

grasses are the problem...

"Around here, our main problem is crabgrass in the fairways, so we use Balan in the spring. It's so economical we treat fairways and the roughs."



"Almost every course in the South has two main weed grass problems: Poa annua and goosegrass/crowfoot. Two applications of Balan gets rid of them both."



"Plain old crabgrass is the biggest problem around here. Balan is so economical we put it on all our fairways in the spring before germination."



Balan is the dependable, economical pre-emergent that kills weed grass seeds as they germinate, allowing the desirable grasses to fill in. Name your weed grass problems . . . crabgrass, goosegrass, Poa annua or foxtail. Balan's the practical solution. Order Balan from your Elanco Distributor today.

ELANCO

Balan®

Elanco Products Company
A Division of Eli Lilly and Company
Dept. E-455
Indianapolis, Indiana 46206, U.S.A.

Circle 103 on free information card

Management from page 59

Fungicide disease control basically involves products that are (1) lethal to the fungus, or (2) inhibit fungal germination, growth or multiplication. Some fungicides are "broad spectrum", inhibiting a wide range of pathogens and other are "narrow spectrum", having a specific activity for only a few fungi.

Helminthosporium leaf spot fungicides prevent infection by the fungus rather than cure the disease. Thus effective fungicide control occurs only on plant parts to which fungicides are applied and only for the period fungicides remain on the plant. Contact fungicides must be applied at regular intervals to maintain protection on turfgrass leaf surface. Since control is achieved by a protective coat of fungitoxic chemical on the plant surface the fungicide must be applied uniformly. New, unprotected shoot growth is constantly being formed within the turf stand. These limitations must be recognized whenever you use fungicides to manage

plant diseases. Certainly fungicides do help in a turf leaf spot management program but they will not replace a poor leaf spot management program or substitute for no leaf spot program at all.

In summary, of the general disease management methods, three are suitable for *Helminthosporium* leaf spot management consideration. These are resistant lines, sanitation and protection, while exclusion and eradication have limited value. The guts of a leaf spot management program is proper cultural management. Turf managers where *Helminthosporium* leaf spot is a threat should consider the effects of modified mowing, watering, and fertilizing practices. Further, they should consider de-thatching and if needed, modifying the turf environment. Lastly, apply fungicides as needed. If the results of these efforts are unsatisfactory, renovate by over seeding with resistant cultivars or reestablish completely including necessary soil and site preparations. **WTT**

Factors from page 53

early spring application nitrogen and auxin-like herbicides might temporarily retard leaf spot symptoms by promoting youthfulness in rapidly growing leaves.

Summer

A. Appearance of Symptoms.

1. Minimal appearance of small leaf spots under a normal, relatively dry summer environment.
2. Moderate to heavy leaf spot symptoms during wet summers or with irrigation.

B. Factors Involved.

1. Increasing day length and temperature, and reduced levels of moisture would normally reduce infections and decrease disease development on individual leaves. These factors would keep leaf spots relatively small.
2. Excessive rainfall or irrigation during summer will compensate for higher temperatures and increase infections. Applications of nitrogen and herbicides under these circumstances would further enhance disease severity. Some preliminary evidence suggests that high temperature stress combined with nitrogen and (or) herbicides may greatly enhance leaf spot symptoms on irrigated turf during the summer months.

Fall

A. Appearance of Symptoms.

1. Early fall number and size of leaf spots increases.
2. Late fall to early winter leaf spot symptoms become severe, including yellowing and blighting of entire leaves. Turf may appear to have a yellow undercover.

B. Factors Involved.

1. Increasing moisture, shorter day lengths, and lower temperatures increase number of infections and enhance senescence of leaves. Enhanced senescence predisposes leaves to more severe disease development.

2. By late fall and early winter decreasing day length becomes a primary factor in enhancing leaf aging, and older infected leaves respond by blighting.
3. Nitrogen applied in late summer or early fall may have some delaying effect on senescence and for a period slow yellowing of older infected leaves.
4. Late summer to early fall applications of herbicides may enhance yellowing of older infected leaves by increasing the rate at which the leaf reaches senescence.

