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The Extension Evaluation— An Overview

Interest in evaluation throughout the entire Extension system is currently running high. The initial report from the Congressional mandate in the Food and Agriculture Act of 1977 is available from State Extension Directors, SEA-Extension, and the Government Printing Office.

The product in the "plain brown wrapper" is entitled, "Evaluation of Economic and Social Consequences of Cooperative Extension Programs," USDA Science and Education Administration-Extension, Washington, D.C., January 1980.

Evaluation is no longer synonymous with investigation. The report details information about the uniqueness of Extension—the world's largest informal education system tied to research, teaching, and service in the Nation's land-grant college system.

The Cooperative Extension system combines the efforts of the U.S. Department of Agriculture and Extension Service in 50 States, the District of Columbia, Puerto Rico, the Virgin Islands, and Guam. Its resources currently exceed \$629 million in support from federal, state, and county governments; nearly 17,000 professionals, 10,000 program aides, and several hundred thousand unpaid volunteer leaders. There is a Cooperative Extension Service office in virtually every county in the United States.

Why did Congress mandate a report of such a long-established, highly recognized, widely dispersed program delivering informal education to the majority of the farms, ranches, and homes in America?

Was the purpose to verify the efforts of the complex Extension programs? Was it to judge the degree of success or failure to achieve goals more sharply defined than the language of the Smith-Lever Act? Was it to improve program performance? Or, was it to help in the budgetary process?

Read the evaluation report for insight into the Extension system. It will tell you that Extension has contributed to the strong agricultural base in America that provides an abundance of food for consumers at a reasonable price. Farmers, ranchers, suburban, and city people contact Extension as a recognized source of sound technical information about agriculture and natural resources.

In home economics and nutrition, a Gallup Poll showed 17 million persons—approximately 10 percent of the U.S. adult population—have participated actively at least once in some aspect of these Extension programs.

The overwhelming number of 4-H participants is the most visible indicator of the impact of 4-H. More than 4 million youth have participated in one or more of the many 4-H activities. Over one-half million adult volunteer leaders helped conduct these activities.

Extension's Community and Rural Development programs have served about 10 percent of the 60 million people in rural America in the roles of educator, catalyst, convenor, and coordinator.

With critical national concerns such as energy, health, nutrition, inflation, natural resource management, food security, and family structure arising, the kinds of

questions asked about long-established Extension programs are changing.

No longer can a budget be defended or increased simply by reporting how many participated. The current question is "So what?" Impacts of economic and social consequences are a new addition to the tools local, state, and federal decisionmakers are using.

Plans to build an ongoing Extension evaluation capability are already in motion. The Extension Committee on Organization and Policy (ECOP) has a task force working to address accountability and evaluation. The process of identifying critical issues for study has been initiated on a pilot basis. Narrative reporting in critical areas such as energy, inflation, nutrition, leadership development, and service to handicapped is to continue on a broader scale.

But most important in program building is reinforcing evaluation in the overall program development process. The process proven over time includes:

- identifying problems and selecting long-range objectives
- identifying the target audience
- planning and budgeting for the job at hand
- conducting Extension activities in a cost-effective manner
- evaluating what happens to people
- relaying the evaluation results with subsequent information to decisionmakers at the local, state, and federal levels.

As Extension educators, who are we accountable to? Ultimately to society as a whole.—Mary Nell Greenwood, Administrator, SEA-Extension, and Bob Frary, Extension Program Evaluation Specialist (IPA).

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extension review

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Mount St. Helens Expands AGNET Boundaries

Ellen Pomerantz
SEA Information Staff
Washington, D.C.



Photo courtesy Forest Service, USDA.

Since Mount St. Helens first erupted, AGNET, a Nebraska-based computerized information system originally designed to aid farm management, has been providing a vital communications link between Washington's devastated areas and USDA.

When the volcano's destruction disrupted normal communication channels, the Washington State University Cooperative Extension Service (CES) began disseminating information through the AGNET "Mailbox" program to USDA, county Extension offices, the Associated

Press, and United Press International.

"When the ash began to fall, Washington State University (WSU) was in the process of going on AGNET," said Terence L. Day, agricultural research writer at the WSU information office in Pullman, Wash. "We had terminals in the Extension director's office, and at outlying stations in Puyallup and Prosser, but none in any of the county offices. AGNET proved to be a boon by speeding our communication with other states and federal agencies that are on the system," he continued.

Information carried on the "Mailbox," according to Pat Ebmeier, AGNET user services supervisor at the University of Nebraska-Lincoln Institute of Agriculture and Natural Resources, includes volcanic ash composition and its effects on the human respiratory system and precipitation, recommendations for irrigation and crop cultural practices, and crop and livestock damage estimates.

The AGNET "Mailbox," originally a general-use electronic mailing list, acquired "recipient additions as a result of USDA requests after the eruption," said Ebmeier. USDA installed an AGNET terminal, "AGNET One," to tie-in Secretary Bergland in Washington, D.C., within several days, he said.

USDA used another general-use program, "Newsrelease," to announce a month-long extension to Washington farmers whose government price support loans expired May 31 and to provide information to the public about disaster loans through the Farmers Home Administration.

USDA is "looking into the

possibility of continued use of 'Newsrelease' as a means of disseminating news releases into state departments of agriculture," said Greg Carnill, program analyst at the Office of Intergovernmental Affairs, which coordinates all disaster assistance programs in USDA.

AGNET Aids Farmers

AGNET began in 1975 as a Nebraska project funded by the state legislature and implemented through Extension. Its original purpose was to help Nebraska farmers sharpen their production and marketing practices in order to survive increasing costs and low prices.

In 1977, the Old West Regional Commission expanded funding to include the five states in its region: Nebraska, North and South Dakota, Montana, and Wyoming. Since then, Washington has also become a partner state.

AGNET contains more than 100 programs available through about 500 terminals nationwide, said Ebmeier. Most of the terminals are located at Extension offices, land-grant universities, and by private businesses in the partner states. However, there are many "external" subscribers outside of the Old West Region.

Perhaps the most popular program, according to Ebmeier, is "Feedmix." It balances feed rations — meeting all nutritional requirements — and combines the most economical feeds possible. Ebmeier said that if the farmer is balancing rations well by hand, up to \$5 can be saved for every ton of feed mixed using the least cost ration formula. This formula was used more than 44,000 times last year, he said.

Another popular program, "Irrigate," helps the farmer determine

how much irrigation water to apply. With this irrigation schedule, the farmer can pump up to one-third less water without yield loss, Ebmeier said.

Most agriculture programs have been developed by teams of specialists at the University of Nebraska-Lincoln and other land-grant universities. Teams use current research findings and personal experience to provide management analysis of complex agricultural problems. Although research is based on averages, the programs are customized, said Ebmeier.

"When researchers come to us with a program, it must be user-proof," explained Ebmeier. "The computer must be patient and understanding with its users. A farmer has to be able to type 'help' if he needs more information."

A farmer interested in using AGNET can give a program a trial run at any Extension office that has a terminal. Ebmeier said that the programs are easy to use and Extension agents help the user through a trial-and-error process.

If the user wishes to subscribe to the service, he or she can use the terminal for \$8 to \$10 an hour. There is also an hourly charge of \$8 to \$12 for use of the WATTS line that connects the terminal to the main computer in Nebraska. Programs usually do not take a full

hour to run, said Ebmeier, and "external" users can use their own terminals.

Educational Programs

In addition to agriculture programs, Extension home economists have inserted their own programs into the network. The most popular is "Diet-check," which tells people in workshops, supermarkets, and county Extension offices if their diet is balanced. There is no charge to the user for this service. It is part of Extension's ongoing educational program.

Many educational AGNET programs are also used in Nebraska elementary schools. Reinforcement quizzes and drill routines help children learn their 3 R's, geography, and history.

"These programs give children the instant encouragement and kind of corrections that teachers don't always have time for," Ebmeier said.

The vocational-agriculture departments of many North Dakota high schools study agriculture-related programs. AGNET educational programs are available to all subscribers.

Although Mount St. Helen's eruption has expanded the boundaries of AGNET, farmers in the system's Nebraska birthplace can also utilize the information that it is providing from Washington. Data on the economic results of crop losses could be extremely important to Nebraskans because of its impact on commodity prices, said Al Stark, AGNET regional supervisor at the Institute of Agriculture and Natural Resources. This information could be especially helpful in making marketing decisions, he said. □

(Editor's Note: the Department of Agriculture Communications, CES, University of Nebraska-Lincoln contributed information to this article.)

Information System Gives Farmers a "Green Thumb" (1-4)

Randy Weckman
Extension Information Specialist
University of Kentucky

In March 1980, Bill Giltner's life became easier. He joined 199 other Kentucky farmers in using the Green Thumb Box (GTB) system, a computer-assisted rapid information delivery system.

Designed to aid farmers in their decisionmaking routines, GTB links individual farmers with data from the University of Kentucky College of Agriculture, the National Weather Service, the Chicago Board of Trade, and the Mercantile Exchange.

Simplistically, the system operates this way: agriculture-related data are entered into a main computer in Lexington and relayed to a county microprocessor by telephone lines. Then, farmers select information to view on their television screen from a master menu of topics and call the county computer to request the information. This information is transferred to their own "Green Thumb Box"—about twice as big as a cigar box—and then appears on the screen of their television set. It all happens within seconds.

