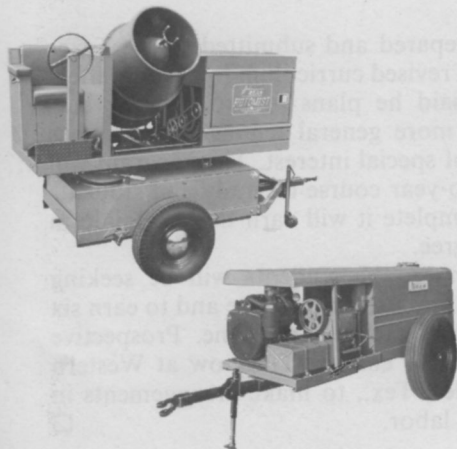




Seasonal leaf drop is one thing...

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need...are available skidmounted or in trailer models, with hose and gun for effective shade tree applications. You won't find any better tree protection than with FMC sprayers. Contact your nearest FMC representative for a demonstration today, or write the FMC Corporation, Agricultural Machinery Division, Jonesboro, Arkansas 72401.



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Equipment

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for overall
performance**

**.. MAN
MADE**



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KENTUCKY BLUEGRASS
(U.S. Plant Patent No. 3150)

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STANDARDS FOR THE
DARK GREEN COLOR OF
ALL FUTURE BLUEGRASSES!**

*Source: Plant Variety Protection Office, U.S. Dept. of Agriculture

In 10 years of man-controlled parentage breeding and over 7 years of university and field testing, "Adelphi" has earned a top rating for overall performance.

"Adelphi" offers the features most wanted in turf. Professionals and home gardeners, alike, are making it the most widely accepted and universally acclaimed bluegrass in 30 years.

For good looks throughout the entire growing season...excellent density...good disease resistance and tolerance to moderately close mowing, it's...MAN-MADE "Adelphi"... A FIRST IN TURF!

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Golf and Operations Course — Western Texas' New Program

AFTER ONE FULL semester of working with the Golf and Grounds Operations program at Western Texas College (WTC), Snyder, Tex., Instructor Perry Turnbow is guardedly optimistic about the future of the program.

Turnbow, a graduate of Texas Tech University in Lubbock, Tex., was named to direct the new WTC program last spring. He was responsible for activating a curriculum which had been planned by the college with the advice of knowledgeable professionals in the field and approved by the Texas Education Agency.

Turnbow said he considers his first class enrollment, which started in late August, 1974, and was made up of 15 young men, a good turnout for a new program. He has been impressed by the caliber of the students, finding them generally serious about learning what the course has to offer.

Several of them have worked in and around golf courses and pro shops in their hometowns, and have had the opportunity to handle equipment and observe the conditions of the greens at various periods. Others have done yard maintenance work for their families and neighbors.

From the standpoint of student interest, Turnbow said he would rate golf course management highest. Students have also expressed interest in landscape contracting, wholesale nursery enterprises and contract maintenance work.

The curriculum for the first semester included Equipment and Shop, Principles of Plant Growth, Applied Communications, Principles of Management, and Physical Education. In addition, the students have attended various turfgrass workshops and equipment demonstrations to gain exposure to new ideas in those fields.

Western Texas College is one of west Texas' newer institutions of higher learning, having opened in new facilities in the fall of 1971. Only one building remains to be completed, but landscaping has not been finished. The students have had the opportunity to study landscape plans and plants by working on the landscaping.

In the spring semester, which is already underway, the students will be concentrating on the study of soils and fertilizers, turfgrass science, pest control and landscape construction.

Turnbow has prepared and submitted to the Texas Education Agency a revised curriculum to become effective next fall. He said he plans to broaden the curriculum to include more general management studies and some electives of special interest. The program will continue to be a two-year course of study and students who successfully complete it will earn the Associate in Applied Science degree.

During the summer, the students will be seeking employment to gain practical experience and to earn six hours of college credit at the same time. Prospective employers are invited to contact Turnbow at Western Texas College, Snyder, Tex., to make arrangements in advance for student labor. □

KING of the MOUNTAIN

"We found the BOWIE HYDRO-MULCHER ideal for erosion control and establishment of new turf on the difficult terrain we have here at Sun Valley."

Kenny Zimmerman, Director of Golf and Grounds, Sun Valley, Idaho

Kenny Zimmerman, Director of Golf and Grounds, Sun Valley Company, Inc., is responsible for the summer maintenance of Bald Mountain's ski slopes, 40 acres of hotel grounds and 105 acres of golf course. He needed a seeding unit that would give quick growing results to prevent soil erosion and yet be completely adaptable to the rugged terrain. He found his answer in the Bowie Hydro-Mulcher.

