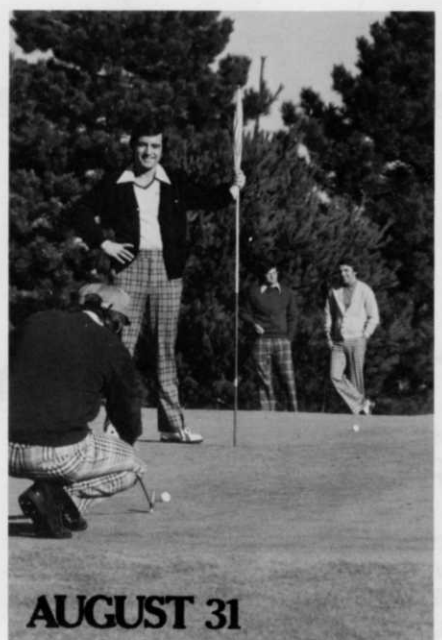




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# The non-farm fertilizer market today

The specialty or non-farm fertilizer industry today comprises only about two and a half to three and a half percent of the total U.S. fertilizer industry and because of this it is a unique situation.

Unlike farm fertilizers, very little is exported. And, because of the limited volume sold, supplies for spring have already reached distributors so there is little chance of transportation problems affecting supply. Prices are relatively stable and should not change for spring buying, except perhaps for a slight increase because of increased demand.

---

## Demand is there

"Today the non-farm fertilizer supply situation looks very good," says Don Collins, vice president for communication for The Fertilizer Institute. "U.S. production of nitrogen and phosphate have increased to a point where we are adequately situated to produce what the U.S. market needs," he says. But he does warn the severe winter could increase curtailments of natural gas to ammonia plants which would affect the fall 1977 supply.

Although the short-range phosphate supply looks good, Collins says, the situation is continually dependent on environmental concerns as more emphasis is placed on regulations governing mining and surface mining, especially in Florida. This, he says, keeps expansion of phosphate mining on a very moderate level, but it should have little affect on supply until after 1980. "At this time," explains Collins, "it has been forecast that the world demand for phosphate will have increased to a point where there will be tight periods of supply."

The potash picture is quite dif-

ferent. Two-thirds of what we use in this country comes from the Canadian province of Saskatchewan. Within the last year two of the approximately ten U.S. owned mines have been nationalized and the Premier has indicated he intends to have at least 50 percent of the province's mines controlled.

"He has said he intends to proceed on an orderly basis, but he hasn't really defined what that means," emphasizes Collins, and adds that the threat of nationalization has brought a great deal of uncertainty to the potash industry. "Until now it has been economically unfeasible to mine our own supplies of potash in the Dakotas and could change."

The non-farm fertilizer market has changed considerably in the past few years. "Fifteen years ago the principal formula was 10-10-10 or 5-1-5. Today we have gone to higher ratios of nitrogen and higher analysis, such as 18-14-10," Collins points out.

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## Bulk buying

There is also a trend toward bulk buying. "Turf managers are more sophisticated," Collins explains. "Now maybe he or someone on his staff may have an agronomy background and can determine this fertilizer needs. The turf manager then can have it custom blended. Also there is considerable interest developing in micronutrients as the needs for higher plant quality increases."

An interesting fact about micronutrients is that if claimed by the manufacturer, they must be guaranteed on the label along with the micronutrient ratios. Each state regulates fertilizers. The Fertilizer Institute along with the American

Institute of Plant Food Officials have written uniform farm and non-farm fertilizer laws and have been urging states to adopt laws as closely as possible to the ones recommended. Florida, says Collins, has deviated the most from the uniform bills. "This isn't necessarily wrong," he says. "It is trying to protect its own fertilizer industry. But it does make it difficult for interstate marketing."

Looking ahead, Collins sees the Clean Water Act of 1975 as perhaps having the most effect on the fertilizer industry.

