

dieldrin, and some others are not given. These chemicals are produced by single manufacturers who do not release production, capacity, and sales information. Furthermore, USDA's statistics cover only the past four years. A hopeful sign pointing to improvement in this situation is that Dr. Shepard reports the industry as becoming more and more cooperative in furnishing data on operations.

How much total sales and profits were down is difficult to estimate (see chart). Most producers of basic toxicants also produce other chemical materials and seldom give breakdowns of total sales in their annual reports in such a way as to indicate the dollar volume of agricultural chemical sales, although most of them have stated in letters to stockholders that business was poor in the ag chemicals field last year.

infestation for the state was about 5000 weevils per acre. The situation this year will depend upon the effects of the winter weather on the larvae and the weather in the early part of the cotton growing season.

Infestations in Tennessee are expected to be lower than in the previous two years. South Carolina also reports a low level of boll weevil infestation.

Pink Bollworm

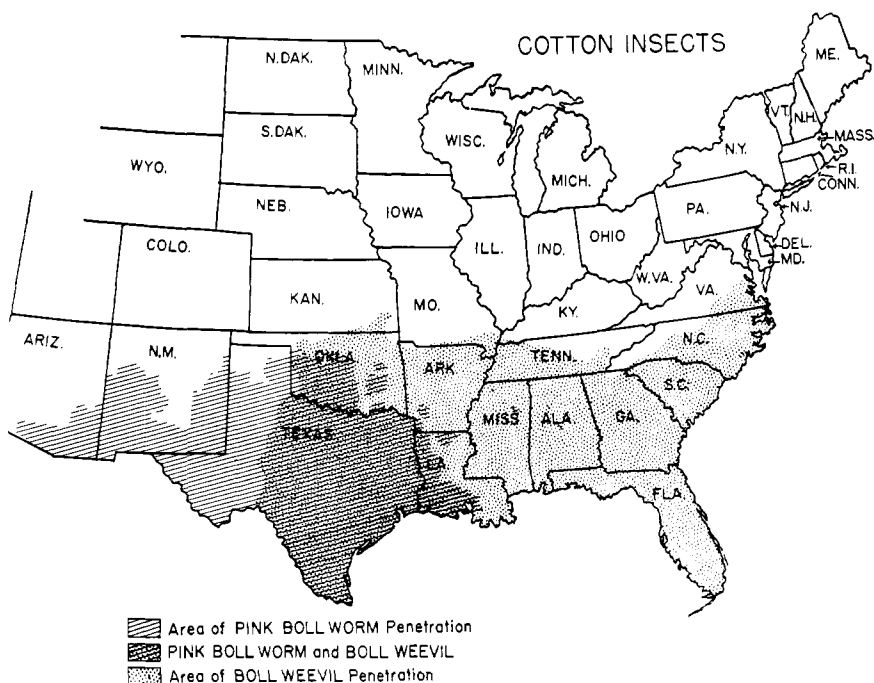
The pink bollworm infestation in southern Texas will probably be down again this year. Inspection of surface debris and bolls in the fields at the beginning of the year indicated a lighter infestation than the previous two or three years. In the north and central regions of Texas the frosts of January may have appreciably reduced the numbers of bollworms overwintering. The USDA does not have its survey completed but it seems possible that the pink bollworm will be down for the first part of the growing season.

Corn Borer

The European corn borer is now present as a crop menace in most of the north-eastern quarter of the country. Last year 11 states reported new infestations in 55 counties which had previously been free of the corn borer. The most heavily infested areas are the junction of eastern South Dakota, northeastern Nebraska, and northwestern Iowa and a band across the state of Illinois.