Whatever your seeding problems, Bowie Hydro-Mulcher has the answer. Get the kind of ground cover you want and stop erosion fast. Ideal for landscaping greens, lawns, roadsides, steep slopes and everywhere. The Bowie Hydro-Mulcher plants, seeds, sprigs, fertilizes, waters, sprays and mulches, all in one easy operation. Get the facts and you'll get Bowie Hydro-Mulcher!

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GRASSES (from page 18)

remaining unmoved at their roots, the grasses furnish an ever-changing, ever-enchanting display of rippling green, gold, red, brown and silvery sheen.

The practical worth to you and me is the low-maintenance beauty of these prairie grasses. Imagine miles of roadside that do not need to be mowed, particularly those extremely difficult slopes where mowing is a hazard to life and equipment. Visualize for a moment the miles of spring's green, summer's red-gold, autumn's gold-browns, then recall gratefully those miles weren't mowed. Think, momentarily, how tall grasses rich with seed heads served as protection for song birds or elusive quail and pheasant, then remember that established prairie grasses crowd out the unwanted weeds, as a bonus.

How long does it take the prairie grasses to become established? About three years. The first year, most growth is underground in roots. Above ground are the usual weeds. Second year growth begins to show prairie promise and the third year the wisdom of one's planning and waiting becomes happily evident.

Three years is a long time for our public to be patient, say nothing of waxing increasingly confident. Add to that the people who declare positively they want a short-clipped lawn effect everywhere in road banks and ditches. These are the weak points in prairie grass use along roadsides. However, where people have been able to see the mature unbroken beauty in long expanses of native grasses, they've been awed into open admiration. The best way to win them is to show them.

Suppose a city has some areas temporarily torn up by construction, areas that might be especially difficult or impractical to mow. Prairie grass seeded there will have a good chance to start, and after a couple years' growth, it can be pointed out to the public that this practical bit of loveliness is the same kind of verdure our pioneer forefathers rode, drove and walked through as they moved west in their covered wagons.

Fortunately we always have among us people who are looking forward with vision clear enough that they can see the value of yesterday's good things, too. People like these often think of native grasses as vista-makers in landscaping. Industrial parks, where acres of land serve as backdrop for handsome architecture, are enhanced by the natural, informal and easily maintained cover of grasses.

Borrow pits, usually an unsightly problem, can be given a natural beauty that makes them a distinct asset esthetically and ecologically by seeding with prairie grasses. Few other plantings will survive where rugged grasses will take root and thrive.

Sometimes small tracts of prairie land are condemned for building or construction. This can afford a way to speed up development of land on which a prairie planting is planned. Small squares of prairie sod — taken three or four inches deep — grass, flowers and all, can be transplanted to the new location, thus gaining a year or so in time needed to produce the desired results.

Interested individuals can help as they consider landscaping personal, privately owned areas. A site developer can make admirable use of prairie grasses on slopes difficult to mow but so situated that they form a major background view for several homes in the development. The view of gently rippling, ever-changing native grasses has a relaxing effect on people in every season. This is the recreative effect cities strive for as they plan green belts. It can be achieved — practically — with grasses and prairie flowers.

How does one go about establishing a planting of prairie grasses? Here are some practical pointers from Dr. Paul Christiansen, Cornell College, Mt. Vernon, Iowa:



**Northern
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Fertilizer
bags it!**

NITROFORM*
organic nitrogen

The turf nitrogen for nursery stock, too.
Gives the same steady sustained growth.

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34



Big Blue Stem, one of the many varieties of native grasses, grows well in the sandy soils of the Prairie States.

WEEDS TREES and TURF

A utility pole with power lines is silhouetted against a sunset sky. Bright lens flare rays emanate from the bottom left, crossing the frame. The overall tone is warm and golden.

BANVEL

**herbicide programs
control tough brush,
including evergreens,
for 3 to 5 growing seasons.**

And what more? Banvel herbicides permit grasses to flourish where you want grasses . . . because Banvel, a selective, systemic herbicide, gets to the roots of vegetation problems by translocation.

Turn the page for reasons why Banvel herbicidal effectiveness becomes the key to cutting the cost of vegetation control. . . .

Why and how Banvel® industrial herbicide formulations in your vegetation control program make excellent economic sense....

Q. We've sprayed picloram for two or three cycles and got rid of many brush species, but the tough brush gets bigger and tougher. Our problem is to control a mixture of oak, ash, hickory, poplar, sassafras, cedar . . . well, you name it. What formulation do you suggest in a long-term selective brush control program along our transmission line right-of-way?

A. Basal applications of Banvel®-510, one pound dicamba and two pounds 2,4,5-T per gallon, has proved effective

and economical for the control of both hardwood and evergreen species, including root-suckering trees such as sassafras, chokecherry, aspen, sumac, and locust.

