The Virginia Integrated Pest Management Program

Peanuts

IPM for Peanut Diseases

P. M. Phipps

Peanuts receive major emphasis because of the crop's importance to the economy of southeastern Virginia and the magnitude of pesticide use in crop management. In 1992, growers planted 93,000 acres of the crop and harvested an estimated 123,225 tons of peanuts with a value of ca. 79 million dollars in farm income. When coupled with the shelling, processing and shipping industries in the Tidewater region, peanut production is a major pillar of the economy in Virginia. In 1992, an estimated 22.6 million dollars were lost to diseases of the peanut. Such heavy losses were a result of unseasonably cool, wet weather and the high vulnerability of the crop to a wide array of pathogenic agents. As reflected in the following summary of IPM-related projects, IPM in peanuts has received major emphasis.

Virginia Pesticide Use Survey for Peanuts (P. M. Phipps, D. A. Herbert, Jr., and C. W. Swann):

This project evolved through cooperative work of extension specialists and county agents in 1990. Results of the survey have shown that pesticide input averages ca. 17 lb of active ingredient (a.i.) per acre in peanut production and costs ca. 118 dollars not including the expense of application. It is estimated that a total of 825 tons a.i. of pesticide was applied to the 97,000 acres of peanuts in Virginia at an estimated cost of 11.5 million dollars in 1990. Fungicides, herbicides, insecticides and nematicides account for 42, 31, 18 and 6% of the pesticide a.i. and 26, 30, 32 and 11% of costs. These data are providing a foundation for setting priorities in research and assessing risks associated with pesticide use in this decade. Funding for the project in 1990 was provided by NAPIAP.

Expanded Leaf Spot Advisory for Peanuts (P. M. Phipps):

Cooperative research with the Neogen Corporation of Lansing, Michigan resulted in the installation of the peanut leaf spot advisory program and a peanut heat unit program into the EnviroCaster®. The EnviroCaster® is a computerized weather monitor that can be programmed to provide information for improving the efficiency of crop management. Growers in cooperation with county agents evaluated 12 EnviroCasters in 1992 as a result of funding provided by the Virginia Peanut Growers Assoc. Inc., the Virginia Farm Bureau, the Peanut Soil and Water Conservation District, the Peanut Shellers Organization, independent growers and the agrichemical industry. Benefits of the leaf spot advisory in 1992 were a savings of two fungicide sprays; valued at 2 million dollars and 120 tons of fungicide active ingredient in an eight county environment.

Development of New Chemistry (P. M. Phipps):

Fluazinam: Improved use patterns for the new broad-spectrum fungicide, fluazinam, were developed for control of sclerotinia blight and other soilborne diseases of peanut. Cooperative research with ISK Biotech is currently directed at organizing the critical mass of data to achieve section 3 registration pursuant to requirements of the Federal Insecticide Fungicide Rodenticide Act. Commercial registration of fluazinam in Virginia would increase the control of sclerotinia blight from 35% to near 80%, and at the same time reduce the tonnage of fungicide to combat this pest by 50%. Value to the peanut industry is projected at $6 million annually through reduced losses to soilborne diseases. Preliminary toxicology reports on fluazinam indicate its chemistry should meet a zero risk for harm to man and the environment and residues in peanut meat, hulls or hay. This research is funded by ISK Biotech and the Virginia Peanut Growers Association, Inc.
**Ergosterol Biosynthesis Inhibitors:** Research on the ergosterol biosynthesis inhibiting fungicides (Folicur, Alto, Spotless, Tilt, Punch) for control of leaf spot diseases in peanuts and wheat were continued in 1992. Use of one or more of these fungicides would reduce the tonnage of active ingredient necessary for foliar disease control as much as 90% in each crop. On a pound for pound basis, this new chemistry is likely to have fewer non-target effects and present fewer hazards to the environment than currently used fungicides. Commercial registration of one or more of these fungicides may occur in 1993 or 1994. This research is funded by Miles Chemical Co., Sandoz Chemical Co., Valent Corp., Ciba-Geigy Corp., and E. I. DuPont de Nemours & Co.

**Biological Control Agents (P. M. Phipps):** Evaluations of biological agents (bacteria and fungi) for replacement of fungicides were continued in 1992. Tests focused on soilborne diseases of peanuts and cotton. Results added further support to previous findings that biological agents can provide significant disease suppression, but performance is not as consistent as that obtained with currently registered fungicides. Future work will focus on problems of consistency and seek to identify factors which influence performance. This research is funded by ISK Biotech & Lipha Tech.

