September 1972

BORDER CITIES GOLF COURSE SUPT. ASSOCIATION MICHIGAN

A Patch of Green

Official Publication of the
Michigan & Border Cities Golf Course Superintendents Association

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The President's Message

As the season draws to a close let us count our blessings of this past summer. We in Michigan have been spared most of the weather extremes that experienced by most areas in the country. Sure, we had some tough times with too much rain and a little touch of hot weather, but basically our courses looked better at the end of August than at any time during my five years in Michigan.

This is the time to plan on improving conditions for next year. Attend all available educational programs, get involved in some of our lively discussions – become a part of our proud group.

Remember that we all benefit by education.

Your president,
Ted Woehrle

---

60 Years of Golf Capped by Ace

"If at first you don't succeed, try, try . . . Something like that.

So says Vic Swanson, who has been associated with the game of golf 60 years.

Vic, in all his days as one of Northeastern Michigan's most respected Superintendents has never had a hole-in-one. He's witnessed a few, played with partners who canned their tee shots but never quite found the 4¼ inch opening himself.

That was until Friday afternoon, July 28, 1972.

Playing a friendly game with Bay County Golf Course's present Superintendent, John Finn and Frank Anderson, Swanson saw his tee shot with a No. 5 iron pull right with a little draw take a couple of quick bounces in front of the pin on the No. 3 (par 3, 165 yards) and roll in. Other witnesses were right next to No. 3 coming down No. 5 fairway, all adding to the momentous occasion.

The 68-year-old Vic, now retired but still serving as golf consultant for the Bay County links, started his links association caddying at the old Bay City Country Club at the age of 8. He played his first game that summer, and his enthusiasm for the Royal and Ancient has never wore off.

He later took over as Superintendent at BCCC, then at the old Bay City Euclid Golf Course, and more recently until retirement at 65, served in a similar capacity at Flint Golf Club. This was during the heyday years of the Carling Open and other major tournaments which brought top pro golfers to the Vehicle City, and words of praise for Swanson and his carpet-like greens.

– *Bay City Times*, Saturday, July 29, 1972

August Meeting at Edgewood C.C.

Ken McRae,
Host
Superintendent

Great weather, a great golf course, and a tremendous dinner at Edgewood Country Club was experienced by those attending the August 29th meeting.

Ken McRae, host Superintendent, was once again the great host that he has always been.

The business meeting was canceled in favor of several announcements of coming events and a round-table discussion on turf maintenance problems. Moderator, Dave Moote, Superintendent, Essex C.C. of Windsor, Ontario, discussed his fertilizer and chemical program for 1972 which prompted many questions and discussions.

One thing mentioned time after time was the warning against complete confidence in systemic type fungicides. We are encouraged to alternate with contact fungicides to prevent the development of a resistant strain of disease.

Vice President Gerald Gill, Superintendent, Tam O'Shanter C.C., presented Ted Woehrle a token of appreciation on behalf of the Michigan and Border Cities members.

Quite a place – A golf course with it's own DOG HOUSE – you don't have to wait until you get home.

Vice President Gerald Gill (right) presents wall plaque to Ted Woehrle for his work during the 54th PGA Championship. – Inscription below.

IN APPRECIATION
of the Outstanding Performance of
TED WOEHRLE
and his staff in presenting the Oakland Hills Championship Course in such excellent condition for the 1972 PGA National Championship Tournament. We, his fellow members of the Michigan and Border Cities Golf Carse Superintendents Association, in recognition of his achievement and the prestige he has brought to our organization vote him this token of our appreciation.

Michigan & Border Cities Golf Course
Superintendents Association
August 29, 1972

GCSAA Executive Director Named

Mr. Conrad L. Scheetz has been named Executive Director of the Golf Course Superintendents Association of America.

Your Executive Committee recognized the need for a sound association manager at the helm of the Headquarters office. Cliff Wagoner, Chairman, Richard Blake and Palmer Maples, Jr. served as the Ad Hoc Screening Committee for this purpose.