As with picloram, Banvel-510 herbicide is applied by hydraulic spray, using a mix of two gallons of Banvel-510 in 98 gallons of oil, at the rate of approximately 100 gallons of spray mixture per acre of brush.

Spray the basal parts of the brush and tree trunk from the ground line up to a height of 1-1/2 to 2 feet. Spray until runoff, with special emphasis on covering the root crown.

Treatment may be made at any time during the year.

As a foliage spray with water, use Banvel®-320 or Banvel®-710 at the rate of one gallon in 99 gallons of water and spray the entire plant to runoff.



Q. Our experience indicates that picloram is a long-residual material, and our company is greatly concerned about this. How does Banvel dicamba compare in this regard?

A. The half-life of picloram is in excess of 100 days. The half-life of Banvel dicamba is 25 days. Once Banvel dicamba gets into the plant system, it works over a period of two or three years in disrupting the plant's cellular structure. In the soil, Banvel dicamba that is **not** absorbed by the root sys-

tem of the plant dissipates quickly. It breaks down into harmless compounds in the process of biodegradation.

Soil moisture, organic matter content and temperature greatly influence Banvel dicamba degradation, but metabolism by soil micro-organisms is the major factor in degradation.

Q. Can we tank mix Banvel dicamba with 2,4-D and 2,4,5-T?

A. You certainly may. Banvel herbicides have Federal label registration for tank-mix combinations with the phenoxyes for both water- and oil-

soluble formulations. Also by tank-mixing with 2,4-D and 2,4,5-T, you can double the acres you can spray.

Q. Some parts of our right-of-way are cattle-grazed. We find that picloram is not registered for use in grazing land. What about using Banvel herbicide here?

A. Banvel dicamba herbicide has Federal registration for use on pasture

grasses. Established tolerance in grass is 40 ppm and in milk, 0.05 ppm. There is no withholding period for meat animals on Banvel dicamba when used alone on treated areas, with this exception: do not graze meat animals on treated areas within 30 days of slaughter. Also, do not graze dairy animals on treated areas within 60 days after application at high application rates;

up to 90 days delay is required before harvesting hay.

No tolerances have been established with 2,4-D or 2,4,5-T in or on grass. 2,4-D, 2,4,5-T and picloram are federally registered for use on pasture grasses. However, picloram has EPA registration for use in Texas.

Q. What about Banvel 4-W.S. herbicide toxicity?

A. Banvel® 4-W.S. herbicide was developed and tested during the period when extensive toxicological and residue requirements were necessary to obtain Federal registration. It has met

every requirement of the USDA, the FDA and the EPA in this regard, and obtained label clearance for industrial brush control in 1968. Be sure to observe grazing and harvesting restrictions shown on the label.

Although Banvel 4-W.S. is several times more active on brush than the phenoxy compounds, it is approxi-

mately five to ten times less toxic than 2,4-D or 2,4,5-T. The LD₅₀ in rats for dicamba acid is 2900 mg/kg, 2,4-D is 300-470 mg/kg, and 2,4,5-T is 390-640 mg/kg.

Q. Much of our right-of-way is overgrown with a varied mixture of brush and weeds. What chemical should we use in a foliar spray?

A. If there is a mixture of species—conifers, softwoods, hardwoods, vines—you need a formulation that controls the broadest spectrum. Use Banvel-320, containing one pound dicamba, one pound 2,4-D and one pound 2,4,5-T per gallon. Or use Banvel-710, containing one pound dicamba

and two pounds 2,4,5-T per gallon. Banvel dicamba alone controls most species, including softwoods that phenoxyes do not control. Moreover, Banvel dicamba permits grasses to flourish.

Q. I have willows taking over my ditch banks. Picloram and 2,4,5-T are not registered for ditch bank use. What chemical can I use to get rid of these trees and a lot of other brush and weeds?

A. Banvel 4-W.S. dicamba gives excellent control of willows and their destructive, water-seeking roots, and is registered for ditch bank brush control. It also destroys broadleaf weeds and extensively rooted vines. Because it is a selective weedkiller, at proper

dosages it will not harm grasses, so you can avoid erosion along banks of irrigation or drainage ditches. Banvel dicamba, alone or in combination with 2,4-D, is registered for vegetation control along ditch banks.

Q. Last year we had difficulty getting an adequate supply of Banvel dicamba and phenoxy in premixes, or in any form. What is the supply situation this coming year?

A. Banvel dicamba and phenoxy should be in adequate supply, in spite of demand that has doubled each year for the past three years for use on several crops and on grazing lands throughout the United States. Recently, Velsicol completed a new manufacturing plant that has more

than doubled the production of Banvel dicamba.

At present, our supplies of 2,4-D and 2,4,5-T acid are limited. You can, however, profitably stretch the 2,4-D or 2,4,5-T materials you are able to find with the various Banvel dicamba tank mixes.