Farmer Response

Bill Giltner is happy with the new system. In May, he was able to profit \$2,800 by using the system for making corn futures transaction decisions. Although the information he received via the system was available elsewhere, Giltner says the ease by which he was able to obtain it made a clear difference to him.

"I watch the futures market daily for trends," Giltner says, "and when things look right, I start monitoring the market at hourly intervals. I could get the information by making hourly calls to my broker, but with the Green Thumb Box, my wife can watch the market while I do other things. It's a lot easier with the computer," he says.

Since the project began 5 months ago, other farmers share Giltner's enthusiasm. During the first 22 days in May, the 200 farmers participating in the project called up information on the system 3,600 times requesting nearly 15,000 pages of data. Weather and marketing information constituted the bulk of the requests.

GTB is a joint effort of USDA, the Kentucky Cooperative Extension Service (KCES), and the National Weather Service. Plans for the project began about 2 years ago with a \$300,000 grant to test the concept from SEA-USDA and the National Oceanic and Atmospheric Administration (NOAA).

Currently, 100 farmers in Todd and Shelby counties, Kentucky, are using the system and serve as an evaluation panel for it. These farmers were selected from all strata and farm types to represent their total population. The first evaluation of the project will continue for 1 year, until March 1981.

Possible Expansion

John Ragland, KCES associate director, says GTB's potential is just beginning to be tapped.

"Right now, the system is an information delivery and transference system," Ragland says. "However, with a few modifications,

the system could become a data processing apparatus for farmers to use in formulating least-cost rations, crop allocation planning, and the like. The possibilities seem almost limitless," he continues.

Giltner echoes Ragland's prognostications. "Farmers have to have timely information for decision-making now that we are involved in chemical controls," he says. "Marketing, too, is very sophisticated now and if farmers are to maximize profits, they need to have easy access to continuously updated information," Giltner continues.

"If the Green Thumb Box System were not available from the Cooperative Extension Service, I would pay to receive information that is useful," he added.

Plans at the end of the first year are to expand the project to five states, with 10 counties in each state trying the system on a pilot basis.

Available Information

Information contained on GTB includes:

- 3 • [marketing] information from Chicago Board of Trade and Mercantile Exchange Wire Services—updated every 15 minutes
- 4 • [weather] information including local and state short-term and extended forecasts from National Weather Service Wires—updated almost continuously
- timely recommendations from Extension agriculture, home economics, 4H and community development specialists—updated as needed
- local announcements and information from Extension agents in each of the counties—updated as needed. □

Extension Promotes Sunbelt Farm Expo

Janet Rodekohr
Extension News Editor
University of Georgia

Razzle-dazzle "show biz" and salesmanship rouse the South under the big tents of the Sunbelt Agricultural Exposition near Moultrie, Ga., for 3 days every October. And the Extension Service sets up the tents.

Now in its third year, the expo drew crowds of 140,000 in 1978 and 175,000 last year. The crowds came from all over the United States to see 80 acres of more than 500 static exhibits, 455 acres of demonstration cropland, and a consumer and family living show with nearly 100 exhibits and an 800-capacity tent for live stage presentations.

As the show grows in popularity among both farmers and agribusiness exhibitors, it has triggered cooperation among communicators in Extension, experiment stations, the media, and business and industry. This cooperation is only one phase of the opportunities Extension's big farm show has produced for Extension workers in every field, from the agronomists using the site for test plots to county agents filling up buses headed for the expo.

Beginnings

Joe Burnside, agriculture and forestry coordinator at the Extension Service's Rural Development Center in Tifton, says he conceived the expo when he saw a void in Southern agriculture. Southern farmers had nothing comparable to the big Midwest Farm Progress Show or other Midwestern and Eastern farm shows. Instead, they looked to small commodities shows like gin expos and soybean meetings. No one had attempted a full-blown general farm show.

But Burnside was the only one who thought it would work. The coordination the expo demanded

looked too unmanageable to most people involved.

That wild idea pulled in people primarily from Georgia, Alabama, Florida, North and South Carolina, and Tennessee. And based on license plate checks and sign-up sheets in exhibit tents, every state in the Union and several foreign countries were represented. This multi-state aspect of the show has presented the Georgia Extension communications staff with a chance to try in practice what Extension staffs should do in theory.

Exhibiting Communications

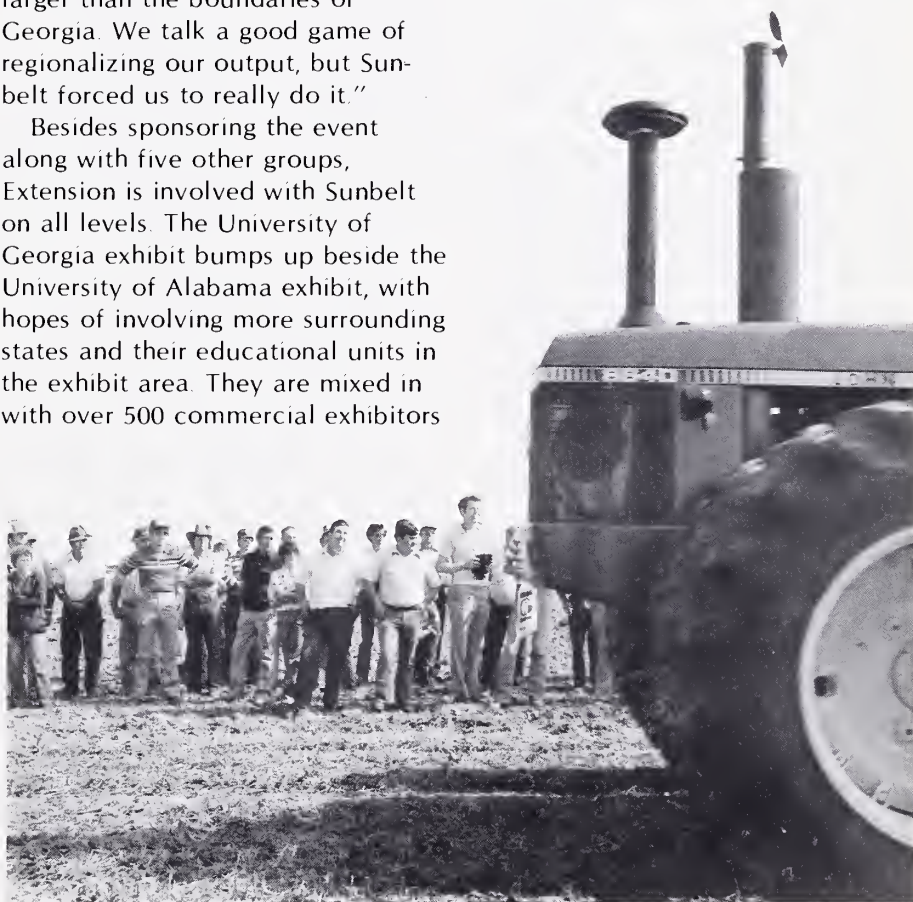
Randall Cofer, Extension communications department head, says, "The Sunbelt Expo taught us to think larger than the boundaries of Georgia. We talk a good game of regionalizing our output, but Sunbelt forced us to really do it."

Besides sponsoring the event along with five other groups, Extension is involved with Sunbelt on all levels. The University of Georgia exhibit bumps up beside the University of Alabama exhibit, with hopes of involving more surrounding states and their educational units in the exhibit area. They are mixed in with over 500 commercial exhibitors

who sing to, shout at, cajol, and entice the crowds to their exhibits through entertainment, colorful displays, and sign-ups and giveaways.

These exhibitors add a new form of communications to an otherwise straight Extension educational program. They have a selfish motive — to attract crowds, especially an agricultural audience. So they respond quickly and creatively to Sunbelt promotions and releases through in-house publicity and dealer promotion.

"This is not a fair or carnival crowd," says one exhibitor describing the expo crowds. "These people have come to learn and





Georgia Extension communicators, Bob Molleur, film editor, left, and Kathy DeMarco, TV editor, opposite, linked the Sunbelt Expo with the media.

conduct business. They're knowledgeable; they ask questions; they listen intently to our explanations. It's the kind of crowd you always wish you could have."

That's called targeting information to a specific audience, and the success of the communications effort to zero in on an agricultural group comes through the gates every day Sunbelt is open.

To convince the target audience that Sunbelt was worth the gas, money, and time, the media had to have something to sell. Its bread-and-butter attraction is the tillage and harvest demonstrations. Extension specialists and experiment station researchers work side-by-side on research plots and demonstration cropland planted with corn, cotton, soybeans, peanuts, and Callie bermudagrass. The demonstrations, conducted twice a day during the 3-day event, draw thousands out to the fields as mile-long lines of heavy equipment stand ready to prove their handling and harvesting abilities in the field.

Exhibitors hammer away at persuasive agribusiness arguments amid entertainment by rock and bluegrass bands, variety shows, magicians, and a circus from Florida. This combined with the field plot work and demonstrations keeps farmers happy for hours.

The factor that rounds out the expo is the consumer and family living program. This huge tent area offers continuous stage productions to entertain and educate tired Sun-

belters, presenting talented 4-H'ers, Extension specialists talking about houseplants or fashions, cooking schools, and many other educational programs. Once again, the exhibitors under the tent make sure customers and dealers know about Sunbelt.

So we have the Extension communications department at work, exhibitors spreading the word to their people, and the media ready to cover a newsworthy event. But it didn't just happen.