Winter

A. Appearance of Symptoms.

1. No leaf spot symptoms on dormant grasses. Winter may be the most important season for fungal colonization of dead tissues.
2. Grasses remaining green under snow cover and especially unfrozen soil will continue to show leaf spotting, yellowing, and blighting typical of late fall.

B. Factors Involved.

1. Provided adequate moisture is available, mycelium will grow slowly down to 36 degree F. Such growth could be important to colonization of dead tissue and an increase in spore production the following spring.
2. The potential availability of nitrogen, especially slow release forms, during winter months could provide an important nutrient source for pathogens and aid colonization of dead tissue.
3. Kentucky bluegrass will often remain green under snow cover, especially if the ground is unfrozen, and if nitrogen fertilizer is applied in the late fall. Under such circumstance leaf spotting and yellowing will persist as long as temperatures are 36 degrees F. or above.

PLANT SELECTION, HYBRIDIZATION PRODUCE NEW VARIETIES

By Gerard W. Pepin, Research Director, International Seeds, Inc., Halsey, OR

Starting with Merion, many leaf spot resistant cultivars have been developed. Almost all of the new bluegrass releases have good leaf spot resistance. The nature of the genetic resistance is not known. The resistant cultivars are generally low growing, broad leaved plants while the susceptible varieties are usually tall growing, fine leaved, stemmy types.

A number of fungicides can be used to control *Helminthosporium* leaf spot. Some of the better known broad spectrum fungicides commonly used are Actidione Thiram or TGF, Daconil 2787, Dyrene, Kromad and others. Unfortunately, fungicides are expensive and time consuming to apply. The best control is the planting of leaf spot resistant cultivars and there is a long list to choose from. However, under severe conditions, even the genetic resistance of the best cultivars can break down and fungicide application may be necessary.

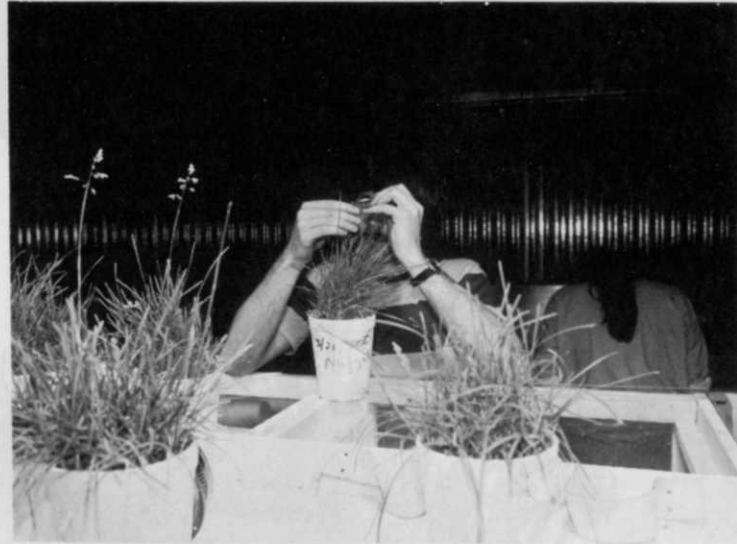
Plant breeders have been very successful in developing leaf spot resistant varieties. Two basic techniques have been used in bluegrass breeding: plant selection and hybridization.

Plant selection is the most basic breeding technique in existence. It simply involves the selection of superior plants that occur naturally, prosper and spread under close cut turf conditions. Often these plants can spread to enormous size; the plant selection that became Touchdown was over 50 feet in diameter. Some of the better known plant selections are Merion, Baron, Fylking, Glade, Windsor, Victa and Parade.

Bluegrass hybridization is a much more recent breeding technique. It has only been used for the past ten to 15 years but has resulted in the development of a number of improved leaf spot resistant varieties such as Adelphi, Bonnie-blue, Bristol and Majestic.

