



"I wish my quarterbacks were as durable as this John Deere Tractor."

Coach Dan Spadoni, Dollarway High School, Pine Bluff, Ark.

Last season, Coach Spadoni had all four of his quarterbacks out at one time or another with injuries.

But his John Deere 850 Tractor never missed a day's work.

"In the two years we've had it, we've used it to mow both of our football fields, the practice field and the grounds around the school," says Coach Spadoni.

"And we've never had any problems. Even opposing teams have told us ours is the best field they've played on!"

Which, of course, is why Coach Spadoni and School Superintendent James Matthews decided to buy a John Deere 'Little-Big' Tractor in the first place.

Not too big, not too small

They were looking for a tractor big enough to handle

**Maximum PTO horsepower at 2600 engine rpm (by official test).*

***Maximum PTO horsepower at 2400 engine rpm (by official test for the 950, factory observed for the 1050).*

a large-acreage mowing job. Yet small enough so it would be economical to buy and operate.

The 22-PTO-hp* John Deere 850 filled the bill on both counts.

Its compact, water-cooled, 3-cylinder diesel engine has the power and stamina to run a rotary mower day after day, year after year. Yet being a diesel, it gives the kind of fuel economy a school's budget really appreciates.

More than just a mower

Another reason Coach Spadoni picked the John Deere 850 is its versatility.

It has a well-spaced 8-speed transmission that can match up to just about any job you want to do, plus a differential lock.

It has a Category I 3-point hitch, 540-rpm PTO and adjustable drawbar, plus more than 20 power-matched implement options.

And it's available in a variety of different tire styles and sizes.

Built to last

Of course, like all John Deere tractors, the 22-PTO-hp 850 is built to last.

"You can actually feel how solid it is when you ride it," says Dan Spadoni.

And to prove it, we ask only that you test drive one yourself at your nearby John Deere dealer.

Try out the 850, the 27-PTO-hp 950 or the new 33-PTO-hp 1050 with turbo-charged diesel engine:**

See for yourself why John Deere 'Little-Big' Tractors are a big winner with schools, parks and golf courses everywhere.



Nothing runs like a Deere®

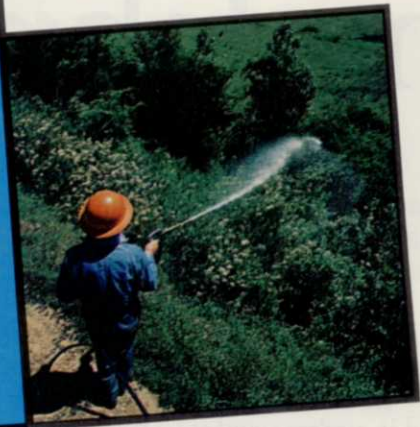
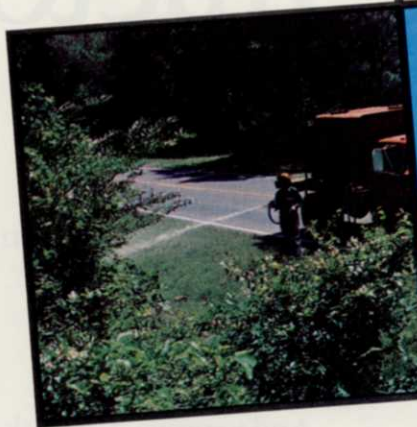
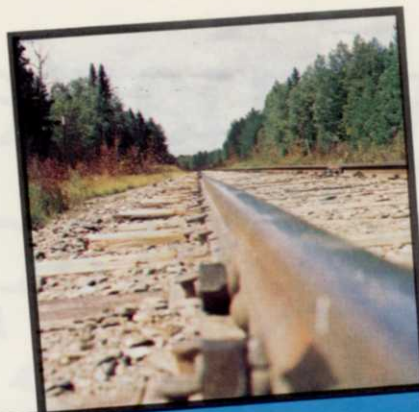
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The little-big tractors from John Deere

Leasing available—John Deere Tractors, Skid-Steer Loaders and matching equipment may be leased for commercial or agricultural use. For details, see your John Deere Consumer Products Dealer.

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to year round
vegetation
management**



substitution for the popular phenoxy herbicides in vegetation management programs.

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There's a BANVEL Industrial formulation program for any need... roadside... railroads ... utilities... drainage ditches ... forestry projects... industrial sites ... and many more.

