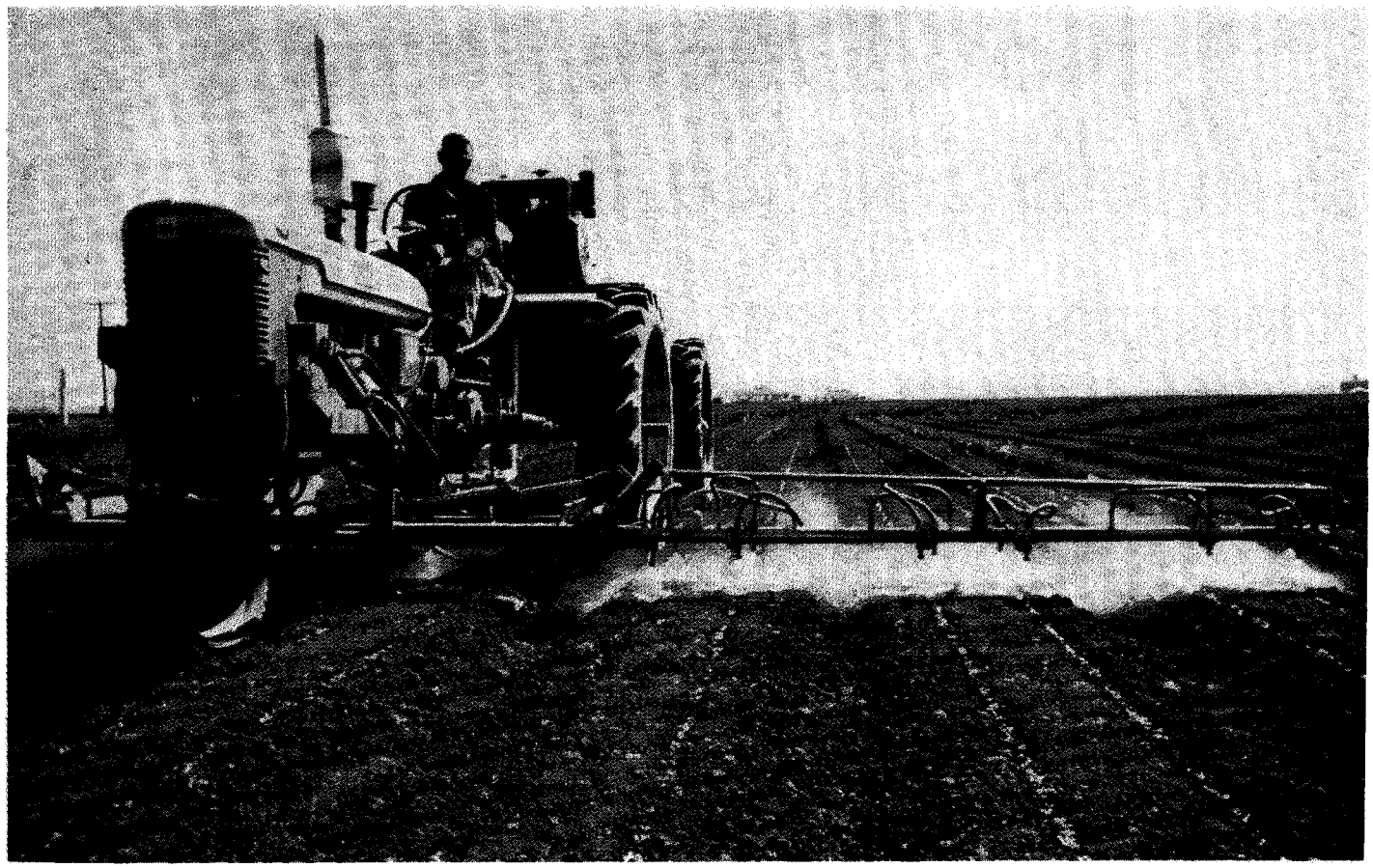


The 1957 Pesticides Season

The West

Growth rate of sales is slowed down. Early rains delayed applications. Producers' stocks led to competitive discounts, lower margins

Sales of agricultural chemicals continue to rise in the West, but the growth rate has been slowed this season. Heavy rainfall in the late spring in many areas delayed application. And larger than normal carryover of stocks in basic producers' hands slowed early season sales. Still, the continuing growth of western agriculture carried pesticides sales over these humps. Most companies expect this year's sales to be up slightly over those of 1956.