Media promotion

When the Sunbelt Expo first moved from the planning board to the show site, it was a job to convince the primary people involved that it would work. Few previous farm shows attracted more than 10,000 people, so media people looked skeptically at releases from the Extension service promising over 100,000 for their first expo. But as most Extension workers will agree, if you sell the media, you sell the program.

Most of the media people questioned it, then hesitantly ran some releases and watched. The 140,000 people at the gates that first year proved the time was ripe for a multi-state general farm show.

Based a great deal on the exhibitors' promotions, the media's response, and the full support from *Progressive Farmer* magazine, which cosponsors Sunbelt, the first year's try played to the crowds it wanted.

The second year, the coordination of the communications efforts slipped into more efficient working order. A publicity committee keeps its finger on the operation, and the makeup of that committee bears out the complex cooperation involved. Dianne Newton, working full time with Sunbelt under an Extension

title, is the tie that binds many of the loose communications ends. She keeps track of all communications levels, including press releases, promotional Sunbelt caps and bumper stickers, and monthly communication with exhibitors and visitors.

Her voice on the committee joins with a representative of the Rural Development Center, near Tifton, in which 45 specialists take an active part in the research and day-to-day farming operations at the Sunbelt site.

The Coastal Plain Experiment Station, also near Tifton, has many of the same interests. Communications editors from both Georgia and Alabama speak for their media contacts, while *Progressive Farmer* sees that its advertising and editorial pages benefit from Sunbelt's operations.

The Abraham Baldwin Agricultural College, located in Tifton, also has a representative.

The Goldkist public relations director brings in the business and industry viewpoint, joined by a Georgia Farm Bureau representative. The government officials have their say through people from the Georgia Department of Industry and Trade and the Georgia Department of Agriculture.

From these vantage points, all angles are covered and Sunbelt gains mutual support. For instance, Goldkist offered the services of its public relations staff to help Extension editors produce public service announcements (PSA's) on Sunbelt.

The business people review in-house publications and dealer promotionals aimed to spark exhibitors' participation in the Sunbelt effort. Coordinator Newton

also adds to direct promotional contact with dealers through a monthly mailing to exhibitors called "Countdown," which lists an update of the number of exhibitors, the nuts-and-bolts information on tents and power units, hotel accommodations and travel agencies, and other facts and figures. With promotion comes caps, jackets, bumper stickers, and a flurry of brochures designed for visitors or prospective exhibitors. Newton designs all these and keeps track of where they're going and who should be on the list.

The general coverage of the event falls on the Georgia Extension communications department, and their production turns into a blitz as October approaches. Regular newspaper mailings to both Georgia newspapers and major newspapers in Florida, Alabama, Tennessee, Mississippi, and North and South Carolina start in June and end with a follow-up story shortly after the expo gates close in October.

The farm press people get their releases earlier, since many of them operate with a 2-month deadline. Monthly packets, special mailings, and photos reach them starting in April.

The farm press coverage of Sunbelt is unique because most other large farm shows are almost totally sponsored by farm publications that tie in the event with their advertising pages and editorial sections. In these cases, exhibitors must run up a certain amount of advertising in that publication before they earn tent space. However, at Sunbelt the tent space is available at a minimal fee through Sunbelt, Inc. Although the expo is jointly sponsored by *Progressive Farmer*, it is considered primarily an

Extension show. Consequently, other farm publications cover it and offer their editorial pages for Sunbelt news even though they may compete with *Progressive Farmer*. They see it as an Extension show rather than a competitor's advertising show.

On the airwaves, all 315 Georgia radio stations get the word on Sunbelt through regular radio programs and special releases. Also, television stations can set up exclusive interviews with one phone call to the communications staff. Slide shows and films produced on Sunbelt can reach audiences through either the communications department or the Sunbelt office.

Expanding State Boundaries

This information also goes out to other state Extension directors and information staffs, who pass it on to their media contacts and county agents. In fact, other communications staffs and county agents throughout the region play a key role in reaching target audiences. For the first few years, Sunbelt communications staff concentrated mostly on Georgia, with some emphasis on nearby Alabama and Florida. However, in the third year the planners are pushing for wider emphasis, requiring more cooperation.

"Our company is backing Sunbelt completely," says Jean Rice, public relations director for Goldkist. "We're stuffing 40,000 Sunbelt brochures in our invoices this month, but it's really going beyond Georgia now, and it must."

The target audience outside the Southeast may not be sure what the Sunbelt Expo is, but the media people located throughout the country are aware of the rumble it's making down South. Over 60 media



people from national publications as well as radio and television stations and newspapers signed in at the media room during Sunbelt last year.

They included reporters and crews from *Doanes Agricultural Report*, *Citrus Vegetable Magazine*, *Wallace Farmer*, *Soybean Digest*, and *Irrigation Age*. *The Atlanta Journal and Constitution* and the Associated Press sent reporters and photographers. Orion Samuelson of WGN-Chicago broadcast from the Sunbelt site.

Media headquarters provided daily press packets, a sound-proof radio station, a typing room and several typewriters with telephones for the press staff, and a well-stocked coffee room. Frank McCain, cochairman of the publicity committee and department head of Abraham Baldwin Agricultural College, coordinated the operation.

To prove the rumor of Southern hospitality, media people were also treated to a kickoff Sunbelt breakfast opening day and a grand finale steak broil the last evening, both prepared by Virgil Adams, Extension editor.

Is it worth it? Cofer looks at the time his staff spends pumping life into Sunbelt and he never flinches. "It's a matter of professional growth," Cofer says. "It's brought us some vital media and business contacts. And it's show biz. When you get down to the bottom line, it's the old razzamatazz to sell the product, and I don't know anyone in the department who doesn't enjoy it." □

Extension Trains Pesticide Applicators

Stu Sutherland
SEA Information Staff
Washington, D.C.



Over 2 million private and commercial pesticide applicators have been certified by state Cooperative Extension Service (CES) training programs since 1976.

The result of Congressional order, the programs are based on standards set by the Environmental Protection Agency (EPA) to ensure the safe, effective use of certain potentially dangerous pesticides. CES programs in each state, subject to EPA approval, train applicators to meet these standards. (For details on the program's initiation, see *Extension Service Review*, Vol. 46, No. 4, July-August 1975.)

In most states, commercial applicators demonstrate their competency through examination; private applicators may or may not take actual tests, depending on the provisions of the various state laws.

An examination for a commercial trainee tests him or her on ten general categories: seed treatment, forest pest control, agricultural pests, ornamental and turf pests, aquatic pests, right-of-way pests, pests encountered by regulatory workers, public health pests,

demonstration and research worker pest control, and industrial, institutional, structural, and health-related pests.

The standards for private trainee tests were designed to reflect a practical knowledge of pest problems and pest control practices associated with agricultural operations, proper storage, use, and handling and disposal of pesticides and containers, as well as legal responsibilities.

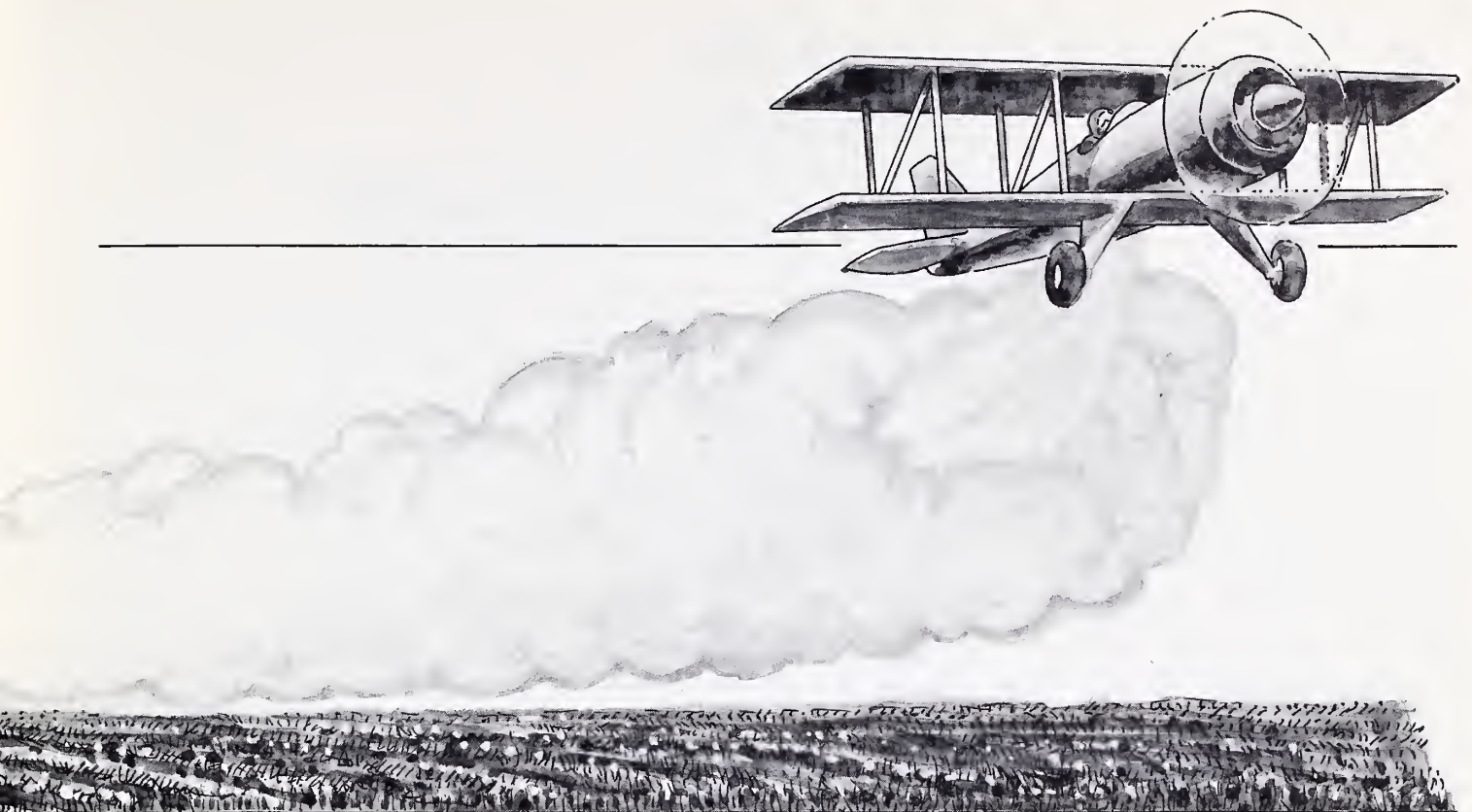
In addition to initial certification, each state plan includes provisions to ensure that certified applicators continue to meet the requirements of changing technology and demonstrate a continuing level of competency through recertification training. Many states have already begun updating training programs, as well as encouraging attendance at ongoing conferences, workshops, and other educational programs approved by universities, associa-