BANVEL adds a Big vegetation control PLUS to every vegetation management program.

More and more vegetation supervisors and applicators are switching to BANVEL® Industrial herbicides. They have learned that the broad spectrum vegetation control of BANVEL formulations makes an ideal addition or

Let us show you how you can cut application costs with our low oil or no oil application programs.

We have developed a BANVEL Industrial Vegetation Program for effective vegetation management all year long — spring ... early summer ... fall ... or winter dormant applications.

Let our Velsicol Industrial Herbicide Specialists build a BANVEL Vegetation Control Program to meet your specific problems and needs. Contact us today.



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CONTENTS

SEPTEMBER 1980/VOL. 19, NO. 9

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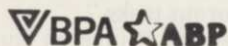
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GREEN INDUSTRY NEWS

Sod Producers Gather for Summer Convention and Field Days in Alberta . . . Nurserymen Withstand Kansas City Heat at Annual Meeting . . . Lawn Institute Elects New Officers. 6

FEATURES

Herbicides' Effects on Turf Disease

Professor Clinton Hodges of Iowa State researched the physiological changes on turfgrasses from lab applications of 2,4-D, 2,4,5-T, MCP, and dicamba. 10

SEED ESTABLISHMENT, SOD INSTALLATION—TURF MANAGEMENT SERIES, PART 3

13

1981 GREEN INDUSTRY BUYER'S GUIDE

An updated source of ready information for purchasing and comparing equipment, chemicals, and supplies. This version gives what is available and where to get it. 29

Junipers Offer Variety of Designs

This well adaptable and multi-shaped tree variegates innumerable landscape designs, according to Horticulturist Doug Chapman. 116

Vegetation Management	114
Classified	118
Advertiser Information	122

Cover: Dwarf Japanese Garden Juniper, *Procumbens 'Nana,'* is a slow growing ground cover for flowering trees such as *Malus floribundi.*



GREEN INDUSTRY NEWS

Sod Convention Brings Industry Together

Manufacturers of sod equipment, seed distributors, turfgrass researchers, and sod growers from throughout Canada and the U.S. exchanged ideas at the American Sod Producers Association summer convention and field days in Edmonton, Alberta.

Under three days of July sunny skies, close to 600 ASPA members, families, and representatives of the turfgrass industry together enjoyed serious discussion and Western Canadian style entertainment.

When most arrived on Sunday, Edmonton was in full swing of its celebration of Klondike Days which relive an era past when settlers first began flooding the area for the rush of gold. Townspeople dressed in colorful garb of those days strutted through the downtown streets blocked to traffic.

Business began on Monday with a panel discussion in the host Four Seasons Hotel on "survival during an economic recession." Ray Johnson of Shamrock Turf Nurseries moderated the panel of speakers chosen from various geographic regions. Although all the speakers agreed that nothing is certain with the economy and that if they knew the answers they'd be millionaires, they said housing projections range to 23 million in the 80's, a good indicator of what the sod business will be.



Equipment innovations introduced at the Sod Producers summer show enthralled the crowd. The barn (background) housed indoor exhibits and a few mosquitos.

Big Lake Sod Farm, Ltd. hosted the irrigation demonstrations Monday afternoon and on Tuesday Don Stumborg, convention chairman, hosted the field demonstrations and exhibits on his 2,900-acre Gem Sod Farms. Observers could not come close enough to the new equipment and innovations revealed.

Roseman Mower Corp., Nunes Mfg., and Brouwer Turf Equipment demonstrated their latest mowers; Nunes Turf Vac Corp., and Brouwer picked up the clippings with their sweepers; Delmarva Textile Co. and Conwed Corp. exhibited netting;

Spyder Mfg. Co., Princeton Mfg. Co., and Brouwer showed how their forklifts handle sod pallets, which became filled from the work of harvesters made by Brouwer, Nunes, and Princeton. Ryan/OMC Lincoln demonstrated its sod cutter and Ferguson Fabrication ran a test of its sod extruder.

The manufacturers, constantly improving their equipment for the sod industry, showed efficiency in all areas — fuel, labor, and time. Observers said that some of these improvements would revolutionize the industry.

NURSERY

Nurserymen's show faces heat and inflation

An optimistic attitude overcame the scorching temperatures and fears of inflation at the American Association of Nurserymen's 105th Annual Convention and Trade Show held in Kansas City, MO, July 12-16.