Q. Can I use Banvel dicamba to sterilize certain areas?

A. Banvel dicamba is not a soil sterilant, and should be used at label dosage rates for brush and broadleaf weed control. Banvel 4-W.S. herbicide is selective, allowing grasses to grow

for soil cover and to prevent erosion. If you wish to sterilize the soil, your contract applicator can advise you, or call Velsicol on the Banvel "Hot Line."

Q. How does Banvel 4-W.S. herbicide kill brush? Why is it more effective than the phenoxy compounds?

2,4-D and 2,4,5-T, but also controls many species not controlled by phenoxy chemicals, such as evergreen species and suckering hardwood species. There are no other herbicides in commercial use that outperform Banvel 4-W.S. for control of brush and vines.

Because Banvel 4-W.S. dicamba translocates, it gives a more complete kill, even though the entire plant is not sprayed. Other herbicides may merely suppress. Therefore, Banvel 4-W.S. is more effective on the toughest weeds, trees and vines that have the deepest or most extensive root system. Translocation of Banvel 4-W.S. herbicide through the plant system eventually gets to the roots.



A. Phenoxy compounds enter the plant through the leaves and bark, while Banvel 4-W.S. herbicide enters the plant through the roots as well as the leaves and bark. It is several times more active biologically than the phenoxy herbicides. Its different mode of action and greater mobility within the plant give a higher degree of brush and vine control with Banvel 4-W.S. dicamba alone or with Banvel dicamba plus phenoxy mixtures than with phenoxyes used alone.

Banvel 4-W.S. dicamba not only controls those brush species controlled by

Q. I put out Banvel-510 herbicide in September as a basal application, according to your label directions. Brush browned out very well, but in June the next year, some trees started to leaf out. Does this indicate partial failure?

application. Translocation takes time. Chemicals that give immediate, first-year brownout do not necessarily give third-year kill, so that you have to spray more often. Full benefit of Banvel-510 herbicide, its ultimate effect, is in the third year.

Banvel 4-W.S. dicamba by itself, applied to brush, is slow in giving brownout. With some species brownout is never achieved, as leaves curl and fall without turning brown. With the addition of 2,4,5-T brownout is faster, occurring within two to four weeks after

application. The addition of Accutrol® adjuvant will increase penetration and absorption of the chemical.

Some species take longer to die than others. For a few, it will be 18 to 24 months from time of application.

In short, this means that you spray on a three- to five-year cycle . . . you seldom have to go in again sooner than three years.

A. It's true that elm and certain other species often leaf out during the first growing season. However, Banvel-510 herbicide usually gives complete kill in the second growing season after the

Q. My management has made a decision not to use 2,4,5-T for brush control. Do you have a product I can use that does not contain 2,4,5-T as a basal application to control brush?

A. Yes, for sure. Banvel®-520 herbicide, containing one pound dicamba and two pounds 2,4-D per gallon, controls a broad spectrum of brush. Why don't you give this formulation a good test? But, if you feel that it is not doing

the job as expected, call Velsicol on the Banvel "Hot Line" free of charge. On certain species, Banvel-520 herbicide proves effective but works more slowly than Banvel-510 herbicide.

Q. We use some pellets in our vegetation control program for brush and vines. Does Velsicol manufacture a Banvel dicamba pellet?

A. Yes, Velsicol sells Banvel® XP pellets, containing ten percent dicamba in clay. It is applied by hand or mechanical applicator, scattered uniformly on the ground under the tree, within six

inches of the trunk. Banvel XP dicamba leaches to the roots where it is taken up and translocated throughout the tree, destroying growth tissue as it goes.

Q. I've been using 2,4,5-T on poplar, sumac, chokecherry, locust, sassafras, aspen, and persimmon with good kill the first year. But right now, about two years after, these areas are thick with root sprouts. Would this happen if I used the right Banvel dicamba plus phenoxy formulation?

A. Not at all likely. Banvel herbicide combined with a phenoxy kills dormant buds and gets absorbed by the roots of these trees as well as through the leaves and bark, to put a sure end to root suckering. As long as you get good coverage around the crown of the plant, you will get good brush control. Banvel-510, containing 2,4,5-T, is

recommended, unless you have an environmental restriction against 2,4,5-T. If so, then you may be able to use Banvel-520, containing 2,4-D. Lower in cost than Banvel-510, Banvel-520 does not control quite as broad a spectrum of brush species, especially maple.