Hybridization is difficult in Kentucky bluegrass due to its unusual type of reproduction and seed formation. Kentucky bluegrass is facultatively apomictic, which means that most of the seed it produces bypasses the normal sexual reproduction cycle of grasses. This seed is an identical genetic copy of its mother plant. Only a small percentage of seed produced will be genetically different from the mother plant.

From a breeding standpoint, this unusual type of seed formation is both good and bad. It is good in that exact duplicates of superior plants can be produced year after year with no variation and no danger of losing a variety due to genetic shift. It is bad in that crossing is quite difficult because few hybrids are produced. Most of the seed derived from crossing will be identical to the mother plant and thus useless to a breeder. For every 1,000 plants derived from a cross perhaps only 20 to 50 hybrids might be produced. Since only one of a thousand hybrids might show commercial promise, huge numbers of plants have to be grown from seed produced by crossing two parent plants.



Seed research entails huge numbers new crosses to study for resistance.

Kentucky bluegrasses are usually crossed in the greenhouse during the spring. In the summer the crossed seed is germinated and individual spaced-plants are set out in the field. The next summer the mature plants are observed and the hybrids identified. Seed of the best appearing hybrids is harvested, cleaned, and used to plant a small turf plot of many standard varieties and the new hybrids are carefully compared with the check varieties. The resistance to various types of *Helminthosporium* leaf spot and melting-out of the hybrids is closely observed. It is essential that new hybrid variety intended for fine turf use has good leaf spot resistance.

The success rate among new bluegrass hybrids is very low. Perhaps only one in 500 or 1,000 hybrids will combine the characteristics of good turf quality, good disease resistance and good seed production necessary in new, improved varieties.

Despite the difficulties, several active bluegrass breeding programs are continuing in the U.S. and Europe. It is from these programs that a continuing source of new varieties will be forthcoming. The perfect variety will never be achieved, but hopefully breeders can keep developing varieties that get closer to that ideal.

WTT

GET WEEDS OUT OF YOUR HAIR.



GET MEAN ABOUT GREEN WITH BROAD SPECTRUM TOUGH CONTROLS FROM MALLINCKRODT.

Broadleaf weeds? . . . they're fair game for Mallinckrodt's TREX-SAN. It clobbers 35 varieties with 3 way synergistic action.

Yet, it's safe to use.

Grassy weeds get the same treatment, pre-emergence, with PRE-SAN.

It's safe for use on greens, with an application rate that makes it affordable for fairways.

And with Mallinckrodt's PO-SAN method of control, you don't have to choose between Poa and a barren fairway.

Get tough about weeds. Mallinckrodt has been doing it for years.

FROM THE GREEN GROUP AT

Mallinckrodt

MALLINCKRODT, INC.
ST. LOUIS
JERSEY CITY
LOS ANGELES

Circle 183 on free information card

OUTMODED FOUNDATION PLANTING HAUNTS LANDSCAPE DESIGN PROGRESS

By Fred K. Buscher and Jot D. Carpenter, area extension agent in horticulture and chairman of the Department of Landscape Architecture respectively, Ohio State University.

Foundation planting is a landscape term which has been used for more than 60 years to describe a method of planting around the base of buildings. Before the turn of the century, foundation plantings were called base plantations, and later, base plantings. These plantings were designed to overcome the rigid architectural styles of the era and provided a more harmonious transition from the lawn to the base of the walls of the building with plants arranged in a natural manner.

The origin of the term "foundation planting" is difficult to document, but references to it can be found in articles on landscape gardening as far back as 1914. Plants have always been used near buildings, but planting a row of shrubs (deciduous or evergreen) in a straight line across the front of a building is a comparatively recent American idea. This practice has been condemned over the last 30 years as no longer necessary. Foundation plantings are criticized today when used in an eclectic manner instead of part of the landscape design of residential properties.