---

## Clean Water Act

"Section 208 of that act governs non-point sources of pollution such as agricultural run-offs and run-offs from municipal lasts. Under section 208 each state must formulate its own clean water regulations for non-point source pollution. "It is conceivable, he says, "that a state could set up its regulations in such a way that it could restrict or control the use of specialty fertilizers."

Basically fertilizer is far from a water polluter. Potash has little if any affect on water. Phosphate which attaches itself to the soil, only reaches water with soil run-off. Nitrogen must leach down to through the soil profile to ground water level to become a pollutant. But before these situations develop, the applicator has already seen the effects on his plants.

If manufacturers' recommendations are followed, and there is a wide margin for error, fertilizers are one of man's most beneficial substances. They promote green growth which cuts down on erosion and noise, and saves energy. And they make any physical environment far more pleasant. □



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## Get growing with us.



# Professional applications of pesticides and fertilizers . . . a \$440 million market

Pesticides and fertilizers for professional applications are a big business in the United States on their own, and need not take a back seat to the farm and consumer markets for these products. In 1976, about \$440 million will be spent at formulator's level by 16 market segments including golf courses, landscapers, schools and colleges, and others for products to fertilize lawns, kill weeds, control insects and perform similar functions.

## The products

The products, about twelve in all, fall into three broad functional categories. Pesticides are the most important group with consumption of \$250 million in 1976 followed by

fertilizers with \$165 million, as shown in Figure 1. All values are in formulator's dollars.

Herbicides are the leading pesticide with \$105 million. They are used by the most end users in significant quantities as shown in Table 2. Insecticides are a close second, at \$90 million. The two pesticides together account for nearly 80 percent of all pesticide sales.

## The markets

Golf courses, and landscaping and lawn service companies share the lead in total purchases. Horticultural firms (flowers, shrubs, and turf), structural pest-control operators, highways, forestry, government agencies, electric utilities, schools and colleges, and railroads are the other important market segments. Minor end uses include industrial weed control, mosquito abatement, cemeteries, airports, and asphalt pavers.

Golf courses use all products except rodenticides, mainly to maintain their fairways, tees and greens. The actual consumption of the various products varies by the geographic location, size of the course and ownership. For instance, courses in the south tend to use more fertilizers, insecticides and nematocides than those in the north. On the whole, private courses are better maintained than municipal courses and spend proportionally more for pesticides and fertilizers.

Landscapers concentrate on planting and maintaining shrubs and other ornamentals while lawn-service companies chiefly fertilize lawns and apply herbicides and insecticides as needed.

The horticultural segment includes firms which grow cut and potted flowers, ornamental trees and shrubs, and sod. Although consumption is heavy in fertilizers, this end use also consumes every product type except aquatic pesticides and rodenticides.

Since structural PCO's concentrate on exterminating insects in and around buildings, their major product is insecticides. However, they are also important consumers of rodenticides. In addition some PCO's also control insect and plant pests on ornamentals and turf and buy herbi-

Table 1  
U.S. PROFESSIONAL MARKET FOR PESTICIDES AND FERTILIZERS 1976

Product	\$ Million	% Of total
<b>PESTICIDES</b>		
Herbicides .....	\$105	24%
Insecticides .....	100	22
Other-a .....	45	10
Total .....	250	56
FERTILIZERS .....	165	38
SOIL CONDITIONERS ..	25	6
<b>TOTAL .....</b>	<b>\$440</b>	<b>100%</b>

Includes fungicides, aquatic pesticides, nematocides, rodenticides and growth regulators.

cides, insecticides and fungicides for these uses.

Highway and road departments, especially at the state and county level use herbicides to kill all vegetation along guard rails and similar areas and to control brush along roadways. Political considerations, in which people are employed to mow grass and otherwise maintain surroundings, hurts the use of herbicides to improve turf areas.

Electric utilities use selective herbicides to control brush under transmission lines, and take soil sterilants and contact herbicides to control vegetation at substation. Fertilizers are used chiefly to promote rapid growth along transmission lines after construction or erosion.