With Kansas City and other parts of the country facing temperatures of 105° to 110°, over 1,300 nursery men and women attended the convention activities. The activities included 77 exhibits represented by 63 firms; a tour to the Rosehill Garden Growing Field, which held a demonstration of nursery equipment for wholesale growers; a landscape/garden center tour covering successful garden centers in the city's suburbs; and a new program designed for juniors and teens to make this year's convention a family affair.

Fighting inflation and developing employee incentives were two of the primary themes explored in the general sessions.

Dr. Jerry Robertson of Ohio State University said that the market increase in the landscape industry, which was 12.6 percent per year since 1967, has only been 4.2 percent with inflation. Robertson said the production of nursery crops,

landscape products, and services to the trade must increase at least at the rate of inflation.

One of the greatest effects on productivity is labor, according to Sidney Meadows, Flowerwood Nursery, AL. He said: "Because of the escalation in wages, there is a need in an escalation of output or we'll price ourselves out of the market. The labor costs are 25 to 35 percent of the sales dollar out of nursery stock."

Another important factor affecting labor relations is the performance standards, said Bill Studebaker, Studebaker Nursery, OH. "Performance standards improve employee morale and increase output. They also allow you to set piecework rates, if necessary, for even the various or less glamorous tasks."

John Flemer, Princeton Nurseries, Princeton, NJ, has combined years of study and experience on the problem. He said "compensation, communication, and concern" are the three main aspects in the management of workers, which is also an effective means to head-off

Continues on page 113



Healthy Turf Next Spring Starts With IBDU® This Fall

Sure, there's more to maintaining quality, disease-free turfgrass than a couple of fertilizer applications. But turfgrass scientists across the country are reporting that a fall application of IBDU (31-0-0) can produce turfgrass with better root development and less disease problems.

Dormant turfgrass plants continue to produce rhizomes and roots, even though vertical growth has stopped. During this time nitrogen should be made available to the turfgrass plant as carbohydrates are naturally accumulating. Thus, scientists say, the optimum timing for nitrogen applications is during the fall and early winter months.

IBDU (31-0-0) is ideally suited for dormant nitrogen fertilization. Because of its slow release characteris-

tics based on hydrolysis, IBDU releases nitrogen later in the fall and earlier in the spring promoting better rhizome and root growth. A fall fertilizer program using IBDU should produce healthier more vigorous turfgrass plants and reduce the severity of several turfgrass diseases.

Remember. Healthy turf next spring starts with IBDU this fall.

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“I could sure use a rugged mid-sized rotary that really maneuvers.”



A lot of our customers have been wanting a mid-sized mower that's built tough to take it, and that's highly maneuverable at the same time.

So our engineers came up with the amazing Turfcats.

It's amazing because it's absolutely packed with features that help you get your medium-sized mowing jobs done faster and better than ever.

First, you have a choice of a 50" or 60" deck. (They're interchangeable.) Fully articulated, they closely follow ground contours so you get a smooth, even cut with practically no scalping.

Deck design lets you trim close, and also gives super clipping dispersion. The deck raises and lowers hydraulically for curb climbing and transport. And you can adjust cutting height from 1" to 4".

Then, the three-wheel, wide track design gives the Turfcats great stability on slopes. And the foot-operated hydrostatic drive lets you steer and maneuver while changing speeds or going from forward to reverse.

How about hill climbing? It's a breeze with the power delivered by the husky 18-HP Kohler overhead valve engine. And you can expect a long engine life filled with good fuel economy.

Plus, the Turfcats are quiet. All controls are within easy reach. And it might very well be the most comfortable riding rotary in the world.

Ask your Jacobsen distributor for a Turfcats demonstration. And have him explain about the many fine features that customers want.

The more you listen to what he has to say, the more you'll know we've been listening.

We hear you.

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GREENHOUSE RESEARCH EXPLORES HERBICIDE/TURF DISEASE RELATIONSHIP

By Clinton F. Hodges, Professor of Horticulture and of Plant Pathology, Iowa State University, Ames, IA

Postemergent herbicides are indispensable tools for the maintenance of high quality turf. Most temperate origin grasses show good tolerance to the auxin-like herbicides (2,4-D, 2,4,5-T, MCP, dicamba) but absorption of the herbicides by tolerant grasses has aroused interest in the potential influence the herbicides may have on the physiology of the tolerant grass. Studies with various crops have examined potential interactions between herbicides in tolerant and non-tolerant species and the severity of diseases. Since most postemergent herbicides are synthetic growth regulating hormones, much interest also has been directed at their immediate effect on the growth and reproduction of plant pathogenic fungi. The purpose of this presentation is to summarize research conducted in our laboratory on the influence of postemergent herbicides (2,4-D, 2,4,5-T, 2,4,5-TP, MCP, dicamba) on the biology of *Helminthosporium sorokinianum* (= *Drechslera sorokiniana*) and on the severity of leaf spot on Kentucky bluegrass.