Army Worm

Army worm outbreaks are almost completely dependent upon weather



Source: USDA

Cotton Insects, Grasshoppers, Corn Borer, And Army Worm Still Major Threats

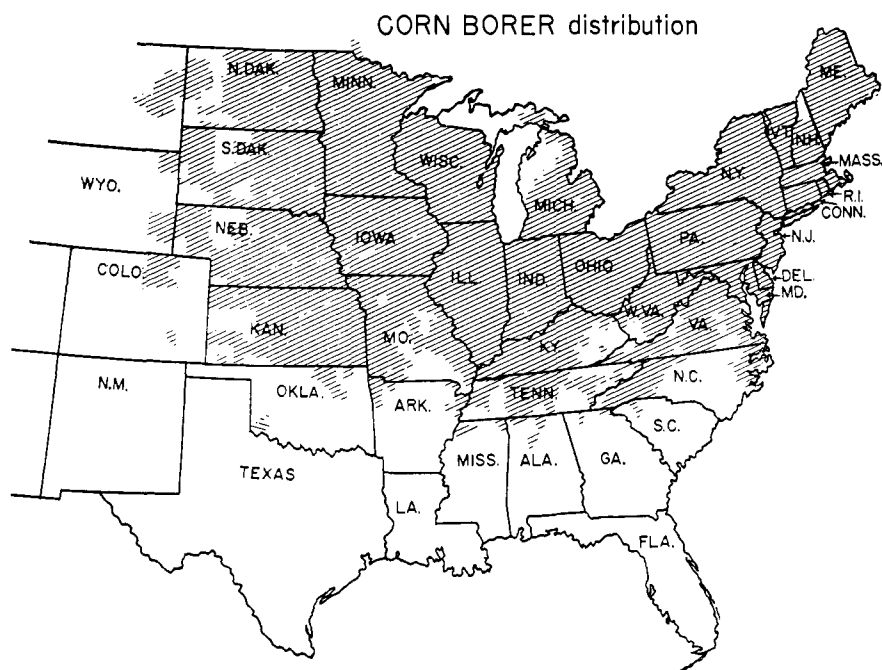
Generally it is still too early in the year to predict accurately the pests which will emerge as major problems this year. The weather in the various regions is perhaps the predominant factor in any insect outbreak. However, it is possible to estimate what might be major threats.

The cooperative insect report, issued by the insect plant pest control branch of the Agricultural Research Service, is a weekly survey of insect infestations by geographical regions of the U.S. This survey is the one centrally coordinated source on insect infestations for the U. S.

Cotton Insects

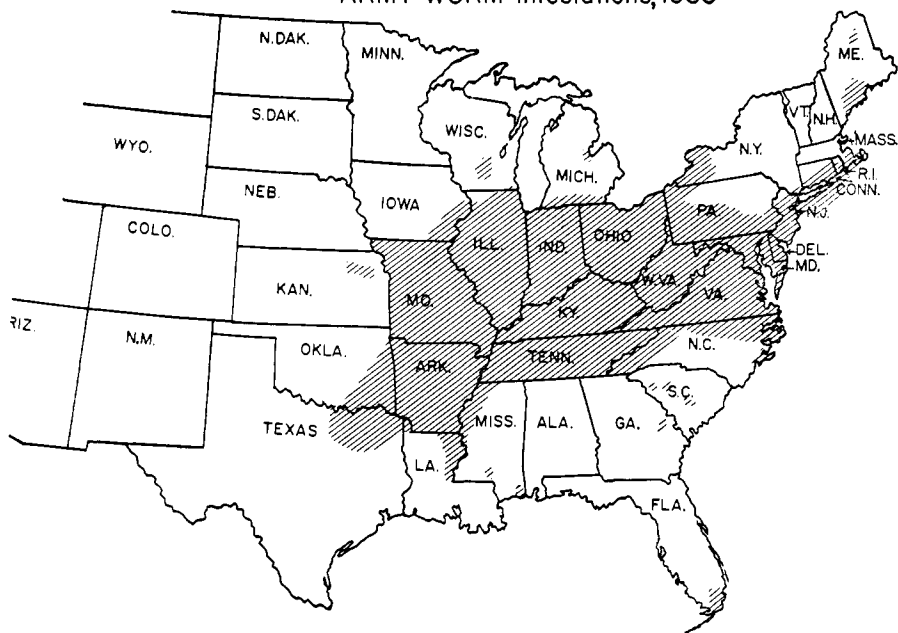
The boll weevil is still unchallenged as the principal insect enemy of the cotton crop. Better moisture conditions in the cotton region could be an indication that there will be a resurgence of the boll weevil.

For Georgia, hibernation counts made last fall indicated that the level of infestation was about 40% higher than the previous year. The general level of



Source: USDA

ARMY WORM infestations, 1953



Source: USDA

conditions. The cool wet weather last spring combined with the relatively mild winter were the major factors contributing to the outbreak of army worms throughout the Ohio-Mississippi Valley and the Mid-Atlantic Coast. The army worms generally move up from the midsouth in the spring. Both the army worm and the fall army worm are effectively controlled by DDT and toxaphene sprays and dusts.