Railroads also buy herbicides to kill all vegetation in the road bed and to control the brush along the edges. Among forestry companies the use of fertilizers for mature stands is a controversial subject. Some large companies are heavy users, others use none. Herbicides find application in clearing an area for fresh seedings and in stand release, the killing of unwanted species to promote the growth of desirable trees.

### Contract applicators

Contractors are important in applying herbicides for electric utilities, railroads, and forestry companies. Most applicators specialize in one of these industries and do little work outside their specialty. In forestry they are most active in insecticides. Interestingly, the choice of product varies more by industry than by individual company. In some industries the company that hires the contract sprayer tightly controls the products used, in others the choice is entirely with the contract sprayer. Application from the air, either by helicopter or airplane, is important in electric utilities, forestry, and for some forms of mosquito control.

### Suppliers

Literally hundreds of suppliers formulate products for this industry. Pesticides move through as many as five tiers from toxicant manufacturer to end user, as shown in Figure 2. In some cases a manu-

*Continued on page 37*

Figure 1

### CONSUMPTION BY PRODUCTS IN THE PROFESSIONAL MARKETS FOR PESTICIDES AND FERTILIZERS 1976 TOTAL \$440 MILLION

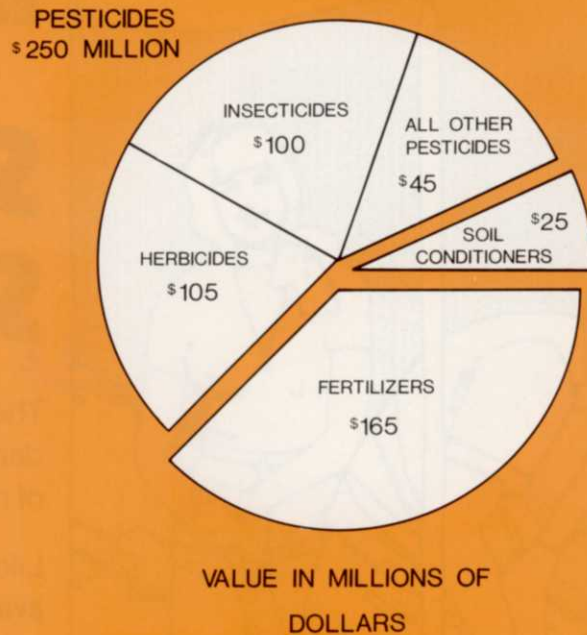
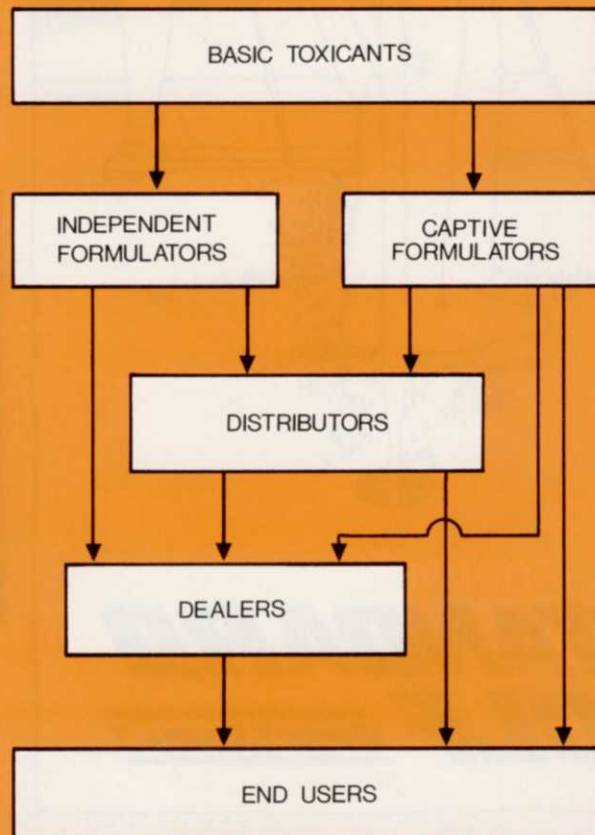
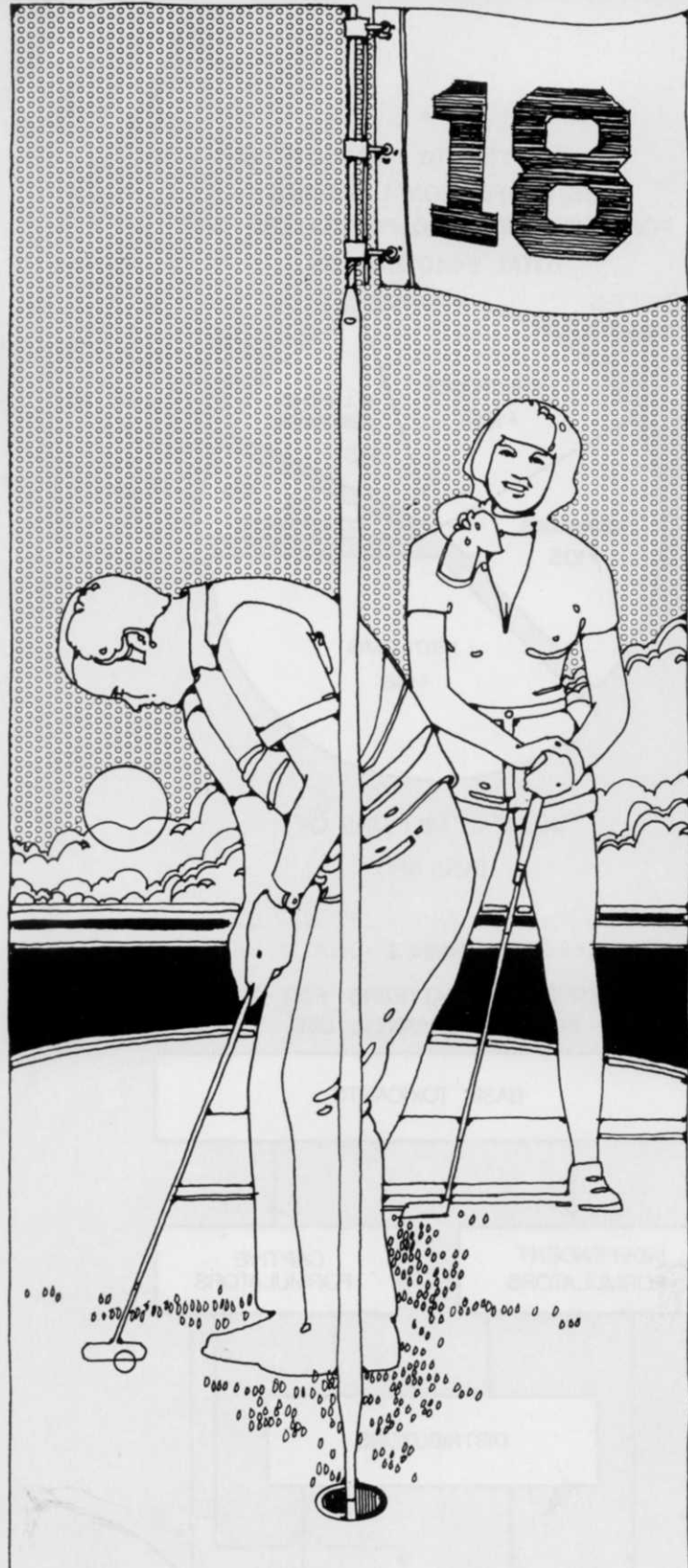