The Screening Committee, activated last February, had a Herculean task of narrowing their recommendation from the 300 plus applications received, plus those interviewed, to the one best qualified to serve GCSAA. In our opinion, they made an excellent choice. The appiontment has received full support of the Executive Committee.

Our budget of $610,000.00, staff of twelve, and the multitudinous activity GCSAA Headquarters is involved with requires the services of a man well founded in association management, budgets, accounting, data processing, membership services and conference management.

To acquaint you with him, Connie holds a Bachelor of Science degree in commerce and engineering from Drexel University in Philadelphia. He has worked extensively with budgets and data processing as Head of Budgets for the Data Processing Division of Educational Testing Service in Princeton, New Jersey. During the last seven years, Connie was Business Manager of the International Reading Association in Newark, Delaware, which was experiencing a tremendous growth, both in membership (increased over 50%) and budget-wise (which quadrupled to over one millon dollars).

I know you join me in welcoming Connie aboard and look forward to working with him for the betterment of the Association.

– Robert V. Mitchell, CGCS
GCSAA President

Future GCSAA Management Seminars

Dates for three of the four remaining locations selected for presentation of the GCSAA Management Seminar I on financial and budgetary procedures are announced by the GCSAA Education Committee.

Locations are as follows:

Columbus, Ohio – October 25 & 26
Washington D.C. – November 15 & 16
Hartford, Conn. – December 6 & 7

Chairman Ted Woehrle explained that the selection of dates was based on results of questionaires sent to chapter officers in the areas where the seminars will be held.

In describing the two-day seminar, GCSAA Education Director Paul Alexander explained that participants can expect to study balance sheets, cost analyses, budget preparation and controlling costs. Students will also have the opportunity to learn the vital "hows" and "whats" of budgeting and writing budget reports in precise, understandable financial terms.

The registration fee of $60 includes all training sessions and reference materials, two luncheons and refreshment breaks. Fees and all expenses for GCSAA Management Seminars are tax deductible (see Treasury Regulations 1.162-5).

Acid Era in Turf Management

from 'THE ROLE OF LIME IN TURF MANAGEMENT'
Published by the TURF SERVICE BUREAU, Sewerage Commission

Sulphate of Ammonia Controls Weeds: The fad to dose turf with sulphate of ammonia and control weeds and clover by producing an acid soil with it was based on the early results obtained on the lawn fertilizer plats at the Rhode Island Agricultural Station. During the first years of the experiment the plats receiving sulphate of ammonia were weed and clover free in contrast to the more weedy nitrate of soda plats. Both received the same amount of nitrogen. The soil on the sulphate plats was more acid, so it was given credit for eliminating clover and weeds.

Golf Clubs Were First to Put Acid Theory into Practice: Golf clubs were the first to make practical use of the Rhode Island experiments. They tried sulphate of ammonia on greens and it performed a miracle. Clover and weeds disappeared like magic, turf density increased, and grass became dark green in color. Enthusiasm increased to a point where many turf authorities frowned upon the use of any other kind of nitrogenous fertilizer, and strongly condemned the use of lime.

The Acid Era Died with the Grass in 1928: The reaction came with the disastrous hot, humid and wet summer of 1928. Wholesale loss of grass occurred throughout the North. All the turf on every green disappeared over night on many courses. The first impulse was to condemn sulphate of ammonia. When reason finally prevailed it was realized that soils can become too acid for the supposedly acid tolerant bent grasses. Lime came back into favor. Although slight acidity may be advantageous, turf authorities now concede that the maintenance of a dense turf is even more important in the control of clover, weeds, and poa annua than an acid soil.