The profit picture is not so bright. With a few notable exceptions, narrowing margins have offset or more than offset the increase in sales. Although list prices of many chemicals have increased, competition has led to discounts which in some cases have more than counter-balanced the price increases. And the impact of the Miller Amendment, much greater this year than last, has increased costs for most producers.

The supply picture is good, both from the point of view of the basic producers and of the farmers. Observers in the industry predict adequate stocks of pesticides in the West for the balance of this year, but except for a few special situations no serious overproduction is anticipated.

Federal Laws

The effect of the Miller Amendment is being felt by the industry in several ways. Basic producers find their research costs rising rapidly and the length of time needed to bring a new product onto the market greatly increased (Ag and Food, August, page 562). And farmers seeking advice from university and extension specialists have found them reluctant to make any recommendations until they have carefully examined the implications of the Amendment in each specific situation.

Another aspect of Government activity—the Soil Bank program—has thus far had little or no effect on the agricultural chemicals market in the West. Loss of markets on land withdrawn from cultivation is being offset by more intensive usage on the remaining acreage. Then too, much of the land being placed under the plan is marginal and hence did not represent a very large market potential.

Narrowing profit margins and increased costs of research have reacted particularly unfavorably on those agricultural chemicals operations which are a part of a more diversified chemical company. At least one such producer reports that the agricultural chemicals division is experiencing increasing difficulty in obtaining its full share of capital investment and re-

▲ Crag Mylone is getting a try-out from 70 forest tree nurseries around the country this season

◀ Calspray's newest rig has hydraulically controlled spray booms, which can be operated individually, and a drawbar positioned to allow short turning in field

Planting plugs of Zoysia grass on turf farm at Palmetto, Fla., where Vapam was applied three weeks before planting to control weeds, weed seeds, and soil pests and diseases

search dollars from top management. And in other cases management is taking a much closer look than formerly at such expenditures.

One significant trend, particularly in Arizona and California, finds large farmers or groups of small farmers hiring professional entomologists and other experts. They thus have their own advisers at hand, and depend much less on commercial suppliers, extension service advisers, and university experts. This movement, however, is not yet widespread enough to give any clear picture of its effect on marketing practices.

Chief Insect Problems

The two major insect problems in the West this year have been grasshoppers and pear psylla. Particularly serious infestations of grasshoppers occurred in Utah, Wyoming, Idaho, and the central valleys of California. Control—using aldrin, dieldrin, and heptachlor—has generally been satisfactory, but very extensive treatment has been necessary in some cases. In July plans were announced to treat 725,000 acres in Wyoming at a cost of about 60 cents per acre. Costs will be shared by private owners, the state and federal governments, and lessees of state and federal land.

The treatment of such large areas has naturally led to modifications in equipment and methods—particularly in an increasing trend toward the use of larger aircraft for spraying. One firm in Wyoming, for example, is using converted war surplus cargo planes (C-82 Flying Boxcars) which can carry more than 2500 gallons of insecticide, lay a swath 600 feet wide, and spray 10,000 acres or more in a day.

Pear psylla appeared early in the season in the Pacific Northwest. The infestation was most severe in eastern Washington where it was described as "perhaps the heaviest epidemic of pear psylla in the history of the industry." Several commonly used chemicals, parathion among them, were reported to be ineffective. It is not certain, however, that this is a true case of resistance, since the cold, damp weather may have made control more difficult. Toxaphene appears to have given satisfactory control, at least in some areas.

Early this year there were reports of infestations of Mexican fruit fly in Baja California, and shortly afterward some flies were found north of the border in San Diego county. The discovery has resulted in intensive work by the USDA and the California state and county departments of agriculture. A protective spraying program has been started on both sides of the border, and this work is continuing.

There appears to be a definite increase in insect resistance, both by species and by chemicals, although in many situations it is difficult to tell whether the problem is haphazard application or bona fide resistance. In addition to pear psylla, problems have been reported with the coddling moth, red spider mites, alfalfa aphids, and (in Arizona) the lygus bug.

Changing Practices

The trend toward multicomponent pesticide formulations, evident for the past several years, is continuing. There is some body of opinion in academic circles that the answer to chemical control lies in the use of specific pesticides rather than "broad spectrum" or multicomponent types. Farmers, however, still favor the multipurpose materials because of the lower application costs. Hawaii is an exception. The agricultural industry there generally buys each active ingredient separately.

Mixtures of pesticides and fertilizers are used only to a very limited extent in the West. The great diversity of crops, soils, and agricultural practices in this area presents too complicated a problem for the general marketing of such mixtures.