Q. Environmentally, how does Banvel dicamba compare with other brush control chemicals?

A. The table shows a comparison of Banvel dicamba with other brush control chemicals.

ENVIRONMENTAL COMPARISON OF BRUSH AND WEED CONTROL CHEMICALS				
	BANVEL	2,4-D	2,4,5-T	TORDON
Chemical Toxicity (acid) oral LD ₅₀ over 2500 mg/kg	Yes	No	No	Yes
EPA Federal Label Approval on Pasture and Rangeland	Yes	Yes	Yes	*
Waiting Period Between Treatment and Grazing:**				
Beef Cattle	No	No	No	*
Dairy Cattle	Yes	Yes	Yes	No
Federal Residue Tolerances Established on:				
Pasture Grass	Yes	No	No	*
Crops	Yes	No	No	No
Milk	Yes	No	No	No
Soil Persistence Half-Life	25 days	4 days	20 days	100+ days
Ditch Bank Application (registered label)	Yes	Yes	No	No
Controls Both Hardwood and Softwood Species	Yes	No	No	Yes

*EPA registration for use in Texas.

**Read all labels for limitations on harvesting hay and slaughter restrictions.

Every vegetation control program has unique requirements.

To help you overcome your particular problems, Velsicol maintains a toll-free telephone that you may use ... all year round

BANVEL HERBICIDE "HOT LINE"



**DIAL (toll free):
800-621-4129**

Illinois Callers: 800-972-8381

between 9 a.m. and 4 p.m., Monday thru Friday.
Calls made outside of these hours will be automatically recorded and answered within 48 hours by phone or mail.

Just cut out and tape on or near your phone for handy reference.

Note: Before using any pesticide, read the label.



**BANVEL®
Herbicide
from VELSICOL**

VELSICOL CHEMICAL CORPORATION
341 East Ohio Street, Chicago, Illinois 60611
Velsicol is a subsidiary of Northwest Industries, Inc.

Species to use	Pounds of pure live seed per acre
Big Bluestem	2.0
Little Bluestem	1.2
Indian grass	1.0
Side-oats grama	0.8
Switch grass	0.8

He adds: "The seeding rate can be easily doubled to about 60 pure live seeds per square foot if more stand reliability is required. Thirty pure live seeds per square foot is a minimum seeding."

Prepare the ground by fall plowing if feasible, or if ground is torn up by construction, kill spring weeds by disking and harrowing. My own experience indicates that seeding with a Nesbitt drill is a great help, but hand seeding small areas or using a cyclone seeder will work. Drilling (mid-May to mid-June probably best) gets the seeds down in contact with the soil and requires less seed for a satisfactory stand than the other methods mentioned. Roadside seeding can also be done with the usual hydro-seeding equipment. A minimal seeding of twenty-eight live seeds per square foot produced rather amazing results on some poor soil (B horizon) of a roadside borrow-pit planting done under Christiansen's supervision. After three years few weeds were apparent, and the prairie species seemed to have things under control.

Another application of prairie

grasses by Dr. David Lyon and Christiansen at Mt. Vernon, Iowa, is the seeding of a "Nature Park" overlooking a quarry that has been cleverly made into a lake. The "palisade" effect of quarry walls furnishes fascinating texture and remarkably effective isolation from nearby traffic sounds. Trails through the grass reveal delightful surprises as one finds various flowers in bloom. As the trail emerges on the quarry rim, varied peaceful vistas of blue water are opened, altogether a winsome invitation to absorb the beauty of nature in many forms.

A great little book to help you learn more about prairie grasses as a tool for low maintenance beautification is **Prairie Propagation Handbook**, (\$1.25, Boerner Botanical Gardens, 5879 South 92nd Street, Hales Corners, Wisconsin 53130).

Another book, less technical but dramatically beautiful, tells in eloquent prose and full color photos the startling (true) story of prairies and their effect on our lives. This hauntingly persuasive book, **Grass Lands**, is published by Wide Skies Press, Polk, Nebraska 68654. Text is by Jim and Alice Wilson, photos by Steven C. Wilson. They know what they are writing about: they own Wilson Seed Farms at Polk. Incidentally they are a good source of seed of grasses and prairie flowers as well as a great deal of helpful information. They sell the book (\$2.35) but they'll give you enthusiasm.

Considering current oil and related petrochemical shortages, all used for roadside maintenance programs, we'd best give the use of prairie grasses and flowers our best thought. □



Changing seasons also mean changing colors for most species of prairie grass.



Short-clipped brome grass, typical treatment for most roadside maintenance programs.

For More Details On Preceding Page Circle (114) On Reply Card
FEBRUARY 1975



Lakeshore | bags it!
NITROFORM*
organic nitrogen



The concentrated organic that takes up less storage space. Pathogen-free and odorless, too.

Turf and Horticultural Products, Synthetics Dept.
Wilmington, Delaware 19899

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For More Details Circle (145) on Reply Card

NEWS (from page 30)

reproduce them in courses built in this country.

When earth-moving was required to provide interest and variety, the natural hills, valleys and windblown bunkers of Scotland were imitated.

