometimes it will settle in real early and it's believed to be a lost and lingering summer day. There are some "old timers" who claim it can never come early, but, neither do they have the answer as to when it should appear. It isn't on a calendar season; like Easter, Thanksgiving or Christmas. It makes its own rules.

Now and then — and this, too, can be argued — it comes twice in a year, both early and late. Such years are memorable. Maybe, this could be one of those years. God knows, after the summer we had last year, with drought and excessive heat, we deserve two spells of Indian Summer this year. I'll take the early one gladly, in any case, and hope for more before I make my trek south for the winter.

The evening TV weather forecasters said last night there was a 60 percent chance of rain, today. This morning's Chicago Tribune gave the same report — a 60 percent chance of showers. But, guess what? It was a most beautiful day, and not a drop of rain. Sixty percent? Come on. Perhaps we should go back to the old way.

On the farm my Dad would arise early, look up to the sky and, check the cows, chickens and the birds. Then wet his finger and stick it in the air. He could tell how much humidity was in the air by how fast his finger dried and, of course, which way the wind was coming from.

When the birds weren't rehearsing their symphony or were unusually quiet, he knew that inclement weather was on the way, and referred to it as the, "lull before the storm". And, if the crows seemed to be flying erratic, it was certain to storm shortly.

If the cows huddled in a group close to the barn, a thunderstorm was inevitable, and on its way. Also, one of his many quotes (all in Plattdeutsch, the Low German vernacular language of his ancestral northern Germany heritage) was, "When cows chase flies with their switching tails, a thunderstorm to drive them away, never fails".

And if the chickens were reluctant to leave the hen house, "donner and blitzen" would soon announce the coming of rain from the dark approaching clouds.

His consolation to hot days and muggy uncomfortable evenings was, "When the winds blow over the stubble of harvest fields, the hot days to cooler evenings will have to yield". And some of his other quotes were, "A sun of morning red, I can tell, will put water in the cistern and the well". Or, "A evening sun, red, bright and clear, will tomorrow bring hope, relief and cheer".

His prediction for Ground Hog Day was, "If he doesn't see his shadow there or here, it will be for farmers a super corn year". And of hoarfrost (or white-frost as he called it) on the ground, plants and roofs, he would say, "Rain will wash away, Jack Frost's work and play". And, on a dewless summer morning his comment would be, "Lack of dew on stalks of corn, will be refreshed by tomorrow 'morn". And he was right more often than he was wrong.

And there were always the pesky flies. Now, let me tell you, those little rascals knew hours ahead of time it was going to rain. They would hang around the windows and doors and stick to one's self, and sting and bite with the voraciousness of a piranha. A sure sign of rain.

And whatever meteorology information my Dad couldn't get from the animals, he was filled in by my Mother's corns and bunions, or the hired hand's rheumatism. As I recall, he was right 90 percent of the time.

Now, maybe it's because the weather service guys and TV weather seers, don't have access to animals and flies to observe. Or, maybe they don't eat the right kind of breakfast or something. But, with all their modern equipment, not to mention satellites, it seems to me they could at least come closer than 60 percent. My Dad sure did.

Get Your Home Orchard Ready for Winter

by James A. Fizzell, Sr. Ext. Adviser
Horticulture

From the numbers of questions coming to Extension offices, it is obvious that many gardeners are starting home orchards. Now is the time to prevent damage to fruit trees by preparing them for winter.

Remove all grass and weeds around the trunks of the trees. Use hand clippers on vegetation you cannot cut with a lawn mower. Be sure not to nick the bark. The vegetation provides protection for field mice which will live there all winter eating the inner bark of trunks and roots, frequently killing fruit trees.

Rabbits eat the bark off the trunks and any branches within reach, particularly on young fruit trees. However, they do not bother older trees which have developed heavy outer bark. Mechanical barriers are recommended for protection from rabbits. Use chicken wire or hardware cloth to form a cylinder around the trunk. The cylinder should be at least two inches from the trunk, and high enough to provide protection in the vent of heavy snow cover. Plastic spiral strips are satisfactory on smaller trees. Or, wrap the trunk with newspapers, water-proof paper, or tree wrap. Wrapping the trunk will also help protect the trunk from winter sun scald, and will benefit even older trees not subject to rabbit damage.

Trunk wrapping does not keep the trunk warmer, but shades it from the winter sun which would elevate the temperatures of the inner bark to the point where it begins growing even in mid-winter. When the sun sets, temperatures rapidly drop to freezing or lower; this causes ice crystals to form in the inner bark, killing it. Such injury usually occurs on the south or southwest side of the trunk, the area most likely to be warmed by winter sunlight, and may not become apparent until the next summer. Some nurseries are investigating white paint on the trunk as a protection from winter sun damage.

Remove the paper wrap when growth starts in the spring so it will not provide a hiding place for insects which may injure the trunk during the growing season.

Of major concern in winter survival of fruit trees is drainage. Fill low areas so water will not stand around the tree trunks and roots during the winter months. Such conditions are ideal for development of disease organisms which could attack the trees at the soil line and kill them.

Plant Now for a Beautiful Spring!

After a dreary Chicagoland winter, few things are more appreciated than the first signs of spring.

These first signs can appear as early as February with crocuses popping through the snow. And, even the most ordinary surroundings can be transformed into a beautiful scene as tulips, hyacinths, and daffodils burst into bloom.

Even though spring is months away, now is the time for preparation. In fact, spring bulbs **must** be planted in the fall. Planting can continue until ground freezes so solid it can't be worked.

Planting is simple. Just dig a hole, drop in the bulb and let nature do the rest.

Spring flowering bulbs are not fussy about soil. They will grow in sandy or clay soil — just so long as the soil drains well. If the soil is heavy, improve it by mixing in sand or peat moss to a depth of a foot or so. Rich soil isn't necessary as the bulbs contain food needed to produce foliage and flowers in the spring.

Plant a spring bulb garden in either sun or shade. Since the flowers appear early in the season, they are often finished and matured by the time trees leaf out and shade the garden.

Plant daffodils, hyacinths and tulips six inches deep and six inches apart. Fosteriana and Kaufmanniana tulips can be planted a little shallower, four inches deep and three inches apart.

Set the bulbs firmly in place, pointed ends up, and water liberally. Water again if a prolonged dry spell occurs in fall.

For best effect, plant in clusters of a dozen or more. Space these clusters throughout the garden — among shrubs, along walks, around trees or near entrances.

The tulips with classic shapes — Triumph, Darwin, Cottage — are especially suited for planting in garden beds and borders. These are the staples of the bulb garden and give a dramatic splash of color. Early blooming species tulips, which grow from 4 to 12 inches tall, are more effective in a casual setting such as rock garden or semi-naturalistic area.



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