tions, and the using industry.

The programs and teaching tools used by each state vary somewhat to meet regional, state, and local needs. Five states—representing different geographic areas—that have developed such programs include: *North Carolina*, where program effectiveness has been tested; *New York*, where population concentration creates training need differences; *Nevada*, a sparsely populated desert area; *Hawaii*, with unique characteristics that truly set it apart from other regions; and *Indiana*, situated in the middle of the Corn Belt.

North Carolina

The 4-hour North Carolina session takes trainees through eight topics, in 30-minute lessons per topic. The topics are presented using a state-developed program based on EPA training materials. Each lesson is reinforced with questions and answers as well as visual aid presentations. In addition, the agent-instructors for each class discuss important pest problems and solutions in the county where the



class is being held. The classes range in size from 20 to 50 participants and are conducted by local CES county pesticide coordinators in each of the state's 100 counties.

From 1974 to 1979 in North Carolina, more than 8,000 licensed commercial applicators and pesticide dealers were trained by the CES program. It is estimated that over 800 "new" persons in commercial categories will continue to need training for certification and licensing on an annual basis.

Commercial applicators and pesticide dealers attend 2-day schools and learn the "core" material developed for commercial applicators by EPA-USDA—plus the 10 major categories listed earlier. In addition to these categories, North Carolina has added a training and testing category for restricted use pesticide dealers and one for serial applicators.

The North Carolina Department of Agriculture, the lead regulatory agency, offers exams in all areas of licensing at the end of each training

period. These must be passed before the lead agency licenses trainees.

The 4-hour private applicator training program of North Carolina was selected as the first to be comprehensively assessed for the effectiveness of its format. The assessment, developed and conducted by the Educational Testing Service of Princeton, N.J., was funded by EPA.

The study, begun in December 1977, was conducted with volunteer training program applicants who were residents of 10 North Carolina counties. It involved both interviews with approximately 200 people and special testing devices.

This study showed that training increased participants' pesticide knowledge and influenced how they used chemicals. However, participants did not always follow all of the important points presented in training.

According to the study, training was most successful in encouraging participants to refer to labels for information on pesticide use, to mix and load the chemicals in a place chosen to reduce the chance of an accident, and to properly dispose of empty containers.

However, it was less successful in teaching trainees to clean and store equipment properly, calibrate equipment at the start of each season, use exact measures and recommended amounts when mixing pesticides, wear protective clothing, and give safety instructions to other people who use their application equipment.

The assessment concluded that the training program increased participants level of pesticide knowledge and use. Also, the study included a follow-up test that shows knowledge lasted over an 11-month period.

Before they started training, study participants said they thought the program would be beneficial, but after they completed training their attitudes toward the program were even more favorable.

New York

There are some similarities between the pesticide applicator training program in North Carolina and the New York CES program at Cornell University. Trainees use prepared "core" training materials, but the New York program consists primarily of self-study of the core manual—with 250 self-study questions.

The self-study, plus a minimum 4-hour class "contact"—which includes a 20-minute color film and two slide sets and discussion by county Extension staff—is completed before a closed book examination is taken. A trainee must pass the examination to certify as a private applicator, but needs specialized category training to be certified as a commercial applicator. The examination and certification are monitored and given by the state's lead regulatory agency, the Department of Environmental Conservation.

New York's training coordinator, James E. Dewey, reports that plans for recertification of applicators were completed in 1979 by the lead agency and Extension. They call for field Extension staff to conduct initial certification training in the counties, but leave the responsibility for recertification training in assigned specific use categories to the state lead agency, industrial

associations, suppliers, and Cornell University.

A quick comparison between North Carolina and New York's training loads for the category of applicators who do industrial, institutional, structural, and health-related pest control work dramatically shows the scope of the problem of training applicators in a major metropolitan area.

From the first of October 1978 to the end of September 1979, North Carolina trained 214 persons for initial commercial applicator certification while the New York program trained 2,343 for initial certification and 4,500 for commercial recertification. Each had a total of about 14,000 persons trained for recertification.

Nevada

During the same 1978-1979 training period, a five-person training team from the University of Nevada in Reno held training sessions in seven locations across the state. Seven hundred thirty-five commercial and 270 private applicators were trained—175 in the industrial specific-use category. Nevada has added three categories to the 10 originally listed: fumigation, mosquito control, and predator control.

The Nevada program requires that applicators obtain their initial certification by written examination. Then each applicator may renew that certification by applying to the lead agency, the Nevada State Department of Agriculture. Starting in 1981, persons must be recertified by examination every 5th year.

The state training team consists of an entomologist, a plant pathologist, an agronomist, a pesticide specialist, and a representative from the state lead agency. They hold 16-hour

training sessions for both private and commercial applicators. Their training program—anticipated for completion in 1981—will be produced as a self-teaching presentation with slides and sound.

During the spring of 1979, the Nevada training program was incorporated into a college pesticides course at the university. It trained and certified 21 commercial applicators.

Several high schools throughout the state are using all or part of the training program in their Future Farmers of America (FFA) activities, reports Harry G. Smith, state training coordinator.

Hawaii

Because Hawaii is our only island state, Barry Brennan, the state pesticide training coordinator at the University of Hawaii, faces program development problems quite unlike those of other states.

Hawaii has four counties. With other county Extension programs understaffed, the state temporarily appointed people in three of the counties to act as coordinators of training program activities. They also hired resource people to help solve problems related to pesticides, including assisting in the calibration of application equipment.



Because of the differences in crops, pests, and pesticide regulations in Hawaii, the coordination team quickly found that materials prepared for training efforts in other states often had limited value to them. As they developed their program in 1976, 20 specialists from state agencies held a planning workshop. This resulted in supplementary training materials on pest control problems unique to Hawaii. A newsletter—*The Pesticide Label*—is now an integral part of the recertification process and is the only source of information on changes of pesticide laws and regulations specifically affecting Hawaii's applicators.

The State Department of Agriculture, as the lead regulatory agency, certifies the applicators. The Vector Control Branch of the State Department of Health develops training materials and examinations for all applicators engaged in public health pest control.

Private applicator training in Hawaii requires 6 hours given in two or three evening sessions to accommodate farmers and ranchers. Commercial applicator training requires from 16 to 20 hours. During the last training period (1978-1979), 899 private applicators received either initial or recertification training, while 329 commercial applicators were trained.

Indiana

The Indiana training program is closely synchronized with the certification program administered by the Office of the State Chemist, the lead agency. The private applicator training is conducted by nearly 100 trained county Extension agents across the state.

Each training session follows a standard format that includes discussion, a core training manual, and supportive visuals and pamphlets. Trainee worksheets cover the eight principal standards for certification already described. Material presented in training is tailored to the needs of county farmers and the chemicals used in the various parts of the state.

Each private applicator trainee completes a comprehensive worksheet that is collected by the Extension agent, who mails them to the state chemist for review. A certification "permit" is issued by the lead agency that is valid for 3 years.

Training for Indiana commercial applicators normally involves 3 days: 1 day for "core" subject matter; 1½ days for category-specific subjects; and the final half day for examinations. Beyond the core material, worksheets are used for pesticide labeling, calibration, and dilution in the commercial training. Indiana uses a system of category leaders, involving 10 different Extension specialists, who help organize and conduct the various category sessions.

The lead agency administers a closed-book examination with 90 questions on core material and 60 questions on category-specific subjects. Certification for commercial applicators is also valid for 3 years.

Indiana's program gives applicators Continuing Certification Hours (CCHs) when they attend ongoing conferences, seminars, workshops, and other meetings that relate to pesticides. The Extension's Training Advisory Group on Continuing Certification reviews all proposed programs to determine if CCHs should be awarded. Enough of these programs are made available so that an applicator can attend one or more meetings a year.