The Rhode Island Turf Fertilizer Plats: The Rhode Island lawn fertilizer test plats were started in 1907 and concluded in 1942. The results are summarized in an interesting manner in the 55th Annual Report of the Station. It states that turf on the nitrate of soda plats was unsightly because of its un-uniform character and invasion of weeds. The ones fertilized with a combination of nitrate of soda and sulphate of ammonia were very slightly acid, and the turf was satisfactory. "Winter-kill" became bad in the sulphate of ammonia plats. It was first noticed in the spring of 1938. The soil was strongly acid, pH 4.0. By raking the plats severely to remove the dead grass, turf was restored so there were few vacant spaces

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by the end of the growing season. Recovery of the injured area was very slow in 1939-40-41. Three times more dead grass accumulated in the acid soil (pH 4.0) and there was twice as much on the moderately acid plats (pH 5 to 6) than on the alkaline ones. The turf became "sod bound" as a result of the matted surface. The grass on the sulphate of ammonia plats was damaged severely by lead arsenate and sodium arsenite used for worm and weed control. Little or no injury occurred from the use of these chemicals on the alkaline, or the slightly acid plats.

The concluding statements about these "classic" plats which were plowed down in 1942 are illuminating:

"The plats that received sulphate of ammonia continuously as the source of nitrogen rather than nitrate of soda remained free of weeds and it was from the results of these tests that the 'weedless lawn' dream was realized by the discovery of a long sought fertilizer that would grow grass and kill weeds. This gave rise to the 'sulphate of ammonia era' in turf culture. But as more research was undertaken and further observations were made, it was found that continuous application of either sulphate of ammonia or nitrate of soda were inadvisable, due to the high acidity produced by the sulphate of ammonia, and the alkalinity produced by the nitrate of soda. However, sulphate of ammonia, when mixed with an equal weight of limestone to prevent the soil from becoming more acid, proved very satisfactory, and was also superior to nitrate of soda in maintaining desirable turf."

Soils are Acid Neutral or Alkaline: The chemist divides matter into three groups based on reaction. Substances are acid, neutral, or alkaline. Vinegar is acid, salt is neutral, and soda is alkaline. The degree of active acidity, or alkalinity, is expressed by pH (potential of hydrogen). The scale is from 0 to 14, with 7 as the dividing point or neutrality. Figures below 7 represent increasing acidity, and higher ones alkalinity. Each figure differs by a multiple of 10, so pH 6 is 10 times, pH 5 is 100 times and pH 4 is 1000 times more acid than neutral. Soils fall in the range of pH 4.0 to 8.5, but more commonly within the narrower limit pH 5.0 to 7.5. Most plants grow best in the range of pH 6 to 8.

Active and Potential Acidity: The acids which are bad for plant growth exist in the soil solution as soluble acids, and are referred to as "active" acidity. The pH is a direct measure of it. An acid soil also contains insoluble acids which are the potential source of soluble acids. "Potential" acidity resides in the silt, clay and humus fraction of the soil. A sand and a clay soil may have the same pH, but more lime must be used on the clay soil because of its greater potential acidity due to its high content of the clay separate. Sand is mostly quartz, which is inert. Continued on Page 17

The Importance of Water Management

by FRED V. GRAU, Consulting Agronomist College Park, Maryland

Water is LIFE! Death comes when there is a scarcity or an excess. Floods killed 500,000 Pakistanis in minutes; Pakistani parents repaired the popu-loss in just 40 days. Deserts speak eloquently of the loss of life when water ran out. Old prospectors managed water very carefully because it was *Life!* We recall the Rime of the Ancient Mariner – *"Water, water everywhere – nor any drop to drink."* We are using water at a prodigious rate. By 1980 we can expect water usage to equal replenishment by rainfall, snow melt, glacier melt, dew and all other forms of water return. Where do we go from here? Overpopulation is not likely to be blamed for loss of life but lack of water could be the real cause only because there are too many people who are using and wasting too much water.

In southeast Asia there is a village where the only source of drinking water is 9 miles away. Only women carry water and one wife can make one trip a day. This forces the man to take more wives who can then supply the family with sufficient water. Water runs downhill and finds its own level. A hose filled with water is a simple device for levelling and staking an area for zero grades. As water moves it erodes and carries impurities with it. It is very important to reduce erosion to a minimum so that our sources of water may not be unduly contaminated.