Unfortunately, the expression "foundation planting" has become so popularized by the horticultural press and landscape industry that planting the front of a house is one of the first considerations of the new homeowner. Consequently, much of this is overdone today. The problems of the foundation planting in today's landscape are still very real, as they were in 1900.

Many of the books written on landscape and garden design before and after World War I made an appeal to make the country more beautiful. The objective of these landscape books was to help in the artistic development of the home grounds of the suburban and moderate-size city lot homeowner.

There was little reference to landscape planning for the small city lot residential property where most of the people lived. Information for the small home gardener could be found in the garden magazines or larger homes in the city and suburbs could be used as models.

Another purpose of the garden design books was to provide horticultural information for those in the landscape business and those with a desire to know more about the beautification and improvement of their properties. Many persons engaged in the landscape industry today either grew up on a farm or lived in a small house on a narrow city lot with little planting.

Writers at the turn of the century recommended using more plants about the foundation area of the house. H. Kellaway, an early writer, suggested that most buildings would look bold and bare if they did not have some plants at their base. Plants would soften the sharp line and create a softening effect so the building would appear as part of the total landscape composition.

Base plantings were criticized before the turn of the century. One writer warned to avoid the



European influence on architecture following the Civil War, such as Victorian style (top), and the warm air furnace encouraged use of foundation planting. Misuse of foundation planting (bottom).

overuse of shrubs. The house should not look as though it grew out of a thicket or that the cultivation of shrubs was the owner's chief concern.

Instead, the late 19th century writers suggested the massing of plants in the angles of porches, steps and bay windows. To avoid the straight rows of plants, garden designers even suggested breaking

the plantings, allowing the foundation to be seen resting on the grass giving a semblance of stability to the house.

By 1922, foundation planting was well entrenched in landscape vocabulary. One definition of the term included: groups of shrubbery located along the base of a building. The objective of the foundation planting was to hide unsightly walls, soften the hard lines of the architecture, provide some measure of privacy, and unite the building with the ground. Some of the terminology is still used today to justify foundation planting, such as: to tie the building to the ground, to soften it, and to conceal scars. Landscaping the front of a house with a row of shrubs was highly criticized for not improving the appearance of the house. Instead the emphasis was always on irregularly massing shrubs at the corners of the house.

No base planting was considered necessary for houses which were set close to the ground. In this event, the lawn could extend up to the lines of the porches, but group plantings should be massed at the corners of the house. When enough of the foundation showed above grade, Gridland suggested that only dwarf plants should be used and larger types placed at the corners and in the blank spaces between windows. There was always concern not to plant in front of a window as this would interfere

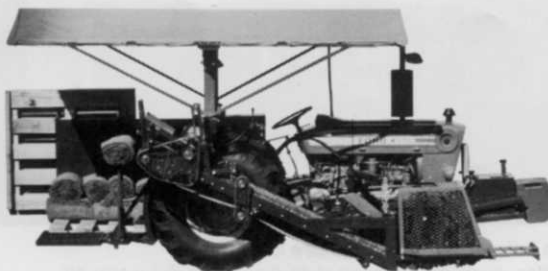
with light and ventilation. Garden designers urged that base plantings should have curving lines and to avoid the monotonous rows of shrubs. The lines of the planting beds should extend out at the corners and recede into the face of the building. Both tall and low growing plants would add to the effect of this method of base plantings.

Going further back in history, there was little concern by the average homeowner over extensive landscaping plans. For example, before the Civil War, the front yards of the smaller houses were usually only 6 to 10 feet deep. Some of the larger houses were set back from the street. Most houses had fences for protection from livestock running at large. A visitor to New York in 1850 complained that pigs rooted in the gutters and that cattle were herded in droves through the streets.

After the Civil War in America, changes began to occur in architectural style and residential construction which had some effects on the types of landscape planting. The expression "front yard" was used to describe the area around the house open to the public view. The term was not the most appropriate, but at that time, a garden was considered a place for vegetable or flowers to be kept out of public view in the back.