Oregon gladiolus grower inspects his crop. Soil treatment with Vapam gave faster growth and reduced labor

Interest in systemic insecticides is spotty. They have become slightly more important in California where they are used chiefly against aphids and red spider mites on fruit trees and field crops. In Washington, though, their use on fruit trees has lessened. The reasons given include high costs and the increased resistance of mites to systemic phosphate insecticides. The systemics are not used much in Hawaii.

The educational programs carried on by manufacturers, regulatory agencies, and other agricultural offices in California and some of the other western states are beginning to show results. There has been a noticeable reduction in the number of accidents resulting from the use of pesticides, and one manufacturer reports that he is getting fewer telephone calls for emergency information. There is, of course, still room for improvement with regard to better recognition of the hazards of chemicals, information on handling and destroying empty containers, keeping containers and chemicals out of the reach of children, and similar matters.

New Chemicals

Among the new chemicals which were introduced or marketed on a wider scale this year, several show considerable promise of becoming commercially important. Thimet and Phosdrin have been tried out on a full scale basis in Arizona. An appreciable amount of Thimet was used on cottonseed treatment with satisfactory results. In Hawaii, silvex, 2-(2,4,5-trichlorophenoxy)propionic acid, has been used experimentally for the control of weeds in cane fields with good results.

Stauffer's Trithion (*O,O*-diethyl *S*-*p*-chlorophenylthiomethyl phosphorodithioate) and Sulphenone are being watched with interest. The former is in very heavy demand despite the fact that it is limited to nonresidue uses (e.g., mites and aphids on cotton, aphids on ornamentals, mites and aphids on nuts). Sulphenone is developing new importance for mite control because of increasing resistance to other miticides.

A new herbicide, Stauffer's EPTC (ethyl *N,N,*-di-*n*-propylthiocarbamate), is undergoing extensive field testing by federal and state research personnel. Preliminary reports indicate that it is effective against both grassy and broadleafed weeds at rates of 2.5 pounds per acre for the grasses and about twice that for the broadleaves.

In Washington, endrin has been used experimentally as a control for mice in fruit orchards. Over 100 acres have been treated with great success. This cover crop treatment with endrin is being recommended this fall for the first time by the State College of Washington.

The South

Sales better than expected but delayed about a month by weather. Variety of pests gave market spotty pattern

MEDFLIES AND FIRE ANTS in the Southeast, armyworms and aphids in the Southwest, and weather all over the South combined to give the southern pesticides market a varied pattern this year. Boll weevils—considered by most the South's biggest pest problem—appeared in large numbers and helped preserve some semblance of stability in sales.

Sales proved generally good—in some cases better than expected. But profit margins remained about level with last year's, or dropped slightly. One individual points out that rising costs of selling took away profits from increased sales. Other expenses such as costs of developing a pesticide and establishing residue tolerances in line with the Miller Amendment cut profits even more.

Last winter the pesticides industry stood divided on the Soil Bank's probable effects on sales for this year. As the growing season reached its height and pests appeared under conditions more favorable than usual, pesticide sales remained equal to or even slightly better than last year's in areas of large acreage reductions. Even cotton areas, where severe effects could have developed, report no Soil Bank effects on sales. Farm income has remained almost stationary, but planters have put more money into pesticides, says a manufacturer's representative. Planters are using with pesticides the same technique they have adopted with fertilizers—increasing dosage to improve control and thus get higher yields per acre.

In Florida, sales of pesticides for the Medfly control program helped increase volume for some suppliers. While acknowledging the contribution of the Medfly program, these suppliers point out that it probably will not be repeated. Rising need in the Southeast for control of fire ants, white fringe beetles, and mosquitoes is looked on as a possible replacement for the Medfly demand.

Weather—Warm and Wet

This year's weather throughout the South brought the widely varied pesticide demand. In some cases rainfall has increased pesticide sales volume through continual wash-off of protective coatings. In other cases, rainfall has been so heavy as to ruin crops and reduce or void potential pesticide sales. In a few places the weather was dry and hot; control programs were brought to a halt and pesticide use reduced.

Because of weather conditions, sales of pesticides in many areas of the South ran about a month behind schedule. Excessive rain in the Southwest and in the Mississippi Delta particularly delayed pesticide demand. In the Delta, sales of pesticides for cotton insect control ran 35% behind those of 1956 to June 1, according to one company that released figures. Others say rain delayed cotton two to four weeks and "drastically" cut use of insecticides through June. However, manufacturers and state officials expect demand to be normal for the season as a whole in the Delta.