Figure 2

### TYPICAL DISTRIBUTION PATTERNS FOR PESTICIDES FOR PROFESSIONAL USE





**STANDARD**  
**GOLF** *Pro-Line*

# What's new in flags?

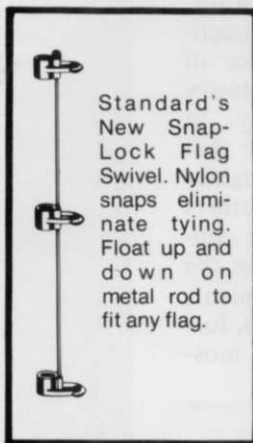
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**Table 2**  
**PRODUCTS AND MARKET SEGMENTS FOR PESTICIDES, FERTILIZERS,**  
**AND SOIL CONDITIONERS FOR THE PROFESSIONAL MARKET**

Market segment	Herbi- cides	Ferti- lizers	Insecti- cides	Fungi- cides	Soil condi- tioners	Growth regu- lators	Aquatic pesti- cides	Nemati- cides	Rodenti- cides
Airports .....	X	X	X	—	—	—	—	—	—
Aquatic pest control .....	—	—	—	—	—	—	X	—	—
Asphalt paving .....	X	—	—	—	—	—	—	—	—
Cemeteries .....	X	X	X	—	—	—	—	—	—
Electric utilities .....	X	X	—	—	—	—	—	—	—
Forestry .....	X	X	X	—	—	—	—	—	—
Golf courses .....	X	X	X	X	X	X	X	X	—
Government agencies ..	X	X	X	X	X	X	X	X	X
Highways .....	X	X	X	—	—	X	—	—	—
Horticulture .....	X	X	X	X	X	X	—	X	—
Industrial weed control ..	X	—	—	—	—	—	—	—	—
Landscaping and lawn service .....	X	X	X	X	X	—	—	—	—
Mosquito abatement ....	—	—	X	—	—	—	—	—	—
Railroads .....	X	—	—	—	—	—	—	—	—
Schools and colleges ....	X	X	X	—	X	—	—	—	—
Structural PCO's .....	X	X	X	X	—	—	—	—	X

## applications

*Continued from page 35*

factorer of the toxicant also formulates and sells direct to a large user, for example, a major contract sprayer for railroads. By contrast, when a PCO buys a small quantity of herbicides from a dealer, products move through all tiers.

The top 19 suppliers listed in Table 3 hold 52 percent of sales of pesticides and fertilizers for professional uses. An additional 94 firms supplied 32 percent, together these 113 companies hold 84 percent of the business.

### The future

Although overall consumption will grow at a steady rate of about 3.5 percent annually to \$500 million in 1980, as measured in constant dollars several segments will increase at rates far above the average. Consumption by forestry, asphalt paving, structural pest-control operators, and mosquito-abatement groups will all grow at a good rate.

### The opportunities

This business represents important opportunities for alert suppliers. For example, government legislation will force the replacement of chlordane for many applica-

**Table 3**  
**THE MAJOR SUPPLIERS OF PESTICIDES AND**  
**FERTILIZERS TO PROFESSIONAL MARKETS**

Company	Chief products
Amchem	Herbicides
Chevron	Insecticides
Ciba-Geigy	Herbicides
Diamond Shamrock	Herbicides
Dow	Herbicides
Du Pont	Herbicides
Elanco	Herbicides
Kerr-McGee	Fertilizer
Lebanon Chemical	Fertilizer
National Chemsearch	Fertilizer
Occidental	Fertilizer
Premier Brands	Peat moss
Rollins	Insecticides
O. M. Scott	Fertilizer
Southern Mill Creek	Insecticides
Swift	Fertilizer
Thompson-Hayward	Herbicides
U.S.S. Agri-Chemicals	Fertilizer
Velsicol	Herbicides

tions and new products will be required. Furthermore, government and environmental pressures are also being placed on other products including organophosphates, and replacements must be found. Other opportunities center around (1) improved products including effective growth regulators, and (2) new, rela-

tively untapped markets including asphalt paving, forest fertilization, and lawn service.