Grasshopper

According to the USDA there are critical build-ups of grasshoppers in several areas of the West, including central New Mexico, south central Colorado, central Idaho, and the panhandle area of Oklahoma and Texas. Infestations serious enough to warrant a large scale control program on the range lands are reported for 13 western states.

The greatest increase in grasshopper populations appears to be in Missouri and Wisconsin. On the crop lands of the West the infestations are generally local and scattered.

The crucial factor in the grasshopper outlook for 1954 will be the effectiveness of the range land control programs. This campaign, aimed at killing off the first generations which hatch and breed in the waste lands in the early spring, generally holds the hoppers in check. However, there is always the possibility that under proper conditions they can break out into the crop lands in the late summer.

Mormon Crickets

Mormon crickets may also pose control problems in the western states.

According to the insect report about 122,000 acres of land in Montana, Utah, Nevada, California, and Washington are infested. Most of these build-ups are on the public lands, with the most serious infestation in parts of Utah. The USDA has scheduled a control program for the Utah area this spring.

In addition to the USDA insect report the following local reports were obtained by the AG AND FOOD staff in its industry survey.

The development of resistant insects may have an effect on this year's market for insecticides. Potato beetles and cabbage worms have developed a re-

sistance to DDT similar to the fairly well established strains of DDT-resistant houseflies. In the Midwest the clover insects such as the clover leaf weevil and grasshoppers and the grain insects; chinch bug and corn borer will probably be the major pests. The greenbug is considered to be a pest in the winter wheat region of Kansas, Missouri, Oklahoma, and the Texas Panhandle.

Some of the other insects which may give trouble in the Middle West include: chinch bug, Arkansas, Missouri, Illinois, and Indiana; corn root worm, Nebraska, Illinois, Iowa, and Kansas. The codling moth and red spider will be troublesome throughout the area. In the Northeast the gypsy moth is developing as a major threat to the trees in certain areas. Connecticut is anticipating a record outbreak. The codling moth, mites, and apple scab are also threatening the apple crop.

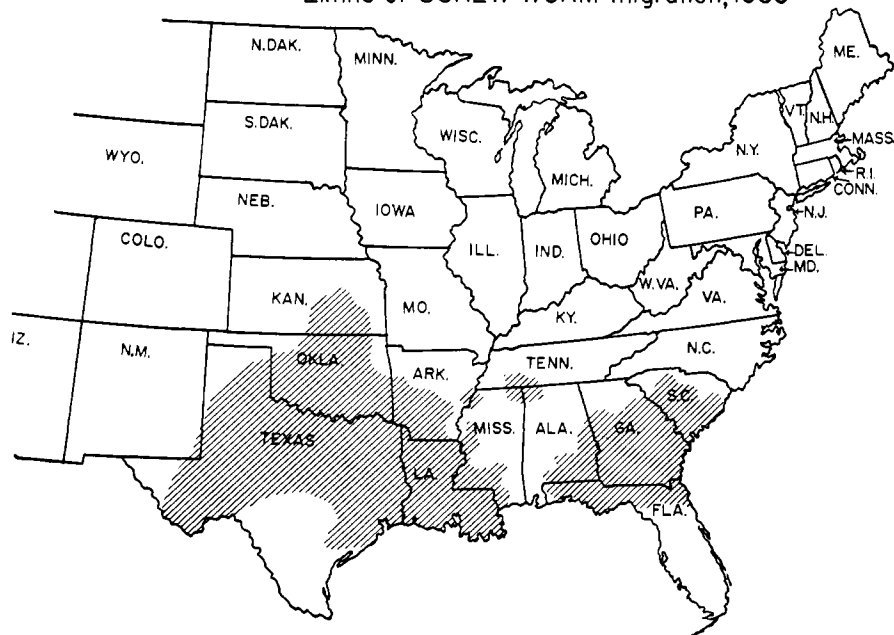
Screw Worm

The screw worm causes an estimated loss of \$15 million per year to livestock. The destructive pest is the larva of a fly which is somewhat larger than the housefly. The fly lays as many as 300 eggs on wounds in livestock. The maggots hatch from the eggs and feed on the flesh of the animal.