Ranging across the South from Texas to South Carolina, the warm humid spring brought early infestations on crops other than cotton. In Texas, however, a recent lack of rain, if continued, will cause crops to mature early. Entomologists now expect late season infestations to be reduced.

In South Carolina, a warm humid winter and an abnormally rainy growing season brought faster development of truck crop and livestock pests as well as cotton pests. Use of fungicides was stepped up to control brown rot on peaches. Some melon growers used more soil fumigants this year in hope of combating pests expected to remain from the warm winter.

Entomologists are still looking for an insecticide to control the spotted alfalfa aphid at temperatures below 50° F. Spotted alfalfa aphids were especially troublesome in some areas of Oklahoma, but control was possible with malathion and parathion in warmer weather.

Also in Oklahoma, armyworms, alfalfa webworms, and cutworms have proved particularly troublesome. Toxaphene and DDT were most used for control of these pests on small grains, alfalfa, clover, soybeans, and other legumes. Where residues were a serious problem, heptachlor, malathion, and parathion were used.

Especially favorable weather brought heavier than usual boll weevil infestations to Alabama. Dusting at four- to five-day intervals with mixtures of DDT, BHC, and heptachlor of varying compositions, 2% endrin, or 20% toxaphene still was the major control method. Used on a lesser scale are aldrin, dieldrin, and mixtures of malathion and DDT. This year for the first time large quantities of malathion are being used in Alabama for boll weevil control.

New Chemicals and Methods

Handicapped in some instances and helped in others more than usual by weather, test programs and demonstrations of new pesticides expanded in many areas of the South. Test programs that have been under way on new materials over a several-year period also reached completion in record numbers this year.

Vapam has been widely tested in the South with results extremely favorable on some crops and disappointing on others. PCNB, used in trials by farmers on a wider scale this year in several areas of the South, proved effective against rot diseases given impetus by warm and wet weather. Diazinon gained as a barn spray in some Southeastern areas.

Granulated insecticides got a boost from the fire ant and other soil pests in Alabama. But in most other areas, particularly west of the Mississippi, use of granular materials held barely even or declined slightly. Aside from their use in programs to control fire ants, granular insecticides still remain small volume items compared to sprays and dusts.

Fire ants in Mississippi and Alabama also were responsible for about the only significant increase in use of fertilizer-pesticide mixtures this year in the South. Entomologists in coastal states of the Southeast say mixtures otherwise are declining in use because of the greater use of seed treatment as well as direct application of insecticides.

About the only commercial scale use of antibiotics in the South is on vegetables in Florida and tobacco in the Southeast. For very specific uses, cost of antibiotics is not prohibitive, according to a distributor in the Southeast. But only the more progressive growers use antibiotics, and sales volume remains virtually insignificant compared to the total pesticide volume.

Nor have biological control methods increased in the South. However, Japanese beetles are beginning to get a foothold in South Carolina, and entomologists there expect "spore dust" to be used.

Outside of the Medfly program, which used protein hydrolyzate as a bait combined with malathion, use of baits for any pest remained almost negligible. In some areas of the Southeast, outbreaks of snails and slugs led to increased use of combinations of metaldehyde and calcium arsenate. These have had a good gain in sales, largely as a side line through seed stores.

Resistance

Development of "hard-to-kill" species of insects in the South still remains a prominent part of manufacturers' and formulators' problems. The most serious part of this development from the industry's standpoint is unnecessary shifting by farmers from chlorinated hydrocarbon insecticides to the organic phosphates merely on the basis of suspicion.

The seriousness of resistance problems varies from area to area. In Mississippi, entomologists have little indication that resistance grows more serious; in fact, the trend appears to be in the reverse direction this year. In Alabama, resistance increases in importance. However, boll weevils have not developed acute resistance to chlorinated hydrocarbons in any area of Alabama, says one entomologist. BHC no longer controls cotton aphids in some parts of Alabama. In some fields aphid resistance has become a particular problem where BHC-DDT mixtures have been heavily used in the past.

In other states, Texas, Louisiana, and Arkansas, entomologists have begun more extensive programs to evaluate resistance to chlorinated hydrocarbons. These include investigations of why "hard-to-kill" pests seem to remain in certain areas, why the resistance of these pests may seemingly vary so widely in small areas such as from one field to the next, and what is the importance of application method and timing in getting good kills. Weather has delayed results of these programs.