Details are available in a new 532-page survey, *The Professional Markets for Pesticides and Fertilizers*, available on subscription only from C. H. Kline & Co., Fairfield, N.J. □

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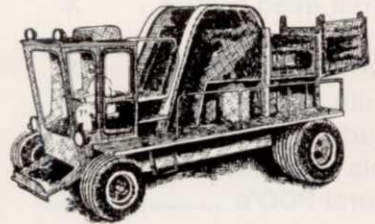
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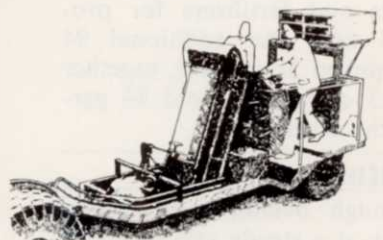
**Stanley F. Cruse, Vice Pres./General Manager**  
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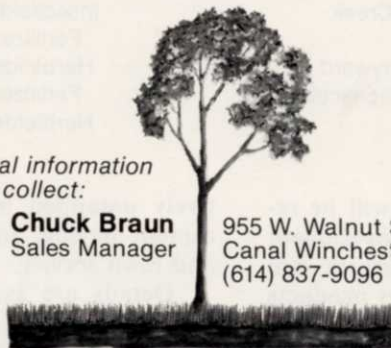
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---

# New fire ant controls needed now

The imported fire ant continues to spread in Texas. In the last year it has been found in 11 new counties for a total of 93 counties.

The control for the imported fire ant has been a bait which contains the poison Mirex. Its secret of success has been its slow effect. Worker ants that go out in search of food find the Mirex in the corn cob grit and oil bait. Workers, before they died, had time to remove the oil (which contains the Mirex poison), return to the mound and feed the poison to the queen and other ants in the colony.

Other insecticides are fast acting compounds that kill the food gathering worker ant before it can return to the mound and feed the other ants. The result is that most of the ants in the mound escape the effect of the compound.

---

## How Mirex works

Mirex is a chlorinated hydrocarbon, like DDT, and is a very persistent chemical. In fact, Mirex is the most persistent of the chlorinated hydrocarbon insecticides. Because of its persistence, it slowly builds up in the environment with use.

It is stored in the fat tissue of animals. When an animal like a frog eats an ant with Mirex, the frog has a little Mirex stored in its fat; when the frog eats another ant with Mirex, a little more Mirex is stored in the frog fat. Slowly, the Mirex builds up in the frog until a toxic amount is reached.

Mirex is a slow killing compound. While it is not toxic unless present in large amounts in man, the slow buildup in the tissues of animals in the food chain leading to man present a potential hazard. It is this slow accumulation, along with the more direct effects on wildlife, that has led to the restriction in the use of Mirex and the present elimination of the use of Mirex in the area-wide program supported by

the Texas Department of Agriculture.

A search for alternatives has resulted in consideration of thousands of chemicals. None have been found that are effective in the bait as a replacement for Mirex, because they are either not active against the fire ant or they are too toxic and kill the ants before they get back to the mound. Killing the worker doesn't solve the problem as the queen continues to produce replacements.

Entomologists with the Texas Agricultural Experiment Station (TAES) have begun a search for an alternative to Mirex. One group of compounds being considered are the "juvenile hormones." They are not usually toxic to adults but prevent the development of the young into adults.

Bradleigh Vinson, TAES entomologist, explains that the juvenile hormones kill young fire ant larvae and prevent reproduction (egg laying by the queen). These compounds look promising because they have no effect on the adult ant; therefore, the adult could eat the poison and carry it back to the mound and feed the queen and larvae. Theoretically, the compound would prevent replacement of the ants, and the colony would die.

---

## Problems exist

This worked in the laboratory, but in the field the results were disappointing. Some mounds were killed, but others were not.

Why? Experiment Station researchers set out to answer these questions instead of abandoning a potentially promising control agent.

Research has shown that adult ants that eat the juvenile hormone destroy most of it in their stomach before feeding it to the larvae or queen, so that too little is left to do the job. Even less is fed to the larvae or queen if the colony is well fed.

The next question is, can this problem be overcome? Vinson is convinced that it can be.