**Predictive Models for Sclerotinia Blight (P. M. Phipps):**
A cooperative project with scientists at North Carolina State University, Oklahoma State University, and Texas A&M University was initiated in 1992 to develop predictive models for sclerotinia blight of peanut. Results of tests in Virginia showed real promise for application of these models to improve the timing of fungicide sprays to combat this disease. Tests in 1993 will focus on additional environmental parameters that trigger epidemics of disease and defining thresholds for fungicide sprays. This is a two-year project funded by the Southern Regional Integrated Pest Management Program.

**Frost Advisory (P. M. Phipps and D. R. Walker):**
Cooperative research with a meteorologist at the University of Virginia resulted in development and delivery of the first Frost Advisory Program for peanut growers in 1992. The USDA unit at the Tidewater Station supplied historical weather data for model development and testing. Following model development and validation, the program was presented to county agents and prepared for delivery to growers. The EMAIL network was used to send daily frost advisories to extension unit offices from October 1 to October 30. County agents in turn recorded these advisories on telephone answering machines for daily access by growers. A seven-day advance warning was successfully given for the first and primary killing frost of the season on October 20. Savings to the peanut industry may well have exceeded 1 million dollars. Developmental and operational costs for the program were funded by the Virginia Peanut Growers Association, Inc.

**Sustaining and Expanding the Outreach of Extension Programs (P. M. Phipps):**
In-service training programs, the disease-diagnostic clinic, peanut leaf spot advisory program, frost advisory program, field demonstrations, and other educational programs were funded by grants from the Virginia Peanut Board, the Virginia Soybean Board, the Peanut Soil and Water Conservation Board, the peanut shelling industry, and the agrichemical industry in 1992. The disease-diagnostic clinic at the Tidewater Station processed 250 specimens for growers in 1992. Several meetings and tours of research/demonstration plots were organized with specialists and agents to broaden the scope of grower education in use of new technology for disease management. The outreach of extension programs was further expanded through production of a video tape entitled *Control of Soybean Cyst Nematode in Virginia.*
Alternative Management Practices for Tobacco Thrips in Peanuts

D. Ames Herbert

History and significance of Problem: Each year, approximately 96% of Virginia’s peanut crop (ca. 96,000 acres) is treated with over 46 tons active ingredient of insecticides to control tobacco thrips injury. Annual cost to farmers is about $20 per acre, or $1,900,000 for the entire Virginia peanut belt. The insecticides most commonly used are highly toxic to non-target species and are applied in granular form, which increases the risk to some wildlife and foraging birds. Thrips is a rather unique insect pest in that it is ubiquitous throughout the peanut belt every year. Feeding causes plants to become deformed and stunted; stunting delays maturity and can significantly reduce yields, especially when combined with other plant stresses such as injury from herbicides or plant disease. Farmers are justified in using insecticides to control thrips but safer and more economical pesticides are needed.

Description of Program: A Virginia Tech IPM Research/ Extension program is ongoing to find, evaluate and extend new thrips control practices. To date numerous moderate-to-low toxicity products, applied using a variety of new mechanisms, have been evaluated in peanut fields throughout the eight county area. To be chosen for further testing, potential candidates must be less toxic and/or less expensive than traditional products, must demonstrate a high level of thrips efficacy, must maintain peanut yield, and be compatible with standard farm equipment.

Results: A new product has been found that meets all the criteria required for consideration as a thrips control alternative. The new product provides excellent thrips control, maintains high peanut yields, and is about 100 times less toxic to non-target species than traditional products. It requires 1/18 to 1/7 the total volume per acre, and costs 20% to 50% less than traditional products. The product can be applied either as a liquid, using a number of farm-compatible systems, or as a dry seed treatment. This new product is labeled by EPA for use in peanuts. After viewing results and field demonstrations, in 1992 local farmers applied new thrips practices to approximately 3,000 acres of peanuts. Based on these 3,000 acres, insecticide usage was reduced by 18,000 lb. and cost was reduced by $42,000. Both peanut yield and quality were maintained, and participating farmers plan to continue and increase the use of new practices in the coming season.