Water is a universal solvent. It disolves rocks and minerals. It carries plant nutrients in solution. It may form 90% of the weight of green plants. Water is an essential constituent of every living cell.

Water freezes. When it freezes it expands. Pressures thus created burst many structures. Rocks are split asunder, one of the soil-forming factors.

Water evaporates and, in so doing, absorbs heat and cools the atmosphere. Evapotranspiration is the device by which green plants cool and create a more pleasant atmosphere.

Water boils and passes into the air as steam or water vapor, one of the many forms of water. Water is a chemical reagent entering into and becoming a part of infinite number of chemical reactions.

Pure water exists only in the laboratory. Good drinking water may be "pure" in the medical or pathological sense but the "goodness" of drinking water is created by dissolved minerals and impurities. "Pure water" is flat and uninteresting.

Water has tensile strength similar to some kinds of steel. It would take a pull (force) of 210,000 pounds to rupture a column of water one inch square.

Desalination (de-salting) of brackish water is gaining ground. Cost is now the big drawbackl In Texas during a drought water sold for 50¢ a gallon. In New York not long ago you got water with your meal only if you requested it.

On Long Island there are some 7,000 Recharge Basins ½ to ¾ acre in size, 12-15 feet deep with porous bottoms - that collect water from highways, roofs, shopping centers. The water soaks into the soil, recharging the ground water and keeping out the salt water from the Sound.

In life we have a closed cycle of water, oxygen and carbon dioxide with hydrogen atoms going back and forth where needed, all driven by sunlight, the ultimate source of power.

In South Africa they are "milking"

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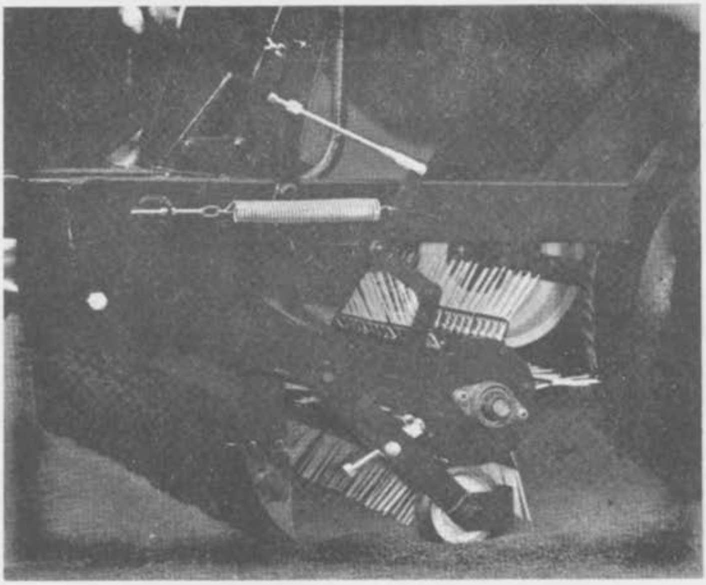
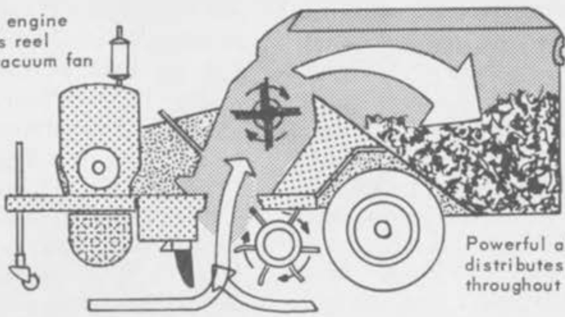
RAKES TURF AND VACUUMS IT CLEAN





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The Mode of Arsenicals Action in the Soil

by CECIL F. KERR, Chipco Turf Products Manager

Arsenicals are widely distributed in nature. Soils contain naturally arsenic values from 0.2 to 40 ppm.