The Miller Amendment is one more factor causing variations in pesticide marketing in the South. In some areas such as Florida where fruits and vegetables are most important crops, the Bill has done little except to make growers more careful in their use of pesticides. In the cotton belt, it has caused a shift in demand for pesticides. Demand has increased for materials with low mammalian toxicity. These may be less effective and less economical than materials for which no tolerances have been established as yet.

Changing decisions under the Miller Amendment are reported to be causing concern among dealers and formulators in the South. Government agencies come in for attack when they are inconsistent, as in the case of issuing conflicting recommendations for methoxychlor use in dairy sprays.

The Miller Amendment has increased the cost of developing a new pesticide, one manufacturer estimates, by 40 to 80%. Another estimates added costs are "in the range of $250,000."

Over-all, this year's pesticide sales will match or slightly equal 1956 sales in the South. With unusual weather, outbreaks of pests seldom important in the past, and higher costs, successful selling will take more hard work and initiative than ever before, says one distributor. That seems to summarize the entire Southern pesticides industry's attitude.

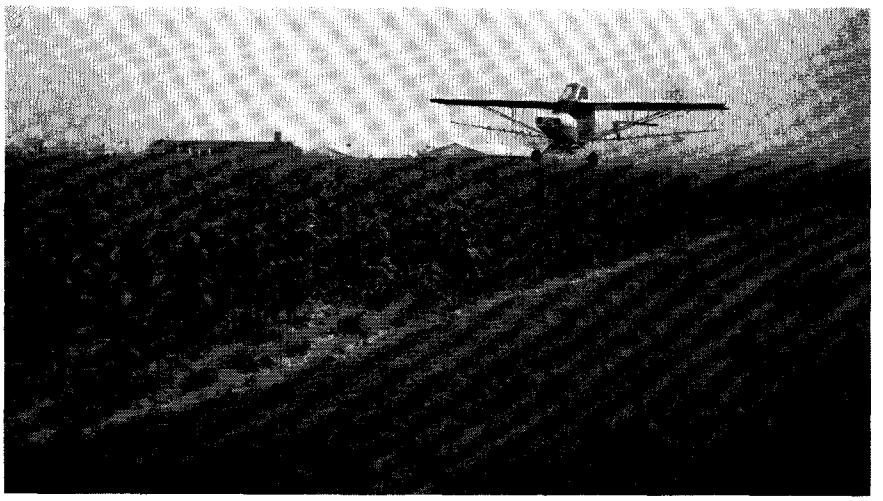
The Midwest

Mixed outlook—insects lighter than expected but weeds were prolific. Herbicide sales up

EVERYBODY is talking about the weather in the Midwest. This year it has been wet, causing more weeds than usual, but reduced damage by some insect pests, and a mixed business outlook for the pesticides industry.

Herbicide sales are generally up throughout the Midwest, a result of the wet weather and increased awareness on the part of the farmer of what farm chemicals will do for him. At the same time, sales of insecticides have been hurt. The late crop season, caused by heavy spring rains, put a premium on farmers' time. In many cases soil insecticide applications were by-passed for the more important job of planting.

One large insecticide producer reports a considerable lag in sales so far



In Ohio corn borers are being fought from the air. This specially equipped plane is used by the Ohio Aviation Board to apply DDT and heptachlor

this year as compared to last. But most companies that offer a fairly complete line of pesticides find business about the same as it was last year with insecticide losses balanced by gains in herbicides. By the end of the season businessmen think total sales will be better than those of last year. A late crop usually means heavy chemical treatment to combat the late-season surge of pests.

Producers' profits in this area are about the same as last year's. And most agree that posted prices still aren't high enough to return a reasonable profit. Dealers are suffering more than producers, with price cutting and consignment selling causing low margins. The lowered demand for insecticides early in the year added to competition and profit problems. Some price cutting on weed killers also was reported.

Although the USDA reported heavy carry-over stocks in producers' hands early this year, carry-over has not turned out to be a problem in the Midwest. In a few cases carry-over stocks lowered price levels early in the season, but over-all they have caused little trouble. In fact, some dealers report that materials which did not move last year have been more active this year.

The Insect Picture

Less damage than usual has been wrought by a couple of the Midwest's biggest pests. The corn borer, a big outlet for DDT, is definitely down this year. DDT sales may be hurt although no major change has shown up yet. Late planted corn so far has escaped damage, and probably won't need treatment. Early corn, particularly in Iowa, is suffering from corn borers; but early corn is in the minority this year thanks to the weather, and over-all corn borer damage will be less than expected. This situation led one man to remark that perhaps the farmer could benefit by not trying to plant corn so soon. Ohio, looking to the future when corn borer damage may be worse, is experimenting with aerial application of granular DDT and heptachlor.