The picket fences started to disappear from the American landscape scene as pioneer conditions

Cut, Roll, Slab or Fold, 24 hours a day, wet or dry weather, all sod conditions.



With a Brouwer Harvester you do it all with time and money saving efficiency.

Over 1000 Top Turf men around the world use Brouwer Harvesters to assure themselves of top profit.

The Brouwer line of Harvesters is engineered by a Turf Grower for Turf Growers. They're economical to acquire, labour saving, and they eliminate waste. Available in 15, 16, 18 and 24 inch widths and a choice of pallet sizes.

You get a more uniform cut, less down time, less top soil removal, and a harvester that operates off the uncut turf. Brouwer Harvesters are easy on your sod. Write for our free Harvester brochure.



BROUWER

The Turf Equipment People

Brouwer Turf Equipment Limited, Woodbine Ave., Keswick, Ontario, Canada L4P 3E9 Tel: (416) 476-4311

Circle 122 on free information card



**Lescosan, the name you remember for crabgrass control.
LESCO Sulfur-Coated Fertilizer,
the name to remember for greener turf** *Ron Giffen, Vice President of National Sales*

I've told you about our Lescosan (Betasan*), the best selling pre-emergence crabgrass control on the market. You've proven its effectiveness. I'm here to tell you now that Lakeshore Equipment & Supply produces an equally effective line of sulfur-coated fertilizers.

LESCO Sulfur-Coated Urea and 100% Sulfur-Coated Fertilizers provide the perfect ingredients for denser, greener turf. The sulfur coating, applied to the fertilizer components, provides controlled release of nutrients for prompt and sustained feeding for safe, efficient and economical fertilization of turf in all areas of the country.

As supplier of the most effective full-season crabgrass control on the market — Lescosan (Betasan*) — and of the latest in controlled-release (sulfur-coated) fertilizers, manufactured by our subsidiary, Ag Industries Manufacturing, we have a special interest in the turf care market. Lakeshore carries a complete line of turfgrass supplies made and distributed with you in mind. The full family of fine LESCO Products mean quality at affordable prices.

Call Lakeshore today and ask about Lescosan, Sulfur-Coated Fertilizers and our other turfgrass supplies. Ask for Barb — she'll have one of our turf specialists give you the full story and work out a complete program tailored to meet your specific needs.

Ask about our Lescopex (MCP) and LESCO 2,4-D.

*(Betasan—registered TM of the Stauffer Chemical Company.)