Arsenic is very similar to phosphorus. Factors which affect the behavior of phosphate in the soil will also affect the behavior of arsenate. Phosphates and arsenates are either fixed or abosrbed by plants. Fixation is greater in a fine silty clay colloidal soil. Chelated iron and zinc increase fixation of arsenic.

Cecil F. Kerr

The addition of iron and zinc to the soil will decrease available arsenicals by increased arsenic fixation and should insure a more gradual removal of *Poa annua.*

Liming the soil increases the displacement of phosphate by arsenate. The availability of arsenates and P_2O_5 is increased as the pH increases as the pH increases to pH of 7.

Some crops are injured by concentrations of arsenicals, especially on light sandy soils, however, most plants thrive on accumulations of arsenicals. The yields of peas, radishes, wheat, potatoes, turnips, sorghum, soybeans and cotton are increased on heavy soils, such as Davidson clay loam, even with applications of 1000 pounds calcium arsenate per acre.

High levels of phosphate will overcome arsenate by antagonistic action. Increasing phosphate levels caused less arsenic to accumulate in the plant. Both phosphorus and arsenic accumulate in surface soils. Neither phosphorus or arsenic appreciably leach in the soil. They do not contribute to pollution of lakes and streams.

Bent, bluegrass, zoysia, bermuda and fescue grasses are extremely tolerant to arsenical formulations. Most researchers recommend tri-calcium arsenate for *Poa annua,* crabgrass and and soil insect control.

There is no acceptable substitute for tri-calcium arsenate for effectively controlling *Poa annua.* All other materials seriously injure bent. Overseeding is not possible with most other chemicals.

Professional golf course Superintendents have a thorough knowledge of their soil type, pH, phosphate level, zinc and iron requirements and are now ableto compute the approximate arsenic needed to control *Poa annua* in their soil by atomic absorption spectrometry.

With repeated applications of tricalcium arsenate, small amounts of arsenicals become available to the plants, gradually removing *Poa annua* over a period of years. Control is maintained with light annual applications (2 to 3 lbs. 48% tri-calcium arsenate per 1000 sq. ft.).

Golf Course Superintendents throughout the United States have, for years, safely used tri-calcium arsenate on an individual *prescribed* basis to to control *Poa annua,* crabgrass, chickweed and harmful soil insects. They manage turfgrass as an anti-pollutant, as a basic oxygen producer and as a prime erosion control agent.

The prescribed usage of arsenicals eliminates unsightly weeds and harmful insects on golf courses creating a beautiful environment, enabling our population to enjoy both nature and recreation.

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Or you may contact the next golf course supplier who calls on you and give him the information needed for application.

Water Management Cont.

the clouds to obtain water. Huge nylon nets are suspended on tops of mountains to condense the moisture in clouds that pass over but never drop any rain.

Microorganisms need water. There are times when soil pores become clogged with the bodies of living and dead microbes. This is true especially when water is present continuously in excess.

Soils become more friable when they enjoy cycles of wetting and drying. Soils that are continuously wet become "sour" and unproductive. Only the anaerobic organisms persist – the ones that create substances toxic to grass.

It is not possible to "partially wet" a soil. Irrigation consists of saturating the surface to a depth determined by duration and quantity. With drainage and percolation water moves downward pulling air into the soil pores. Roots of grass must have oxygen. With continued percolation and plant usage the "saturated" soil moves into the "field capacity" range where plants grow best. With no further water applied as rain or by irrigation all available water is used and we reach the "wilting point." Some plants die very soon after this – others can tolerate days and weeks at the wilting point and return to normal upon resumption of irrigation.

In preparing for this paper I re-read USDA Yearbook on "WATER"; Turf Management by Musser; Turfgrass Science, American Society of Agronomy Monograph No. 14; many bulletins and a delightful book, "On the Shred of a Cloud" by Rolf Edberg translated from the Swedish. I urge each one of you to re-read all you can on the subject of WATER. We don't have much time left.

A baby born today will polute 3 million gallons of water in his lifetime. Providing food, goods, and services for this baby will polute another 30 million gallons.