The screw worms cannot survive cold weather, and usually overwinter in southern Texas, Florida, and California.

Last year the screw worms were particularly severe due to the fact that they seem to have overwintered about 150 miles north of their usual range. The mild winter permitted the northward spring migration to begin a month ahead of normal.

Limits of SCREW WORM migration, 1953



Source: USDA

Principal Crop Insect Threats Based On 1953

	Ariz	Del	Ga	Ind	Kans	La	Mass	Miss	Mo	Mont	Nev	N. J.	New Mex	N. Car	Ohio	Ore	Pa	S. Dak	Tenn	Wash	W Va
Aphids	X	X			X	X	X					X	X			X			X		
Armyworms		X	X	X	X	X		X	X								X		X		X
Bollworm			X					X					X	X							
Boll Weevil			X			X		X											X		
Codling Moth					X		X		X			X				X				X	X
Cornborer			X		X		X								X		X	X	X		
Corn Earworm		X		X	X	X	X		X			X		X	X				X	X	X
Cutworm				X					X	X							X	X			
Grasshoppers				X					X	X	X		X					X			
Leafhopper	X	X		X								X			X		X	X			X
Lygus Bug	X									X	X		X			X	X			X	
Mites	X				X			X				X	X			X	X			X	
Plum Curculio			X				X	X									X				
Spittle Bug				X								X			X		X				X
Weevils			R			R				A				R		P		A		P	
Alfalfa A																					
Pea P																					
Rice R																					

Incomplete results of USDA survey

Systemics Promising but Not Likely to Take Big Markets This Year

Among new insecticide developments of the past few years, the systemic insecticides seem to be the most revolutionary and those which show most promise of developing a new type of approach to the battle against insects. But the systemics are not yet ready for the large scale markets. At present they have only specific or specialty uses and are not to be considered threats to the markets of the well known insecticides such as DDT, BHC, toxaphene, and others.

While the systemics are not yet really well developed, being only recently out of the research laboratory, there is another big barrier to be overcome before they gain major importance. They must overcome the legal restrictions regarding their use. They promise to reduce or eliminate outside hazards to harmless insects and to animals, thus offering a maximum of efficiency, with a minimum of hazard. However, to date they have been approved only for use on fruit trees, cotton, and certain other uses, but not for food crops. They are also being used with considerable success on ornamental plants.

Opinions vary on the trend in the markets for systemics this year. Some say that they will not increase this year. This idea appears to prevail in the East and in the Midwest. However from

the far West there is considerable opinion that there will be an expanded use of systemic insecticides in 1954. It was reported that systemics were used almost to the limit of their demand on cotton in California last year, and there was an excess supply. The heavy demand is only in cotton and it depends on mite infestations and to a smaller extent on aphids.

In the Southwest the greatest reported demand for systemics is in the irrigated sections. There it is predicted that consumption of Systox may increase by something up to one third during the current season.

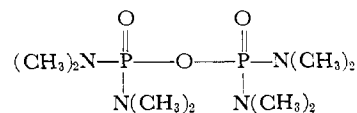
Current Development Promises Specialty Growth

Extensive data now are being accumulated on the effectiveness of the systemics for the control of certain pests not otherwise controllable and also on the degree of hazard associated with their use on various crops. It seems likely that these data will probably justify a number of valuable agricultural uses by showing that the major amount of the residue in food crops does not present a hazard to public health. The high prices of systemics also retards their increase as does the lack of wide spectrum of activity against chewing insects. The

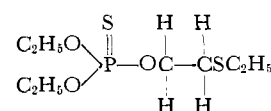
development of the newer products, the collection of information as to their activity and toxicity seems to support the rather general opinion that while systemics may not advance greatly in markets in 1954, they are likely to be a considerable factor by 1955 in special uses, particularly against mites, aphids, and certain mealy bugs.

A great deal of the basic work in systemics research came out of Europe, particularly from the laboratory of Gerhard Schrader of Farbenfabriken Bayer. The compound schradan has been named for him. Much development work has been done in Great Britain. Pest Control, Ltd., where development has been under the leadership of Dr. Ripper and I.C.I.'s Plant Protection, Ltd., are among leaders.

The two most promising systemics for



Schradan



Demeton