Herbicide Effects on the Pathogen

Leaf spot development induced by *H. sorokinianum* involves the life processes of both the pathogen and the leaf of the grass plant. The effect of any substance on the development of the lesion must be viewed relative to both living entities. The influence of 2,4-D, 2,4,5-T, 2,4,5-TP, MCP, and dicamba show various stimulatory and inhibitory effects on the germination of *H. sorokinianum* conidia, growth of germ tubes, mycelium growth, and conidia production. Relatively high concentrations (10⁻³M) of these herbicides prevent the germination of conidia, but more dilute concentrations (10⁻⁴ to 10⁻¹²M) have no effect on germination. These observations suggest that the concentrations of 2,4-D, MCP, and dicamba currently used for weed control in turf will neither inhibit nor stimulate the germination of *H. sorokinianum* conidia.

The most dramatic effect of 2,4-D, 2,4,5-T, 2,4,5-TP, MCP, and dicamba on *H. sorokinianum* is stimulation of growth of conidia germ tubes after germination. The growth of germ tubes may increase 2X to 3X in response to various concentrations of each herbicide. Only 2,4,5-TP demonstrates some inhibition of germ-tube growth at higher concentrations. The significance of germ-tube stimulation relative to infection of leaves and disease development is unclear. It is well established that stimulation of the growth of a pathogen is not necessarily related to its ability to increase disease.

Most of the commonly used postemergent herbicides will stimulate mycelium growth of *H. sorokinianum* in culture. MCP and dicamba are stimulatory in very dilute amounts. 2,4-D shows stimulation at high concentrations. The importance of mycelium stimulation relative to disease development is unknown. Such stimulation could, however, be of some importance in aiding *H.*

sorokinianum colonize dead grass tissue.

The influence of postemergent herbicides on the ability of *H. sorokinianum* to produce spores is mixed. 2,4,5-T and MCP inhibit sporulation at most concentrations. 2,4-D, 2,4,5-TP, and dicamba show some stimulation of sporulation. These observations could be important to the ability of *H. sorokinianum* to produce spores on dead grass tissue; herbicide stimulated or inhibited spore production could subsequently influence the number of potential infections.

Herbicide Effects on Leaf Spot Development

Research conducted in our facilities over the last six years has established that the postemergent, synthetic auxin-like herbicides (2,4-D, 2,4,5-T, 2,4,5-TP, MCP, and dicamba) can function in a host-pathogen-herbicide interaction involving *H. sorokinianum* and Kentucky bluegrass, to increase or decrease leaf spot severity. Kentucky bluegrass exposed to 2,4,5-T, MCP and dicamba by means of leaf sprays or soil applications and then infected with *H. sorokinianum* show a 2X to 3X increase in leaf spot severity. Plants sprayed with 2,4-D and then infected generally show no change in disease development, but 2,4-D applied to the soil in-

The most dramatic effect on leaf spot development is stimulation of the growth of conidia germ tubes

creases disease severity markedly. 2,4,5-TP applied to Kentucky bluegrass as a spray or as a soil drench inhibits leaf spot development at higher concentrations and stimulates development at lower concentrations.

Recent studies in our laboratory have established that herbicide stimulation of *H. sorokinianum* leaf spot on Kentucky bluegrass is associated with the aging process of the leaves. Leaf spot normally becomes more severe on each older leaf of the shoot; when the shoot is exposed to 2,4,5-T, MCP, or dicamba and infected the increase in disease is least severe on the youngest leaves and most severe on the older leaves.

Mechanism of Herbicide Stimulated Leaf Spot

Existing plant science literature suggests that auxin-like herbicides may function to retard or to stimulate the aging process in leaves. Such observations may provide some insight into the host-pathogen-herbicide interactions resulting in more severe leaf spotting of Kentucky bluegrass. It seems that in a very general way, auxin-like herbicides introduced into young leaves, where cell division and expansion is occurring, may help maintain this youthful condition; however, introduction of the