"Today," Graves said, "we attempt to blend the historic with modern technology to provide a beautiful golf course that provides a fair challenge, yet can be easily maintained with modern equipment."

The American Society of Golf Course Architects is comprised of the leading golf course architects in Canada, Mexico and the United States.

Velsicol Requests Hearing On EPA's Proposed Action

Velsicol Chemical Corporation has announced that it will request a public hearing regarding the Environmental Protection Agency's

proposed action toward two of its products, chlordane and heptachlor insecticides.

In late 1974, the EPA announced its notice of intent to cancel certain registered uses of the two products. The proposed cancellation does not affect use of chlordane or heptachlor for subsurface ground insertion for termite control and the roots or tops of nonfood plants.

Sales of chlordane and heptachlor are not limited during the cancellation proceedings.

The EPA stated that chlordane and heptachlor appear to "pose an unreasonable risk to man," but that "these risks require further definition. Public hearings should allow all pertinent evidence to be brought forth . . . and both the risks and the benefits may be more fully developed."

We anticipate a thorough and fair public hearing, said Robert M. Morris, Velsicol president and chairman of the board. "We firmly believe these products are important to the American people — especially to the American farmer. These

hearings will allow us to present the EPA with evidence of the safety and efficacy of chlordane and heptachlor, so that current registrations may be sustained."

Freeport Minerals Raises Sulphur Price, Opens Mine

Freeport Minerals Company recently announced a \$6 per ton increase in its domestic sulphur prices and also a planned \$18 million program to reactivate an offshore sulphur mine in the Gulf of Mexico to help relieve the current sulphur shortage.

The mine, Caminada, was shut down in 1969 after sulphur prices began a long decline. A relatively high-cost operation, it is a sister mine to Freeport's nearby Grand Isle, the first and at present the only offshore sulphur operation in the world.

Recent price improvements in sulphur are helping make possible the reopening of Caminada and are

(continued on page 40)

GRASS

When you talk GRASS, you're really talking about a combination of several important characteristics.

Strong disease resistance. Aggressive root development. Good color. Excellent turf performance.

At E. F. Burlingham & Sons, we know. Because we've spent the last 70 years continually upgrading and developing new and better varieties for your use.*

The results speak for themselves. In 1962, a distinctively new Kentucky Bluegrass variety was developed through a special breeding project at Rutgers University. The name of the Bluegrass: Bonnieblue.

We recognized its potential and conducted further testing. In trials across the country over a 5-year period, Bonnieblue consistently ranked among the highest in overall turf quality.

It proved to maintain a rich dark green color over a long growing season. Showed good rhizome and tiller development. Low growth with excellent density. Best of all, a good resistance to leaf spot, stripe smut, rust and snow mold.

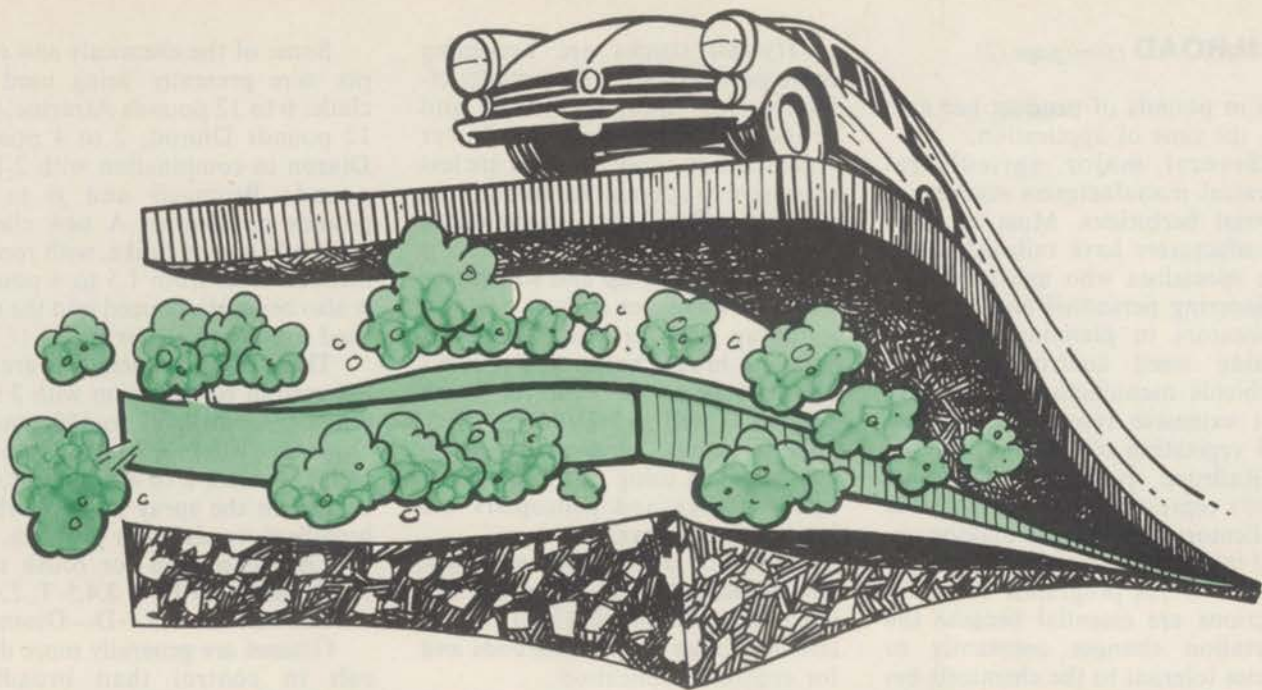
Bonnieblue from E. F. Burlingham & Sons. Just one of many reasons why . . . when you talk about GRASS, you talk about Burlingham.