Since 1981 will be the first year private applicators need to renew their certification, training sessions 2 or 3 hours long will be scheduled during next fall and winter. County agents conducting the sessions will concentrate on topics that need special attention: calibration, farm storage, fumigation, and some specific procedures to use with restricted use pesticides.

John V. Osmun, who was responsible for the development of National Certification Standards when he was director of EPA's operations, is the state pesticide training coordinator in Indiana. He had estimated that over 5,000 commercial applicators would renew their certification through the CCHs method during the first 3-year cycle. Latest figures show that some were recertified through examination, but the majority had accrued enough CCHs to satisfy their requirements. □

Livestock Expo and Kids—An Unbeatable Combination

Jayne Marsh
Information Coordinator/4-H Youth
Michigan State University

Kids and animals have long been an unbeatable combination, especially in 4-H. Since the founding of the youth program, livestock and young people have been a popular and successful union.

In Michigan, that age-old tradition of 4-H'ers and animals has become the focus of a new, fun-filled learning activity called the Michigan 4-H Livestock Expo.

"The Livestock Expo is a unique program that gives young people a chance to show off their knowledge and accomplishments in the livestock industry," says Ken Geuns, Michigan State University (MSU) animal husbandry specialist and program coordinator.

Kids and Animals

At first glance, a visitor to the 4-day program might think the expo is another state fair-like event for youngsters. The livestock pavilion is filled with rows and rows of pens, and young people are busily grooming and polishing their animals. But there's something missing. There's hardly an adult or parent in sight.

"One stipulation of the expo is that from the time the 4-H'ers get to MSU until they leave, they are totally responsible for the care and preparation of their animals," Geuns says. "The kids gain an enormous amount of confidence and pride in themselves and their abilities after participating in expo activities," he says.

Events

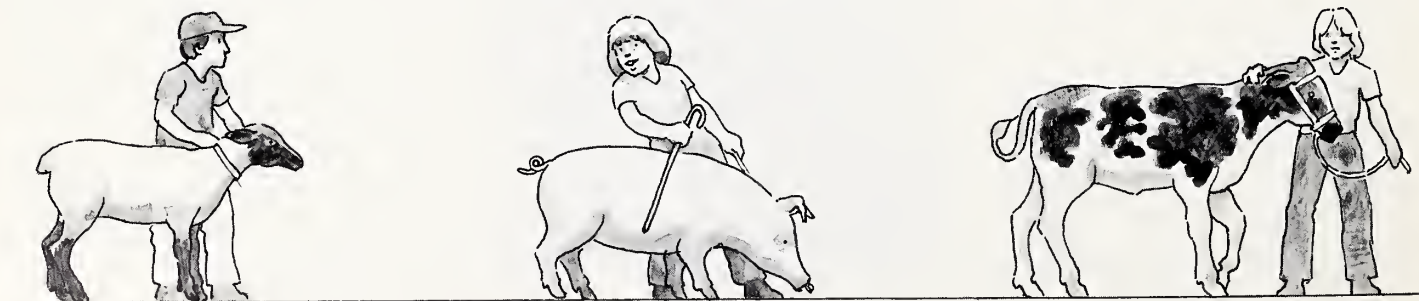
Though many of the expo's activities are traditional, a number of unusual livestock-related events are also offered.

A livestock Quiz Bowl—patterned after the "College Bowl" competition, complete with toss-up bonus questions—tests contestants' knowledge of livestock-related

subjects. Livestock photography, public speaking, and demonstration contests are also held. All help broaden the youngsters' expertise in livestock subjects and skills in other areas, such as communications.

"We wanted to offer young people something new and different that went beyond the show ring," Geuns explains. "Though raising and caring for an animal is a tremendous learning experience, there are other worthwhile ways young people can learn about animal science and husbandry."

Owning an animal is not a prerequisite for participating in the expo. In fact, 4-H members who live in urban and suburban areas are



encouraged to attend the expo and participate in various events. Researching to prepare for competition in the communication or livestock judging contests helps the young people increase their knowledge of livestock and even livestock-related career opportunities.

“For many Livestock Expo participants, it’s the first time they’ve been away from home, lived and learned at a large university, and had an opportunity to interact with

young people from different backgrounds who have similar interests,” says John Aylsworth, Michigan 4-H-Youth program leader.

A highlight of the Livestock Expo is the Trifecta competition. To compete in the Trifecta, youngsters must enter two of the three major expo categories. These are: Showmanship (beef, sheep and swine); Judging and Evaluation (livestock and meat judging and live animal evaluation), and Communications (public speaking, demonstrations, photography, and the quiz bowl).

Awards

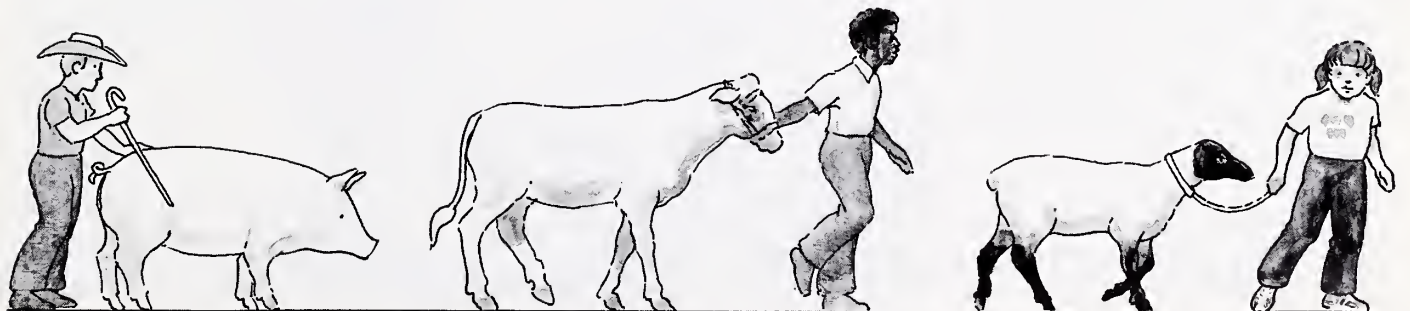
Contestants are required to participate in at least four of the category activities and are scored based on their placings in each activity. The top 20 scorers receive all-expense paid trips to the Royal Winter Agricultural Fair in Toronto, Ontario.

Scholarships are also awarded to the top two Trifecta winners, as well as to winners of various breed, carcass, and communication classes. The top five winners in the expo’s special Sheep Production and Management Contest also receive

scholarships. Ribbons are given to other event winners.

Though competition is tough and the stakes are high, winning isn’t the major idea behind the expo. Several just-for-fun activities are planned, including the Ag Olympics which features everything from hay-bale tossing to an egg throw and a milk-drinking contest.

“The Livestock Expo is designed to increase participants’ knowledge and expertise in livestock areas in a fun and exciting way,” says Aylsworth. “After working and playing together, the kids develop a real spirit of camaraderie. They walk in as strangers and walk out best friends—with a new-found knowledge about livestock.” □



Field Training for Future Farmers

Jayne Marsh
Information Coordinator/4-H Youth
Michigan State University

How do young potential farmers gain "field" training in commercial field crop production and management? Nearly 20 youths are learning how to successfully raise and market field crops through the Jr. Crops Production Program.

Sponsored by the Smith-Douglas Company of Riga, Michigan, the program is designed to guide the young farmers through an entire growing season from planting to harvesting and marketing. It is open to young people aged 8 to 18 from Monroe, Lenawee, and Washtenaw counties in Michigan, and Fulton County in Ohio.

Production Responsibilities

Participants must plant at least a 2-acre plot of corn, soybeans, wheat, oats, or alfalfa. Local 4-H and agricultural agents, FFA advisers, parents, and company employees work with the youths during the year to help them learn proper crop production techniques.

"The program isn't a yield contest," says Linda Schafer, Monroe County 4-H program assistant and county crop production program coordinator. "Its purpose is to teach participants about good field crops management and production and the importance of record-keeping," she explains.

In addition to the minimum planting requirement, participants must test the soil to determine proper soil treatment, photograph their crops at the beginning and end of the project, conduct a midseason weed and insect identification and treatment program, submit a project notebook, and participate in year-end interviews.

"The Jr. Crops Production Program is a valuable way to teach young people about agriculture,"

Schafer says. "The kids learn firsthand about what it's like to assume responsibility for a field crop and to handle various problems that may occur during the growing season. They also learn useful decisionmaking skills."

Other responsibilities include project financing decisions and payment for seed, fertilizer, and other necessary supplies. However, there are no enrollment or participation fees for the program.

"Just like commercial farmers, many of the youngsters have to take out loans to cover the costs of planting their crops," Schafer explains. "By borrowing money, the kids learn financial planning skills."

Choosing Winners

To evaluate the young people's progress, agricultural agents review the participants' record books and interview the young people during a special end-of-the-year Achievement Day program, sponsored by the company for the youngsters and their families.

Also, an expert from a local grain elevator inspects the youths' field-run and exhibit crop samples and offers criticism and advice on improving crop production techniques.

Finally, four top winners and two alternates are chosen to take a special 4-day educational trip sponsored by the company. This year the group will tour northeastern Ohio, visiting an agricultural experiment station to observe field crop production research and management.

After 3 years of successful operation, the company has expressed an interest in expanding the program.

"We're very pleased with the interest and accomplishments the young people have displayed," says Doug Mattis, representative. "Based on its success, we're interested in setting up similar programs in other areas."