Grasshoppers, although always potential trouble makers, are not too serious in most of the Midwest this year. The notable exception is Nebraska which has the most severe infestation since the '30's. Further east the lush vegetation in fence rows, roadsides, and ditch banks is keeping the grasshoppers out of cultivated fields, another benefit of the wet weather. Where grasshoppers do present a problem they can be very effectively controlled with the aldrin-dieldrin-heptachlor-toxaphene group of insecticides.

Potato leafhoppers are making unexpected news in Illinois. Potato and bean growers are probably most affected by the big swarm of leafhoppers, although many alfalfa fields have been damaged as well. Usually the leafhopper presents no threat to alfalfa in Illinois until the second or third cutting. But this year damage was noted on the first cutting as well as the second, and it is expected that heavy treatment with DDT, malathion, or methoxychlor will be needed on third cuttings.

Leafhoppers are probably heaviest in Illinois, but they have also spilled over to neighboring states to cause trouble. Wisconsin reports the leafhopper more abundant than for several years, and it has been noted in central Ohio, Missouri, Iowa, and Michigan.

The chinch bug, often an expensive pest in the Midwest, is almost absent this season. Missouri has scattered damage, but other states have noticed little serious trouble. Another expected pest, the spotted alfalfa aphid, has turned up only in Kansas. This pest came into the Midwest two years ago, and last year appeared in significant numbers in Illinois, Iowa, Nebraska, and Kansas.

Mixtures Gain

Fertilizer-pesticide mixtures continued to gain importance in the Midwest this year. This is possibly another result of wet weather since the farmer was rushed at planting time, and the mixes offer a convenient way to get two jobs done at once. Last year it was estimated that about 60% of all Midwest soil insecticides were put down in mixtures with fertilizer. This season the experts think the percentage is up to 70 or 75.

Although fertilizer-pesticide mixtures are coming into wider use there are disadvantages which some believe may eventually limit their use. Some banding recommendations on corn, for instance, call for placing fertilizer out from the row and deep. This placement allows the plant's root system to grow down into the fertilized area. Soil insecticides, on the other hand, are most effective when placed above the seed. Those who are against the mixtures argue that a compromise placement does not completely meet the needs of either component.

Lack of control with fertilizer-pesticide mixtures is another drawback. Reportedly, some farmers use less fertilizer than is recommended, and thus short themselves on pesticides, too. To avoid this, Kentucky requires that each bag of fertilizer-pesticide mix carry a statement of the amount needed to obtain satisfactory insect control.

Still another problem is the vast number of possible combinations of fertilizers and pesticides. A dealer cannot hope to stock even a majority of combinations, so he must limit himself to a few of the most popular ones.

Despite these potential handicaps, fertilizer-pesticide mixtures have not suffered this year. In the long run, though, some expect a return to separate application of fertilizer and pesticide. This is still speculation since it has not yet happened to any extent in the Midwest.

New Developments

There has been no rush of new insecticides into commercial channels this year. In Ohio, however, an established one is getting a new use. The spittlebug, an annual Ohio pest not too serious this year, is being fought with heptachlor. The materials used

before, BHC and toxaphene, are now limited by the Miller Amendment. Some reports indicate that heptachlor is not quite so effective on spittlebugs as its predecessors.

Another effect of the Miller Amendment is the restriction on use of chlorinated hydrocarbons for dairy cattle fly control. State agricultural stations are now recommending pyrethrins and other approved materials in place of lindane or methoxychlor. But it seems to be too early for these recommendations to have changed established habits of the farmers. Producers and dealers have not noticed any switch in sales that would indicate a trend away from chlorinated materials. In fact, one man in Wisconsin believes that "adverse" publicity has helped sell a little more methoxychlor this year.

In research there is a great deal of activity in the Midwest. New ways to fight pests—for example, systemics, antibiotics, and biological control—are getting a close look.

Systemics have a big potential in the Midwest although they are as yet commercially unimportant. In a couple of spots, Thimet is being tried for systemic control of the Hessian fly on wheat. There has been no chemical control for this pest; it must be avoided by planting wheat at the proper time. During tests on Missouri wheat, Thimet was applied mixed with fertilizer. Initial results indicate such mixtures may give six to 10 weeks' protection against the Hessian fly. Early planting of wheat without regard to "free fly date" would increase grain yields, and allow the use of wheat for fall forage and silage.