Research shows that ants, like many other insects, communicate by chemical smell. These compounds, called pheromones (a type of chemical language), influence the behavior of the ants. The TAES researchers have identified one of these compounds, called a brood pheromone. When this compound is added to a small granule or pellet, the workers are fooled into treating the object as one of its larvae, and they carry it into the mound.

When the pheromone and the hormone are added to a carrier, the carrier (grit) is carried into the mound by the workers and is placed with the larvae, in the mound. The hormone contaminates the larvae, the target, resulting in their death. The result is a new concept in a bait approach to control of the imported fire ant.

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## More work ahead

While juvenile hormones still hold promise, much more work will be necessary before it is determined that they are safe and effective and before they are available at a reasonable cost.

Researchers have also found that some insecticides can be made less toxic on contact and can also be carried into the mound with the brood pheromone and certain foods. Vinson suggests the more toxic insecticides may offer promise if new, less toxic formulations and bait approaches can be developed. He says that an alternative to Mirex can be developed but that there is much to be done before an effective replacement is available.

TAES entomologists are also working to find an insecticide that can be used by the home owner for the fire ant problem in his yard. The encapsulated and biodegradable insecticides show promise for this limited use. □

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## Rhodia announces reduction in price of its new herbicide

Rhodia, Inc. reports that Asulox®, a new herbicide for noncrop applications, may now be purchased at a suggested retail price of 15-20% less than when introduced last year.

The price reduction, which became effective January 1st, stems from improvements in the manufacturing process and increased use of Asulox, according to a spokesman for the Company's Agricultural Division.

A postemergent herbicide, the compound provides effective con-

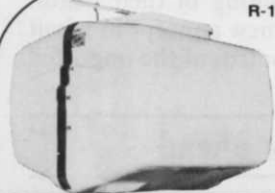
trol of Johnsongrass and other grassy weeds.

Included in noncrop applications are highway and roadside rights-of-way, industrial plant sites, storage areas, lumberyards, warehouse lots, boundary fences and railroad rights-of-way and yards.

Rhodia says it has also applied for registration of Asulox for reforestation plantings and ditchbanks.

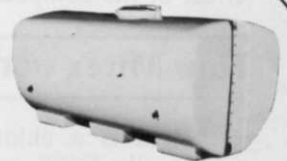
Recommended usage for control of Johnsongrass and other grassy weeds is 1 to 2 gallons per acre.

R-100 gal.



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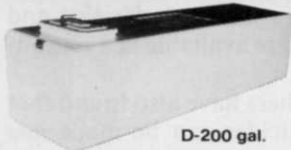
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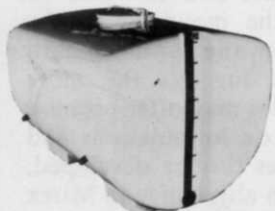
PC-1200 gal.

**CONTROL PESTS... WEED... FERTILIZE**

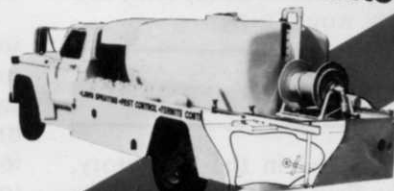
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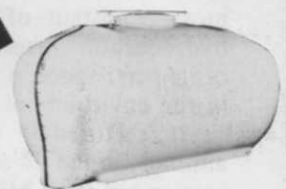
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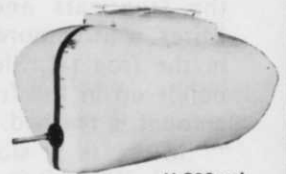
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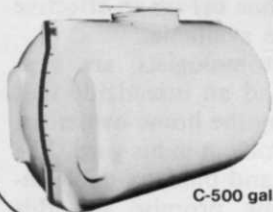
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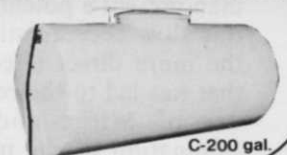
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U-200 gal.



C-500 gal.



C-200 gal.

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