For more information about the Jr. Crops Production Program, contact Linda Schafer, 4-H program assistant, 1426 E. First Street, Monroe, MI 48161, phone (313) 243-7333; Elva Lovell, 4-H program assistant, 199 Broad Street, Adrian, MI 49221, phone (517) 263-8831, Ext. 249; or Rod Petteys, 4-H Youth agent, PO Box 645, 4133 Washtenaw Avenue, Ann Arbor, MI 48107, phone (313) 973-9510. □



Farm Women Sharpen Market Skills

Howard Frisbee
Cooperative Extension Service
The Ohio State University

Grain marketing is now a husband-wife enterprise on many western Ohio farms. A new Extension program there has taught 50 farm women the ins and outs of farm marketing operations.

Before they opted for equal rights in the marketplace, these women took a college course taught by John Sharp, professor and Extension economist at The Ohio State University (OSU). They studied the grain trader's language; learned buying and selling methods; and examined contracts, hedges, and bidding and selling on the futures market.

"Now I can discuss prices with some confidence," said Mary Knick of Darke County. She, her husband, and six sons operate 1,000 acres of tomatoes, corn, and soybeans, along with driving the tractors.

"I think I have already helped my husband Ron market better," said Tina Lyme, also of Darke County. The Lymes produce corn, soybeans, and wheat on their 800 acres.

But the women, who help farm 29,344 acres of land, didn't actually go to classes on the campus of OSU. They gathered in a church classroom near Englewood for nine 3-hour classes. Nearly all of them—and their husbands—visited the Chicago Board of Trade, the Mercantile Exchange, and the Mid-America Exchange for a firsthand look at how grain prices are set. Some of the women, who came from 11 counties in the western part of Ohio, drove more than 75 miles each way to attend the classes. One participant attended in a wheelchair.

Women Gain Interest

"Farm operations are becoming so big the farmer himself can't handle them alone," Sharp said. "He needs marketing help from someone—why



Many farm women participated in the Extension program to improve their marketing and farm operation skills.

not his wife! Selling grain is becoming a specialized science."

Sharp said the grain marketing season may be as long as 18 months. This includes time for planning, planting, growing, harvesting, and storing until the farmer decides the time has come to sell. Decisions all along the line can be crucial to making a profit.

For 6 years, at three locations each winter, Sharp has taught similar courses to Ohio farmers and others interested in improving their grain marketing understanding. More than 2,900 students have participated in his programs.

Last winter he taught a class of 96 at Van Wert and another of 117 at Ashland, in addition to the class at Englewood. Nearly all of the class participants took the Chicago bus trip to visit the three commodity markets—following the class sessions.

Just as in the marketplace, few women were involved in Sharp's previous grain marketing classes. In 1979, several women attended the course at Wilmington. R. Don Moore, Eaton area Cooperative Extension Service farm management agent, noted an interest expressed

by some of the women to have a course for women only—where their husbands would not be looking over their shoulders.

Moore told Sharp, "If you will teach a class, I'll get the women together." Moore secured recruiting help from county Extension agents in the Eaton area and the market was opened to farm women.

"I had never done anything about marketing before," said Opal Holfinger of Miami County. "Now I'll be more interested, and if I should ever be left to do this alone, I would have a better chance to succeed." The Holfingers now handle 500 to 600 beef cattle on their 350 acres. Holfinger said they planned to keep fewer cattle, giving them more grain to sell.

"Now marketing is not just a bunch of numbers," said Ginny Nieport of Darke County. "The market situation is more realistic than it was," she added. Nieport's husband took the course several years ago. At that time she studied with him, so this time the course was not all new. She noted that she and her husband try to do all grain marketing together at home and



With the help of Extension, farm women like Pat Roff are learning the buying and selling techniques of farm marketing operations.

that she keeps the farm books. They now farm over 1,000 acres.

Vital Statistics

A summary of responses to a questionnaire showed that more than 83 percent of the women and their husbands were operating farmers. One class participant listed her involvement as a realtor and said, "This information is good to know. It gives me a better idea of the value of land for sale or development as well as tax considerations."

Two women were wives of grain dealers, and four owned farms that they rented to others. All but four participants in the class said they would be more involved in grain marketing decisions on the farm as a result of taking this training.

Working with Sharp on the course, Moore took attendance and answered questions about future classes and plans. He also taught some sessions on figuring production costs and budgeting. Then Sharp took over the discussion of

grain marketing and contracting.

"Contracting means walking into or calling an elevator and saying, 'I would like to make a contract for future delivery,'" he said. "In a contract you can write anything—if you can get somebody to agree to it. The time to have the understanding is when you write the contract."

In a grain marketing contract, Sharp explained, important considerations include time of delivery, place of delivery, quantity, and quality. Beyond these, the seller can add any conditions of the contract to which the potential buyer will agree.

"I give out a lot of printed material that I have developed especially for the class," Sharp said. "By the time participants get through with the course, they have a fair-sized text book." Several titles include: "Weekly Cash Prices Paid to Farmers as Compared to Future Prices for Corn, 1970-1979," "Marketing Alternatives," "Weekly Cash

Prices Paid to Farmers as Compared to Future Prices for Wheat, 1970-1979," "Marketing Terms," and "Marketing Terminology."

Sharp has taught a similar course to college students at OSU for a number of years. His off-campus classes for farmers were started after he accepted an assignment with CES.

An indication of the keen interest exhibited by the women came at the end of the nine-class period.

They wanted a tenth 3-hour class, after the Chicago trip, to review the course and get even more answers to their grain marketing questions. This extra class turned out to be a lively session. Sharp also agreed to hold the first annual update session for all members of the class in the fall.

Will Sharp hold more courses for women? Ohio farm women hope so. One participant summed up the situation, "John Sharp is SHARP—he knows his subject and his enthusiasm is contagious!" □

Dairy Producers Prosper with DHIA^{1,2}

Burton Olson
Benton County Extension Director
University of Minnesota

Cows in Benton County, Minnesota, are producing more milk than they were 2 years ago.

The reason? More than 75 percent of the dairy producers there are participating in an Extension recordkeeping program that tells them what type of feed to use.

In 1978, the 30-year-old program, sponsored by the Dairy Herd Improvement Association (DHIA), began expansion by the county Extension Service to boost its membership of less than 25 percent of county dairy producers.

The Program

Dairy farming, the main industry of central Minnesota, has undergone major changes since the days of the "family cow." Growing herd size and costs of operation have increased the producer's need for herd production records. This program provides producers with information on each cow as a basis for feeding, breeding, and management decisions.

Membership Expansion

Past membership promotion attempts have produced minimal results. In the fall of 1977, county Extension Director Burton Olson and directors of the Benton Association, Jerome Schendzielos, Bruce Olson, Ken Neeser, Robert Gail, and Edman Lezer developed a new approach to expand participation.

Effective since 1978, the expansion program centers around a field inspector who personally visits every dairy farmer in the county, explaining what kind of information the DHIA program can provide.

Lawrence Sckuza, Minnesota Valley Breeders Association technician for 25 years, was hired as the field inspector in January 1978. Since then, the county has hired five



supervisors to handle increased county membership.

Follow-up visits from the field inspector teach producers how to most effectively use records for herd management.

At the end of the year, the real impact and effectiveness of the program became evident. Forty-two new members joined the association during the year, the largest increase in membership of any county in the state. These results prove that to "sell" a program, you must "tell" people about it, and this is most effectively done on an individual basis.

Further Expansion

Field inspector promotion has expanded into neighboring Stearns County. Faced with a possible program shutdown due to terminated CETA funds at the end of 1978, Benton pooled resources with its neighboring county to keep the program in operation.

Statewide expansion is also foreseen. A newly hired state program director plans to increase the number of field inspectors.

Industry Possibilities

What could the field inspector promotion program mean for the dairy industry in Benton and other participating counties?

Wider access to management information provided by DHIA has already shown an increase in average production per cow in Benton County. And speculators predict this means "big business" for their industry.

New members each invest an average of \$300 a year in their DHIA records. Numerous studies show a return of \$10 to \$15 of increased income for each dollar spent on the program due to better management information provided by DHIA. Speculators estimate this could mean \$3,000 to \$4,500 per year per herd, or over \$150,000 per year in increased county income. With further expansion, this could easily become a "million dollar business" for Benton County.

Further information about this program and DHIA can be obtained by contacting Burton Olson, County Extension Director, Courthouse, Foley, Minnesota 56329. □

Good News for Pork Producers

Leigh Ellen Clark
Agricultural Information Specialist
Purdue University

Putting together the *National Pork Industry Handbook* is no small task. But the job is being done with the cooperation of more than 300 swine experts throughout the United States.

What is the *Pork Industry Handbook* (PIH)? It's a collection of approximately 75 fact sheets detailing all phases of swine production including: breeding and genetics, reproduction, nutrition, management, housing, waste management, herd health, production systems, marketing, and pork quality.

Funded and sponsored by the state Extension services and SEA-Extension in cooperation with pork producer organizations, the PIH project is based at Purdue University under the supervision of project coordinators Vern Mayrose and Jim Foster, Extension swine specialists.

Working Together

"Cooperation has been the key to success throughout the project," explains Mayrose. "Since it began in March 1975, 69 of the 75 fact sheets have been printed, and the initial project will terminate when the remaining fact sheets are published—probably in mid-1980. For each fact sheet, directors of Extension, authors, and reviewers worked together to produce relevant and up-to-date educational materials."