As a nation we are running out of water! We must learn to conserve it, to reuse it, to recycle it as never before.

Hawaii is blessed with an abundance of good water but turf is being ruined by the excessive and wasteful use of water. Now, with automated water systems, we anticipate an even greater misuse of water. We can only hope that those who manage these new systems will exercise restraint.

A new system of "Drip Irrigation" now being practiced in California claims to use 60% less water with superior results. We can hope to adopt something like this to turf.

An example of water management can be cited on a course in the Mid Atlantic area. Two years ago it was mostly soggy *Poa annua* with some struggling bent and bluegrass. With minimum irrigation, the introduction of new ryegrasses and improved bluegrasses, and a slow-release fertilizer program we now have nearly solid blue-

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Water Management Cont.

grass fairways with no *Poa annua.* It took courage to let the fairways get dry but the *Poa annua* died and the other grasses held on. Water, when needed, was the secret of success.

In 1946 Jim Watson started his work on water on turf under the late Prof. Musser. His Ph.D. thesis summarized four years of work which said in effect, *"Water is needed only so fast as the soil will absorb it."* About the time aerification became feasible and we learned how to cultivate turfgrass soils to let more water into the soil. This was a big step forward in Water Management.

Drought years in 1963, 1964 and 1965 in the Northeast created an upsurge in the installation of irrigation systems. Water was thought to be the answer to the problem. A survey conducted in 1968 by Dr. Harper, Penn State, showed that irrigation produced a whole new set of problems.

77% reported decrease in Kentucky blue and red fescue.
81% reported increase in *Poa annua* (some indicated 90 to 100%)
Height of cut had to be lowered.
78% said that mowings were doubled.
22% said that mowings were tripled.
Weeds increased, there was more thatch buildup, new grasses had to be introduced, renovation became necessary, fungicide use increased, and fertilizer requirements doubled and trebled.

Water provides films around solid particles which act as a lubricant. With traffic the soil particles become rearranged in the direction of more compaction. Pore spaces were reduced from 33.1% to 6.1% in one study. The weight of the non-compacted soil was 68 pounds per cubic foot. After compaction the same soil weighed 112 lbs.

Roots of turfgrass have been found at considerable depths when there is good sub-surface drainage, where the soil is permeable and water has been used in moderation. In California the roots of Merion bluegrass were drawing moisture below 3 feet. Roots of bent-

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Water Management Cont.

grasses on putting greens have been found to be active below 12 inches. The secret is permeability, good drainage, and good water management.

"Water as Needed" includes syringing to bring grasses out of a wilt condition. A quick syringe with cool water provides cooling and life-saving oxygen. More oxygen is dissolved in in cool water than in warm water. Perhaps one great failure of automatic irrigation systems is the ability of the turfgrass manager to syringe all areas quickly early in the morning to wash off dew and water of guttation. Guttated water (that which is forced from opening in the plant by root pressure during the night) contains rich nutrients which is ideal for the growth of fungi. When left on the plant there may be burning of the leaves when the moisture evaporates and the salts are left behind on the leaves. Syringing washes these nutrients into the soil where they are recycled through the plants.

Acid Era Cont.

Phosphates Most Available in Very Slightly Acid Soil: The availability of applied phosphate fertilizer is reduced by soil acidity. Truog says the critical point is 6.2. When the soil is more acid, the phosphoric acid is precipitated as relatively insoluble iron and and aluminum phosphates, rather than the more mobile calcium salt which is formed when the soil reaction is above pH 6.0 to 6.2.

Acidity Increases Solubility of Trace Elements: The solubility of the trace elements such as copper, manganese, iron, etc., increases as soils become more acid. Copper poisoning of the turf when Bordeaux mixture was used for disease control was aggravated by the use of ammonium sulphate to increase soil acidity. An application of lime would have precipitated the copper and reduced or eliminated its toxicity.

Over-liming, especially with hydrated lime, may depress turf growth.

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Acid Era Cont.

The lime makes all the trace elements such as iron, manganese, copper, zinc, etc., insoluble and hence unavailable. But the other extreme of too much acidity may create a deficiency of calcium and magnesium.