E. F. Burlingham & Sons, P.O. Box 217, Forest Grove, OR 97116. Phone: (503) 357-2141; Telex: 36-0274; Cable: Burlingham.

E. F. BURLINGHAM & SONS



*Bonnieblue, Majestic, Sydsport and Birka Kentucky Bluegrasses and Koket Chewings Fescue.



Put a "gas blanket" between you and weed breakthrough.

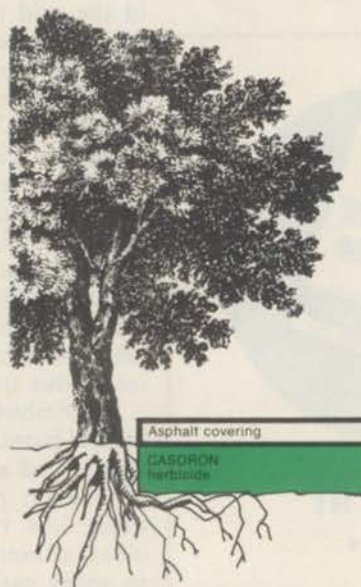
CASORON® — for years leader in orchard, nursery, landscaping and industrial weed control — is now approved for use under asphalt. Use it where weeds and roots do the most damage: recreational courts, bicycle and golf cart paths, paved sidings, airport runways, parking lots, etc.

Works like nothing you've ever used before. Applied as a granular or wettable powder over the subgrade, CASORON soon begins to emit a weed-killing gas. Once the asphalt is applied, it traps the gas creating a long time blanket and protection against weed growth and weed breakthrough.

Why CASORON instead of sterilants: Simply because you can effectively kill weeds and stop root growth without risking damage to adjacent ornamentals. CASORON is a root inhibitor, ornamental roots will stop growing as they contact the gas blanket. They won't systematically translocate the herbicide. And they won't erupt through the blanket into the asphalt. Also, CASORON's blanket of protection stops weeds from germinating — but won't sterilize areas for future planting. *Other uses:* CASORON is highly effective around right-of-ways, curbs, landscaped areas and fences. Over 60 perennial and annual weeds and grasses can be controlled.

If asphalt is in your plans for the future, specify CASORON. It's a gas.

4-4891



THOMPSON-HAYWARD CHEMICAL COMPANY

P. O. Box 2383
Kansas City, Kansas 66110

For More Details Circle (127) on Reply Card

RAILROAD (from page 12)

rate in pounds of product per acre and the time of application.

Several major agricultural chemical manufacturers market industrial herbicides. Most of these manufacturers have railroad herbicide specialists who assist railroad engineering personnel and contract applicators in planning and conducting weed control programs. Herbicide manufacturers also conduct extensive research on industrial vegetation control.

Railroad personnel, manufacturer's representatives and contract applicators cooperate in making annual inspections to check the results of the various programs. These inspections are essential because the vegetation changes constantly to species tolerant to the chemicals being used. Spray programs have to be adjusted every year so chemicals that will control resistant species are used.

There are four national contract applicators and a number of regional contract applicators. These companies have specialized railroad spray equipment including hy-rail trucks and railroad spray cars. The spray cars are used with several tank cars and are pushed by a regular locomotive.

Hy-rail trucks are becoming more popular and are especially effective for spraying yards and branch lines. They use lower volumes than spray cars and are less expensive to operate. Railroad spray cars are still efficient on mainlines and in wide open territory where it is possible to spray up and sometimes over 100 miles per day.

Spray cars are also used for spraying brush, however, hy-trucks are starting to be used for brush control as well as helicopters. High volume sprays are used for brush control when using spray cars while hy-rail trucks and helicopters use low volume sprays.

Contract applicators also distribute herbicides for railroads doing their own spraying and formulate herbicides for the railroads and for contract application.