Antibiotics are a little farther along than systemics. Terramycin is commonly used to control wildfire on Kentucky tobacco. Fireblight in commercial orchards is being controlled with streptomycin and Terramycin. And in Ohio attempts are being made to use antibiotics for bacterial spots on peaches.

The most important use of biological control to date has been on the corn borer. Parasites like the lydella took care of about 30% of the hibernating corn borers in Ohio last year. The USDA Corn Borer Research Laboratory at Ankeny, Iowa, is working with a "granular" fungus—a fungus applied with granular Attaclay as carrier. Results on first brood borers were excellent, although less success was obtained on the second generation. More work is planned.

Of all the pressing plant problems, nematode control is probably the one that could best benefit from increased research. Breeding of resistant crops looks like a promising approach, although experts agree that nematodes can be best controlled by working with all possible variables such as crop rotation, proper use of fertilizers, and soil fumigation.

This year in Illinois a search is under way for the soybean cyst nematode. Last fall it was discovered along the Mississippi River in Tennessee, Missouri, Arkansas, and Kentucky. Knowing that the nematode is this close, Illinois fears that the pest may already have entered its soybean fields. This is a serious threat, since Illinois is the country's number one soybean grower.

The East

Drought cuts into volume. Market becomes more stable and profits improve. Control problems: Hay pests, mites, gypsy moth

DROUGHT CONDITIONS cut into pesticide volume in the eastern states this season but the losses found compensation in a more stabilized market and improved profits. Capacity for manufacturing these products remains more than ample, although the supply-demand relationship on the whole is not worse than it was a year ago. As to insect control, problems are offered by hay crop pests such as the alfalfa weevil, by mites on fruits, vegetables, and ornamentals, and by the gypsy moth.

A reduction in plant diseases resulting from the dry weather adversely affected the market for fungicides. In this connection, the long-term decline in the use of copper fungicides continues as growers swing over to the organic products. Those who make the organics credit them with greater effectiveness, safety, and price stability.

Rohm & Haas finds that the use of mixtures of fungicides is gaining in favor with apple growers. Sulfur or Karathane this season was added to apple scab fungicide sprays to control powdery mildew. Zineb was widely utilized late in the season because of its longer residual protection and better control of late season fruit rots. Stauffer Chemical notes that despite unfavorable conditions, consumption of captan increased noticeably as did sales of Magnetic 70 and other microfine sulfurs for controlling mildew. The latter is becoming a major problem in deciduous fruit areas in the East.

Farm Income Factor

Manufacturers' estimates for total sales in the region range from a moderate over-all decline to a slight gain compared with last season. A late spring and the drought combined to reduce early buying as growers skipped several sprays. When summer arrived with its dry spell the demand usually noted at this time fell sharply in certain pesticides.

One large company which reports better volume for 1957 attributes the improvement to increased farm income. Pesticide manufacturers, a company spokesman says, cannot help but benefit from higher farm prices and crop returns. On the other hand, increased prices for some agricultural products have had little effect on

Connecticut Valley tobacco growers and county agents get a demonstration of how to apply Stauffer's Vapam for control of weeds and soil pests in seed beds

pesticide sales, according to a second company.

A third producer of farm chemicals says this year's agricultural economy has produced a step-up in demand for chemicals of more specific action, such as the selective weed killers. These allow a substantial reduction in preharvest costs, in his view. Farmers continue to seek means for increasing "output per unit of input," and anything that helps will be in good demand. Efficient farmers have likewise accepted the principle that preventive pest control measures during the growing season are valuable insurance on crops which represent a high investment in land, fertilizer, and labor.

The industry appears agreed that the Miller Pesticides Amendment has brought a substantial increase in costs in the development of new pesticidal chemicals. It is reported that certain manufacturers who were operating pilot plants, or who had developed compounds of high mammalian toxicity, have either abandoned plans for marketing them in the U. S. or have shelved the products altogether. These are doubtless extreme cases.

One large eastern manufacturer asserts the Amendment has had little or no effect on its research and development. However, once the company has decided to place a new product on the market it now requires much more paper work and contact with Washington agencies than formerly. The direct increase in costs under the Miller law can actually be small, but its required procedures may slow the introduction of a new product, even after the producer has been satisfied as to its safety; it may also postpone use by farmers, and delay return of profit to the manufacturer.

As with fertilizer, pesticide volume losses in some sections are attributed to the Soil Bank program. Large tobacco acreages, for example, have been lost as a result of the federal aid program. But more intensive treatment of remaining acreage leads one large supplier of pesticides in the Northeast to think that on balance the Soil Bank has not affected pesticide sales.