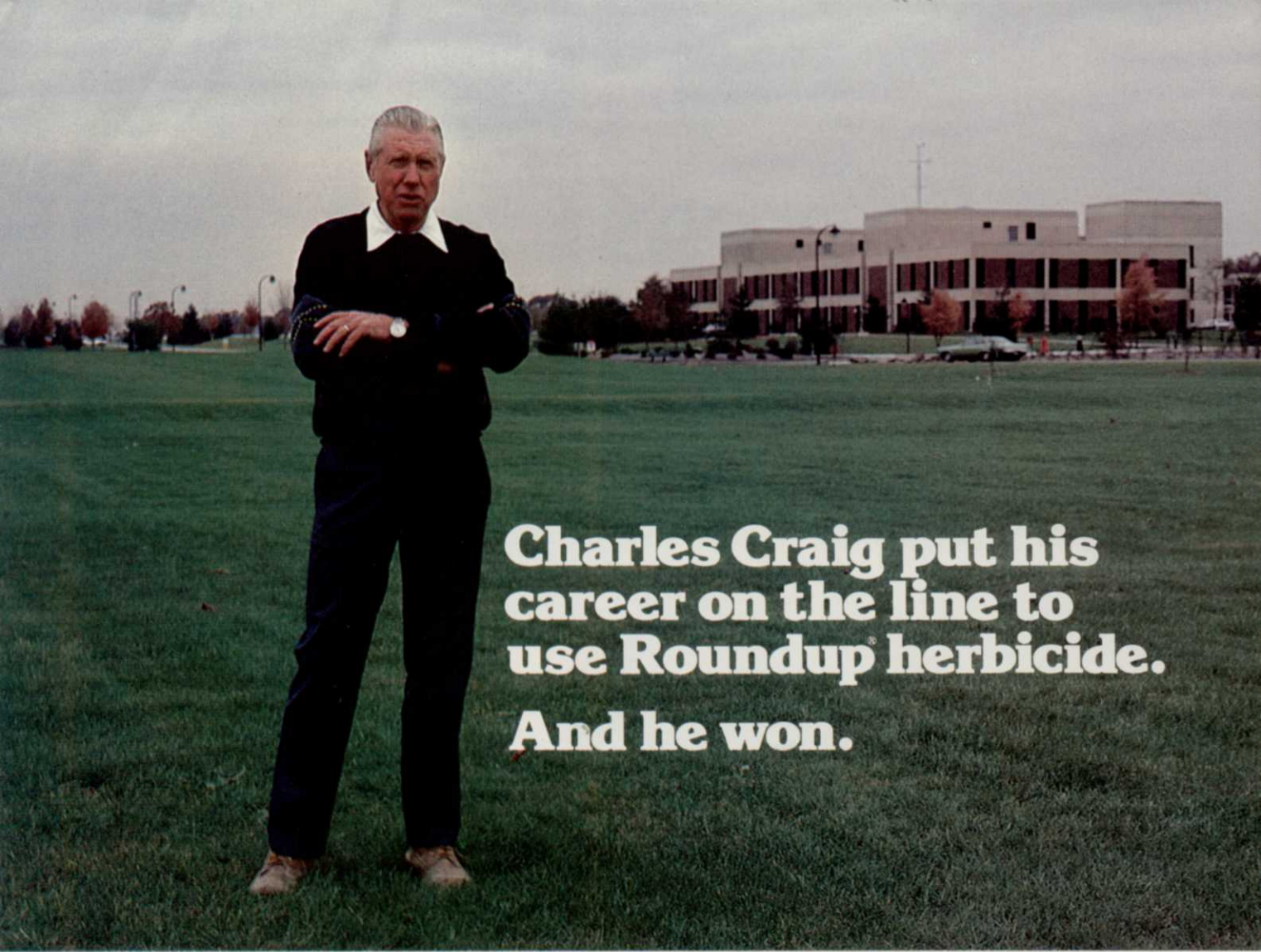
**Get the most for your
Lescosan dollar.
Use the patented
ChemLawn Gun.**

LESCO PRODUCTS

Division of Lakeshore Equipment & Supply Co.
300 South Abbe Road, Elyria, Ohio 44035
(216) 323-7544

1-800-321-5325—Nationwide 1-800-362-7413—In Ohio 1-216-323-7544—Call Collect

A Family of Fine Products: Lescosan 12.5G—Lescorene—Lesco 4—Lescobor—Lescopar—Lescopex—Lesco Non-Selective Herbicide—Lesco MSMA—Lesco Thiram 75W—Lescozyme—Lakeshore Chinch Bug & Sod Webworm Control.



Charles Craig put his career on the line to use Roundup® herbicide. And he won.

When Charles Craig decided to renovate 35 acres of this college campus with Roundup® herbicide in 1977, he knew that if it didn't work, he'd probably have to "hide under a rock."

But, fortunately, Charles didn't have to go into hiding because just 7 days after he applied Roundup he was able to reseed right into the dying grasses.

"Yes, I put my career on the line, but I felt all along that Roundup was going to work," Charles says. "There was no doubt in my mind."

As horticulturist for Mercer County Community College in Trenton, New Jersey, Charles Craig depended on Roundup

for the broad spectrum control he needed for tough grasses like quackgrass, orchardgrass, tall fescue and others. And since Roundup has no residual soil activity, he was able to reseed in a matter of days.