Soil Granulation Depends Upon Soil Reaction: Marked acidity has an adverse effect upon the physical condition of loams and heavier soils. The minute silt and clay particles exist as separate individuals in acid soil, but form compound granules in the presence of calcium. The granules act like larger particles in their effect on soil structure, but retain the desirable chemical properties of the colloidal silt and clay particles.

Stabilizing Action of Silt and Clay: Management is simplified when the soil contains a small amount of the silt or clay separate. Both have acidic and basic properties and are great soil stabilizers. Both containing a little clay or silt tend to resist change. It is the reason for the slow and gradual change in reaction following applications of acid fertilizers or lime. The chemist calls this property the "buffer" capacity of the soil. It is a wise provision of nature. Except for this buffering ability, plant growth and crop production would be a trying and difficult task. Some of the soil fluctua-caused by foolhardiness of man might be too violent for the plant to survive.

Humus Has Beneficial Buffering Action: The soil humus has a high buffer capacity, and is similar to silt and clay in that respect. This fact is often ignored or overlooked. The effect on water-holding capacity and on soil structure are the ones usually stressed.

Acid Soils Occur in Humid Regions: Acid soils develop where the annual rainfall is more than twenty inches. Calcium and magnesium are leached out of the surface by the rain water as it passes down through the soil. A high rainfall and a low content of calcium in the parent material make conditions ideal for the creation of strongly acid soil.

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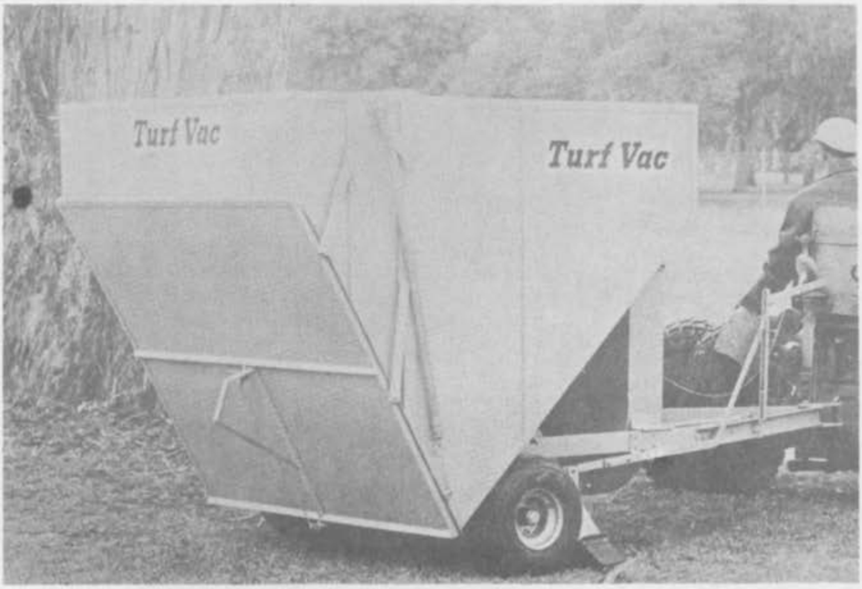

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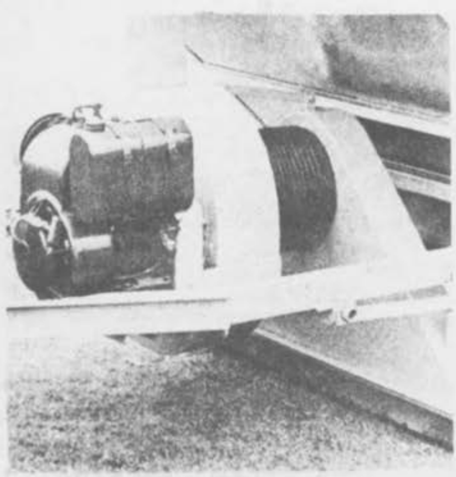

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