DDT Demand More Active

Export demand affecting manufacturers of insecticides in this section has been fully up to normal. Purchases of DDT by foreign buyers and by the Government this year are actually heavier than usual. Much of the increase represented early buying, and the volume currently has fallen off somewhat. Demand for BHC appears to have slumped this year.

Marketing agricultural chemicals in the Atlantic states remains highly competitive at all levels; still, some discern what they term a noticeable change for the better in marketing practices. Consignment selling remains general, but this year it is under more rigid control by the manufacturers.

There is considerably less price cutting, especially by the major interests, as the result of increased attention to profits. There are indications that companies are giving more attention to profits and less to volume.

Carryover supplies from the 1956 season were higher than normal but in most cases these were worked off without weakening the market. The carryover from 1957 to 1958 will be normal.

New Products Tested

Recently developed pesticides are coming in for extensive testing. At the University of Connecticut, where extension work is conducted cooperatively with the State and with the USDA, Cyprex, an experimental fungicide from American Cyanamid, appears promising for use in apple scab control. Materials widely tested for mite control on apples include Trithion, Phosdrin, Kelthane, Chlorobenzilate, and Genite EM 923, all of which appear to be effective. Thylate, a relatively new fungicide, is being used extensively by growers for apple disease control. Preliminary field testing is being conducted with Thimet and Disyston against vegetable insects.

Natrin is being field tested on tomatoes at seven locations by researchers at Cornell University. Robert D. Sweet, of the department of vegetable crops, says that while the Midwest and South have essentially discarded the material, New York continues to encounter favorable results in both weed control and crop response. It is still the best, they find, for weeds in tomatoes.

At Pennsylvania State University, extension entomologist J. O. Pepper reports that heptachlor, the main insecticide used in a large control project for hay crop insects, gave excellent results when properly timed and applied. About one million acres of hay crops will be treated this year.

A tiny caterpillar known as the birch leaf miner meanwhile is denuding New York City's birch trees by eating tissue inside the leaves. Control is afforded, according to the city Department of Parks, by chlordan and malathion sprays.

Despite a barrage of opposition from civic groups and "crusading" newspapers, DDT has been sprayed aerially on Northeast forest lands in tremendous quantities this year to combat the gypsy moth. The objective is to eradicate the moth from 3 million acres in New York, New Jersey, and Pennsylvania. (See page 635.)

At the University of Maine agricultural experiment station, entomologist G. W. Simpson reports that Carbide 8305 appears very effective against red mite in fruit and potato pest control work, and promising against potato infesting aphids. Three other products, Sevin (Carbide 7744), Nialate (Niagara 1240), and Trithion (Stauffer R-1303), have given what now appears to be good control of the codling moth. Nialate and Trithion have also proved effective against red mite, and Thimet and Thiodan reasonably effective against potato-infesting aphids.

Extensive Controls

Mites offered problems which called for major controls in the East this year. In Connecticut, nonphosphate miticides such as Aramite, Ovex, Kelthane, and Chlorobenzilate, gave good control. The phosphates (among them parathion, TEPP, Demeton) were described as disappointing. Workers in Pennsylvania said several species of mites, encouraged by unusually hot and dry weather, provided a real problem on various fruits. Miticides such as Aramite, properly timed and applied, have given good results.

The use of systemics evidently is restricted in the East. In Pennsylvania they are finding use mostly on flowers in greenhouses, to a smaller extent on blooms cultured in the open. Elsewhere in the East the systemics, principally Demeton, are being employed in a small way on apples. Their main objection: high mammalian toxicity. In Maine these products find some utilization as acaricides in orchards, some for aphid control.

Application of pesticides and fertilizer simultaneously appears to have gained but little headway. In a few areas mixtures are applied in soil treatment, chiefly for wireworm and grub control on potatoes or fine turf. The resistance problem is ever present, but strangely many sections in the Northeast report that little or nothing is being done about it. A serious resistance problem has turned up in Connecticut, according to W. D. Tunis, extension pomologist, where the European red mite has become a problem to apple growers. A switch to nonphosphate insecticides is suggested, as well as alternating insecticides.

Basic causes of insect resistance have been under scrutiny for almost 10 years at Connecticut's AES. Raimon L. Beard has completed his first extensive study which indicates that under proper conditions resistance can be developed to almost any insecticide. He is now extending that work in an effort to delimit the conditions more accurately.