Residual or soil active chemicals require precipitation to activate them; however, extensive precipitation will leach residual chemicals out of the root zone and reduce their effectiveness. Consequently, time and amount of rainfall are important considerations when determining the time of application. In the semi-arid West most of the rainfall is in the fall and winter months and application is made in the arid northern states such as eastern Oregon, southern Idaho and southern Utah in the fall, while warmer semi-arid areas such as southern California are usually sprayed during the winter months.

Higher rainfall areas including most of the central and eastern U. S. are sprayed in the early spring with a combination of residual, contact and systemic herbicides. This allows for later application than with residual chemicals alone and reduces losses due to leaching.

Distributing application over several months also helps utilize personnel and equipment.

Present programs call for relatively low rates of contact herbicides; consequently, it is important to spray early in the spring before the vegetation gets too large.

Originally all railroad chemical vegetation control was with contact herbicides; however, since the introduction of residual herbicides, the trend has been to less use of contact herbicides and more residual herbicides which give longer lasting results.

Some of the chemicals and rates per acre presently being used include: 6 to 12 pounds Atrazine, 6 to 12 pounds Diuron, 2 to 4 pounds Diuron in combination with 2 to 4 pounds Bromacil and 6 to 12 pounds Prometon. A new chemical, trade named Spike, with recommended rates from 1.5 to 4 pounds is also being introduced into the railroad market this year.

These residual chemicals are being used in combination with 2 to 3 pounds Amitrol, 75 to 150 pounds chlorate borate, or 6 pounds MSMA. Also, 2 to 4 pounds 2,4-D is used in the spray mixture where broadleaf weeds are a problem.

Chemicals used for brush control include: 2,4-D — 2,4,5-T; 2,4-D — Picloram and 2,4-D — Dicamba.

Grasses are generally more difficult to control than broadleaf weeds. Some difficult to control grasses prevalent on railroad right-of-ways are inland saltgrass, big bluestem, prairie cordgrass, johnsongrass and bermudagrass. Annual grasslike weeds are usually controlled with regular spray programs; however, foxtail, and crabgrass often germinate late in the season after the residual herbicide has been leached down. Downey brome grass is easily controlled but is prevalent outside the regular pattern and is the cause of many railroad fires. Horsetail is one of the most difficult to control species prevalent on railroads.

Swamp smartweed, hemp dogbane and common milkweed are some of the most difficult to control broadleaf species. Various vines are a serious problem on railroads in the southern United States.

Although annual broadleaf weeds are relatively easy to control, when they are not controlled they are very troublesome because of their size and rapid growth. Kochia is the most troublesome broadleaf species. Russian thistle is also prevalent on railroad right-of-ways in the western U. S.

Brush or woody plants are a serious problem in the eastern and southern U. S. It is not only necessary to keep brush out of pole lines, but also at least 20 feet back from the outside rail. Brush is also a problem in the Pacific Northwest; here blackberry brambles are the most serious problem. □



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NEWS (from page 36)

prolonging the life of existing sulphur mines, according to the company. Freeport pointed out that reactivating Caminada — which is contingent upon securing the necessary natural gas supply — will cost not much less than Caminada's entire original cost of \$23.7 million in 1968.

Freeport also announced that, on the strength of higher prices, it

had launched a new sulphur exploration program in Louisiana.

Forest Service Man Cited For Tree Decay Research

Dr. Alex Shigo, a U.S. Forest Service researcher known for his contributions to the understanding of discoloration and decay in living trees, has been honored by the American Phytopathological Society.

The award of Merit of the Northeastern Division of the Society was presented to Shigo of the Northeastern Forest Experiment Station, Durham, N.H., at a recent Society Meeting in N.Y.

Shigo's work has changed the whole concept of discoloration and decay, and has uncovered the succession of micro-organisms and their locations within developing columns of decay. He has also worked on development of a meter — named a "Shigometer" in his honor — that helps eliminate the educated guesswork involved in tree replacement.

Shigo is also well-known for his ability to explain his research in a manner that is understandable to the average homeowner, home builder and lumberman.



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New Gravely Dealer Group Holds First Meeting In Fla.

The ten members of the Gravely Dealer Council recently held their first meeting in Florida. The Council was formed to "give Gravely dealers an opportunity to express their opinions and ideas directly to the people who are responsible for Gravely's operations and policies," according to P. W. Cayce, marketing vice president. The meeting was scheduled as a result of suggestions made during Gravely's recent dealer meetings. Representing a cross-section of Gravely dealers, the ten members discussed a wide range of topics, from the outlook for 1975 to "What manufacturers should do to help their dealers in 1975." The consensus was that Gravely dealers believed the market will be looking for quality equipment, with greater emphasis on value.

(more news on page 52)