"Seed germination was terrific, especially with the weather we had," Charles told us. "Everyone always says it looks nice."

Charles still uses Roundup for touch up jobs around cracks in the pavement, parking lots, buildings, tree bases and flower beds. Taking precautions against spray drift, Charles has no fear of harming surrounding vegetation with Roundup.

Charles Craig is convinced that Roundup works, and he

has 35 acres of beautiful turf to prove it.

To see how it can work for you, reach for Roundup where you buy chemicals.

Monsanto



There's never been a herbicide like this before.

Circle 181 on free information card

began to fade, although some fences remain to continue the customs. Houses were set further back from the street with larger, more open and showy front yards. It was during this period in American History that the front yards became a major feature in residential landscape design. The habit of living in the garden, as was also the custom in England and Europe, began to decline in America, and with it, the need for privacy in the front and back yards was less important.

Between 1850 and the early 1900's the influence of Andrew Jackson Downing and his followers dominated American landscape design and thought. They advocated the so-called natural style of landscape planting of the larger estates and parks. This involved curving drives, walks, and isolated planting beds, at times placed without good reason. The natural style featured several exotic ornamental trees or shrubs in the front yards such as the copper beech and weeping birch. Later, the electric blue spruce was a front yard feature. Even shrubs were planted as single specimens or in beds in the front lawns. Later, the native plants began to replace the exotic European specimens once considered to be more important.

The end of the Civil War brought an end to the Greek and Roman revival style of architecture in America. Architects and builders began to experiment with the Gothic, the Egyptian, the Romanesque, the Byzantine, and the contemporary French. Out of all this, a Victorian style developed.

This was also a time when new materials, new tools, and manufacturing processes became available to the builders. Low-cost steel replaced handwrought iron. The manufacture of Portland cement boosted brick and masonry construction. Plate glass manufacture was industrialized. Wood was the most abundant building material of this time. There were new power tools to cut, turn, twist, and shape the wood into the symbols of the Victorian period.

The European influence on residential architecture began to show up in the homes of the newly rich after the Civil War. This was considered the darkest period of American residential architecture. It was the time of the pseudo manor, Victorian, Gothic and French Mansard along with beds of geraniums and cannas, iron deer, and open lawns. At the close of the century, authentic revivals of architecture began again and brought an end to the excesses of the Victorian age with improved domestic architecture.

The custom-built houses with high foundations occurred about the same time houses were placed further back from the street and set in an open lawn. Thus, the planting of shrubs and vines next to the base of the house and porches began, and foundation plantings became the style. In those years, such a foundation planting was deemed necessary to hide the foundation and otherwise soften the break between the house and lawn.

Another fact that contributed to the building of exposed basement foundation walls was the new concept of central heating and introduction of the warm air furnace. The basic heat sources before the gravity warm-air furnace were steam or hot



It's Powerful ... Safe ... Versatile!

Princeton's mighty "Piggyback" has solved many of the problems that have always plagued heavy-duty, field quality material handlers. The remarkable "Piggyback" is light...strong...fast...durable...AND completely stable on the job!

The Piggyback will lift and load up to 4500 lbs. at a time ... turn quickly in its own length ... navigate curbs, logs, and other obstacles with ease...trudge through gravel, sand and mud, but float over normal soil...and then load itself onto your truck for a piggyback ride home at the end of the day.

How is it Possible?

The Princeton "Piggyback" provides an extremely low ratio of weight to carrying capacity...with complete stability. Stability is achieved by carrying the load weight between the drive wheels instead of in front, as with other fork lifts, and by special hydraulic stabilizer legs. Load is lifted to truck bed height, then rolled over truck bed by a horizontal carriage.

Heavy-duty high torque wheel motors allow the "Piggyback" to operate on steep grades or in adverse ground conditions and to drive easily over normal loading area obstructions while fully loaded.

The Piggyback's 28 h.p. Murphy 2-cylinder diesel provides superior power for all adverse operating conditions.