Authors and reviewers—who are swine specialists, researchers, and pork producers—write and send manuscripts to Mayrose and Foster. Editing, review, art work, and printing follow.

So that other pork-producing states can participate in the project, fact sheet negatives—which can be adapted to include the indicia of any university or Extension service—are offered for sale at cost by Purdue University. Many states offer the handbook on a subscription basis to interested persons. Some states opt to purchase fact sheets from other participating states.

State Extension offices representing 99 percent of the swine production in the United States are using all or some of the fact sheets published.

Development and Funding

Why was the *Pork Industry Handbook* developed? According to Foster, the project had three objectives.

"There was a need to improve the quality and availability of educational materials with more uniformity in recommendations for the pork industry," explains Foster. "The PIH fact sheets help meet that need. Also, the development of a handbook helped lessen the amount of duplication in many swine subject matter publications. Finally, the handbook was created to strengthen individually owned farms and to provide for the wise use of resources in pork production."

An advisory committee, composed of 21 swine specialists and producers from all over the United States (representing 12 states and Washington, D.C.), guides the development of the PIH project. The committee also establishes fact sheet topics to be developed and

identifies authors and reviewers.

The *Pork Industry Handbook* project maintains a high degree of multi-state cooperation, meets production needs within a specific time period, and enjoys widespread acceptance and practice of its recommendations. In fact, USDA recognized the handbook's success by naming its project leaders recipients of the 1979 Superior Service Award.

Howard Diesslin, director of Extension at Purdue University and advisory committee coleader, reports that PIH funding has been assured by the North Central Extension Directors, with assistance from all major pork-producing states, that will carry the project past the developmental stage into a continuing, self-financed project.

Walter Woods, head, animal sciences department, Purdue University, also a committee coleader, explains: "While the details are yet to be worked out, 3 to 5 new fact sheets will be produced, and 12 to 15 fact sheets will be revised and updated annually for another 3 years after completion of the initial project."

Good News for Pork Producers

Continuation of the PIH project is good news to the pork industry. Hog sales ranked fourth nationally as a source of cash farm receipts in 1978,

and many producers use the handbook for timely, unbiased, technical information to help keep their production efficient.

For example, Dale Hendrickson, pork producer and veterinarian in Farmland, Ind., sees the handbook as an invaluable source of current, basic information related to pork production.

"As a producer," Hendrickson says, "I look to it for information that I can't always keep in my head, such as space requirements or data concerning ventilation systems. Also, as a veterinarian, I am very much involved in teaching management practices for disease prevention as well as treating animals. I use the handbook as a teaching tool for medical recommendations, too."

Handbook subscriber Page Thurston of Ninnekah, Okla., also views the *Pork Industry Handbook* as a good source of general information about hog production. It's especially helpful to the beginning producer because it brings facts about the many aspects of pork production together into one book," he says.

Response from producers in foreign countries has been equally positive. Purdue University has received requests for copies of the handbook from several countries. Guam is printing fact sheets from purchased negatives.

For More Information

Because of the cooperative nature of the project, further information can be obtained from most state Cooperative Extension Service offices. Inquiries can also be directed to the Department of Agricultural Information, Room 206, Ag Administration Building, Purdue University, West Lafayette, IN 47907. □



Farmers Get the Beef on Performance-Tested Bulls

Charles Burns
County Extension Agent
Auburn University



Persuading a beef producer to pay \$1,000 to \$1,500 for a fast-gaining bull when he can get one from a neighbor for \$500 to \$600 isn't easy.

But Extension agents in Lauderdale County, Alabama, have done it. In the last 13 years, 146 cattle producers in the county have bought 295 performance-tested bulls. And a survey of county beef producers in December 1978 shows that 29 percent of the respondents used these bulls.

Before 1967, there was only one performance-tested bull in the county. But in the mid-1960s, when the Extension Council there began to study the county's beef cattle situation, they found that the quality and growth rate of the 13,000 brood cow herd was poor. The council decided that the 642

cattle producers needed fast-gaining bulls to improve their stock.

Performance Testing

There are two locations in Alabama where beef cattle breeders can bring their calves for weight-gaining performance testing—Auburn University and the North Alabama Bull Test Station in Lauderdale County.

Testing begins in September and for the first 3 weeks of the program, the calves are fed "warm up" rations—a high-roughage diet. Then, starting in October, they eat all they can during a 140-day feed test which measures each calf's weight gain every 28 days.

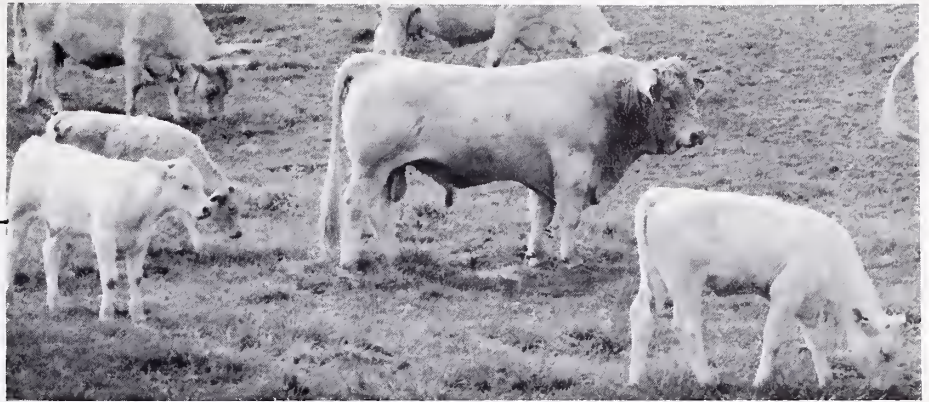
Beef Cattle Improvement Association (BCIA) agents, sponsored by the Cooperative Extension Service, supervise the weighing. They send

birth and weight information to specialists at Auburn University who store it on computers.

Reports of gains are then sent to the breeders. At the end of the 140-day period, the final weight gains are compared so that the breeders know which of their calves gain the most weight in the shortest time. This information helps the breeder decide whether to auction the performance-tested bulls in March or use them to improve the breeding stock.

Promotion Begins

Showing farmers the value of tested bulls became the county Extension Service's objective in 1966. They used a combination of tactics to persuade beef producers of this value.



They started with bus trips. In 1966 L. T. Wagnon, county chairman, and Charles Burns, county agent, organized a bus trip to a performance bull sale at Auburn University.

On the way to Auburn they did a lot of "bull" talking. They told farmers about the growth rate, heritability, and market value of bulls with superior growth rates and emphasized the value of high weaning weights as an indicator of milk production. As the bus cruised down the highway, farmers took a good look at the sale bulls and their performance figures in the catalog.

Only one Lauderdale County beef producer bought a bull at the first sale, but 35 others saw the performance-tested bulls and heard how these bulls could help them make more profit. The Auburn bull sale became an annual trip for Lauderdale County beef producers and more bulls were bought.

For the next 3 years, the beef producers visited other farms and attended demonstrations showing how performance-testing improves cattle's weight-gaining ability.

Demonstrations

In 1969, the county Extension Service held a series of five community meetings to teach farmers good beef management practices—including buying performance-tested bulls. At these meetings, county agents showed slides of performance-tested bulls in the county and their progeny. This type of slide presentation is now a regular part of annual Lauderdale County Cattlemen's Association meetings.

At the 4-H fat calf show in 1970, county agents conducted another demonstration. Two calves—one

sired by a fast-gaining bull and one by a bull of unknown performance—were fed and exhibited.

When bought, both calves were about the same weight and were fed from the same trough. But at the end of a 200-day feeding period, the calf sired by the performance-tested bull had gained 140 pounds more than the other steer. Those 140 pounds were worth \$44.80.

In a demonstration comparing the offspring of tested and nontested bulls, a 60-cow commercial Angus herd was divided into three groups. In 1971, 1972, and 1973 progeny of performance-tested bull No. 823 were compared with the progeny of three other bulls. All four bulls were English breeds.

Cows were rotated from year to year to give a truer picture of the genetic growth rate contributed by the bulls. The results in the table below were obtained from this demonstration according to BCIA records.

The added value earned by No. 823's calves in 1973 was: 71 lbs. at \$ 5542 per lb. = \$39.34 per calf.
29 calves × \$39.34 per calf = \$1,140.86.

Lauderdale Begins Testing

To make tested bulls more accessible to Lauderdale County producers, a bull test was started there in the fall of 1973. Registered producers from Alabama and neighboring states were invited to participate.

The North Alabama Bull Test Station, operated by Emory F. Behel and the Cooperative Extension Service, is located on Behel's farm in Greenhill. So far they have conducted seven tests there and have sold the top two-thirds of the tested bulls.

Lauderdale County producers have bought 233 bulls—about 41 percent of tested bulls bought—from these seven test sales. Producers from adjoining counties have bought from five to 21 bulls per county.