Loaded for Piggyback ride home.

For additional information or demonstration, write, or call collect:

Rodger Osborne, Sales Manager
955 W. Walnut St., Canal Winchester, Ohio 43110
(614) 837-9096

Dealer/Distributor Inquiries Invited

The "New Concept" People

princeton
mfg.
company



Civil War era home without porch, or tall foundation, or base plantings.

water. The warm-air furnace was the least expensive to install, and by 1894 was a fairly well developed basic source of heat in houses. The hot-air furnace was installed below the rooms to be heated requiring a relatively deep basement.

To reduce digging to make sufficiently deep basements, some foundations were laid at ground level, or a little below grade. The excavated soil was terraced against the exposed basement wall. High foundations were not always considered problems. It was considered much better to have a shallow basement than one dug too deep, as the height could be overcome by planting at the base of the house when there was sufficient soil for the fill.

Porches also had influence on the foundation planting. The trend for out-of-door living after the turn of the century brought about another change in house design. It caused architects to complain that porches were the greatest trial they had. The porch was absent in the homes of early America, England, and France. By the 1920's, the typical house was the two-story "packing box" cube with a porch across the front. This was one of the most difficult houses to plant successfully. With this type of building, the landscape designers were justified in suggesting a foundation planting where previously it would have been condemned.

Although the steam heating system was first developed by James Watt in 1770, a major drawback in its development was high cost and a lack of trained fitters in the smaller towns and villages to install the system. The hot water system paralleled the development of the steam system, and by the early 1900's, both heating methods were used in residential and commercial buildings in addition to the less expensive gravity warm-air furnaces. With this system the leader or warm air round pipes radiated out from the top of the furnace to the first

floor registers and second floor stacks. Leader pipes and cold-air return ducts were designed to be short and direct, necessitating the large furnace to be placed in the center of the basement.

The long front porch was not a family center of activity, but reserved for afternoon, good clothes, gossip with the neighbors, and a place where the ladies did their hand sewing. The porch was also an outgrowth of the social needs to observe the passing scene of the neighborhoods daily life. Most porches were ugly from an architectural standpoint and difficult to add to a well designed house. The houses which are the most pleasing visually have stoops but no porches. Front porches are a part of the passing scene today. However, the plants which once were used to hide the open porch railings and lattice work between the supporting posts of houses of that architectural style still exist. This type of "left-over" foundation planting across the front of most residential houses today serves no real purpose.

When the trend for privacy and garden living again became desirable, the porch was moved to the side or rear of the house in conjunction with a patio. A new mode of landscape design slowly began to develop about 40 years ago when gardens and the landscape were suggested as places to be lived in, rather than looked at.

Authors such as Waugh, writing in the 1920's, show there is still tremendous agreement among today's authors with many of the principles in the older books and articles on landscape architecture and garden design. Careful consideration of the basic principles of good design and approaches to solving environmental problems used in the 1920's show that only the styles of the language and vocabulary have changed. The directions for the development of the small home grounds, however, were written primarily for the well-to-do owners of larger properties in the city or suburbs.

The landscape architects, gardeners, and writers played a major part in the landscape improvement of the communities during the 1930's but their suggestions were beyond the reach of the majority of Americans who lived in small houses on narrow city lots, on farms, or in small towns and villages. Much of the gardening information for the "average" American was obtained from the garden magazines where the original source of information came from the garden and landscape books. The pattern for landscape designs of the small houses was copied in a selective manner from the larger homes, but without the changes necessary due to scale and site differences.

By the early 1930's many of the people in the towns and cities of the United States lived in multi-family dwellings. From the time when foundation-plantings were used to cover the exposed masonry of houses and up to and beyond the middle 1930's, the average American lived in small houses. The characteristic of the small urban home is compactness in high density population. The houses were most often two-family. Single houses were on narrow lots of 35-50 feet wide and 100-150 deep. These properties had small front and back yards with a minimum of space for gardens and shrubs.

Continues on page 72