Since performance testing began in Lauderdale County, cattle auction operators and order buyers in the North Alabama area are impressed with the quality of county herds. Their beef cattle are now in big demand and buyers are bidding top dollar for them. □

| Year | No. Calves Sired | Weaning Weight 205-Day Adjusted | Confirmation Score |
|-------------------------|------------------|---------------------------------|--------------------|
| 1972 | | | |
| Sire 8 | 24 | 382 | 11.8 |
| Sire 308 | 12 | 343 | 11.2 |
| Sire 823 | 14 | 508 | 12.6 |
| Avg. of Sires 8 & 308 | 36 | 369 | 11.6 |
| Sire 823 | 14 | 508 | 12.6 |
| | | Difference 139 lbs. | 1.0 |
| 1973 | | | |
| Avg. of Sires 216 & 308 | 30 | 403 | 12.3 |
| Sire 823 | 29 | 474 | 12.9 |
| | | Difference 71 lbs. | 6 |

Cooperation Spurs Resistant Soybeans

Ray Pierce
SEA Public Information Specialist
Peoria, Illinois

"Major pests and pestilences are created by man because man himself provides the opportunity for their development," says Hideo Tachibana.

Tachibana, an SEA plant pathologist stationed at Iowa State University, Ames, is referring to a specific pestilence, brown stem rot (BSR), a disease of soybeans caused by the fungus *Phialophora gregata*.

He places the blame for brown stem rot problems on man because the disease thrives best where soybeans are grown continuously or alternated every other year with some other crop, usually corn.

Tachibana began developing a soybean with the ability to resist brown stem rot in 1970. A recognized disease problem in southern Iowa, Tachibana predicted that BSR would become a problem in northern Iowa as soybean acreage increased there.

In 1973, Tachibana located five Iowa soybean growers with BSR problems: Karl A. Kirk, Ames; Donald W. Whitecotton, Bagley; H. Dean Hanks, Huxley; Harold D. Witzenburg, Otley; and Jerry D. Kincart, Bloomfield.

These cooperating farmers planted strips of low-yielding, BSR-resistant soybeans and strips of

commercial varieties. The BSR-resistant lines produced higher yields and had less disease damage in the areas with a history of high BSR infestations.

Tachibana continued to develop resistant lines for both northern as well as southern Iowa, improving yield potential as well as disease resistance.

Disease Surveys

Soybean disease surveys in 1966 and 1972 showed BSR to be most common in the south central and southeastern areas, with some fields showing as much as 79 percent infection. Most people did not consider BSR to be a problem in northern Iowa.

However, Tachibana continued breeding BSR resistance into soybeans for northern Iowa. He believed the disease would spread northward as soybeans became more popular there and acreage increased.

Tachibana thought BSR would become a serious problem in northern Iowa because of the organism's ability to thrive when plants are under moisture stress. The northwest and north central areas of Iowa normally receive less rain than central and southern Iowa.

Explaining how BSR damages plants, Tachibana compares brown stem rot with cardiovascular problems in people.

"You can get along pretty well with limited circulation as long as you are not under stress. But, when things go wrong the limited circulation makes things much worse. Brown stem rot plugs up circulation systems in plants and creates a cardiovascular problem for soybeans," Tachibana says.

In 1977 Tachibana enlisted the

help of the Iowa Cooperative Extension Service (ICES) to find out how serious BSR was in northern Iowa. He met with A. H. Epstein, plant pathologist with ICES, and they worked out a comprehensive survey of soybeans in northern Iowa.

"We needed to know what impact BSR was having on soybean production in northern Iowa," Epstein said. "We lined up the manpower and Tachibana designed the project and handled analyses of the samples."

It only required 1 day's work on the part of the county Extension directors in the 31 northern three tiers of the counties. Area Extension directors and crops specialists also helped out, Epstein said.

Tachibana and other SEA researchers picked up the samples from the county offices and brought them back to the campus for analyses. The results showed 274 of the 290 fields sampled, 94.5 percent, were infected with BSR.

"Our soybean breeders now know that BSR is important and must be considered along with other factors in their breeding work," Epstein said.

Field Samples

The survey showed 97.5 percent of the sampled fields in northwestern Iowa were infected, 98.4 percent in north central, and 76.6 percent in northeastern.

Samples were taken in the three areas between September 1 and 10. That is usually the peak period for



BSR, Tachibana said. Locations were selected randomly to achieve reliable results.

One field was sampled for each 10,000 acres of soybeans planted in northern Iowa in 1976. Samples were analyzed in Ames within 3 days of their removal from the field. Northwestern area counties were sampled September 1 through 3, north central counties September 6 through 8, and northeastern counties September 8 through 10.

Ten plants were selected from three locations in each field sampled. One sample was taken from the third row in from the border and the other two samples from central areas of the field. Results showed less BSR in plants from the border samples than in plants from the interior.

"The cooperation by the Extension Service furnished a more accurate estimate of diseases over a wider area than would have been possible otherwise with the available research funds and personnel," Tachibana said.

The joint research-extension effort was mutually beneficial. Extension people became more familiar with BSR and its prevalence in the northern counties, and the researchers got the information they needed, Epstein added.

Two BSR-resistant breeding lines developed by Tachibana, in cooperation with the Iowa Agricultural Experiment Station, were released to Iowa soybean breeders in 1978: A3 (A74-101035) is adapted for northern Iowa, and A4 (A75-332035) is suited for southern portions of the state. Seed production of a BSR-resistant variety, BSR-301, is being increased and will be available for use in fields with a history of BSR problems in 1981, Tachibana said. □

CPM Cuts Pesticide Use

Jack Sperbeck
Agricultural Journalist
University of Minnesota

Participating farmers gave high marks to a Crop Pest Management (CPM) program begun in 1979 that was coordinated by the University of Minnesota's Agricultural Extension Service.

"Thorough, regular crop monitoring for diseases, insects, weeds, and other pests enabled us to reduce insecticide and fungicide applications," said a Minnesota potato grower enrolled in the CPM program.

"This year we would have used two applications of each as a precaution if we did not have the regular field monitoring. This year we used only one fungicide application."

This potato grower's comments are typical of others enrolled in the program, according to a recent farmer survey of all CPM participants. In addition to monitoring potatoes in Minnesota's Red River Valley, the CPM program included corn in an area surrounding Dakota County in east central Minnesota, and sunflowers in the Morris area in west central Minnesota.

Scouts monitored fields of farmer-cooperators weekly or more often, depending on the pest situation. Pest control recommendations were made by area Extension agents in cooperation with a state technical support group located on the university's St. Paul campus.

Federal funds administered by USDA's Science and Education Administration paid for staffing and operating the program. Farmers paid for scouting costs.

"The Minnesota CPM program is a plan to adapt principles of integrated pest management to Minnesota crops, pest problems, and the environmental situation," said Gerald Miller, Extension agronomist

at the university and state CPM coordinator. "It was planned to be consistent with the USDA policy on management of pest problems."

In the farmer surveys, 48 percent of the CPM potato growers reported using fewer insecticides and 43 percent said they used fewer fungicides, compared to 1978.

"Where pesticides were being overused, this reduction was a step in the right direction," said Mike Hutter, area Extension agent in charge of the CPM potato field program. "None of the growers who reported less insecticide spraying suffered yield losses."

The need for insecticides and fungicides varies from year to year. "Since this is the first year we've had a pest management program, it's too soon to know how often we can get by with fewer pesticide applications," Miller said. But this year, potato growers involved in the program were able to avoid some pesticide applications that they would have made without field monitors and technical pest management advice. The pest management program is planned to use pesticides only as needed, based on careful field observation. The object is to identify diseases, insects, weeds, and other pests and determine if they're present in sufficient numbers to justify use of chemicals.

Farmer Response

Pest problems in sunflowers and corn were relatively low last year. One sunflower grower put it this way when he returned the survey: "I think it's a pretty good program, but '79 was a poor crop year to start it due to the lack of any insect or disease problems. But I like no problems. It would have been a real success in '78."

Farmer participants in all three crop categories were generally well satisfied with the CPM program. Of the 149 farmers enrolled in the three crop categories, 125 returned the survey, an 84 percent return rate. Sixty percent said they planned to participate in the program next year, 34 percent said they "didn't know," and 6 percent said they would not. The uncertain future economics of sunflowers and potatoes was an additional deciding factor in their choices.

In the survey, farmers were asked, "What kind of a job did the scouts do in monitoring your fields?" Fifty-seven percent said "very good," 24 percent said "good," 15 percent said "adequate," and 3 percent said "poor."

Farmers were also asked what they learned from the program. Nineteen percent said they "learned a lot," 50 percent said they "learned some," 24 percent said they "learned a little," and 7 percent said they "learned nothing."

Another question asked farmers to check their primary source of information for solving crop pest problems for both 1978 and 1979. Many farmers who were in the CPM program in 1979 utilized the area CPM agent as their primary information source for solving crop pest problems. Primary reliance on chemical companies, the county agent, aerial applicators, university



specialists, and neighbors dropped from 1978—when there was no CPM program—to 1979. Reliance on chemical companies as the primary information source dropped from 30 percent in 1978 to 14 percent in 1979.

Even though they did not generally have serious pest problems in 1979, many sunflower and corn CPM cooperators valued the program for the “peace of mind” and time saved in monitoring their own fields.

Larry Schilling, area CPM agent for the corn program, said one farmer had been planning to apply a corn rootworm insecticide as a preventative measure. The field had been in soybeans and alfalfa previously, and Schilling recommended not applying the insecticide. “He should have saved enough money from this one recommendation to pay his entire scouting bill,” Schilling said.

Program Expands

Minnesota’s CPM program is expanding this year. Hutter is expanding into sunflowers in addition to potatoes. Scott Sederstrom, area CPM agent for west central Minnesota, is adding farmers from more counties to the sunflower program that is headquartered at Morris.

Private industry is also getting into the crop monitoring and pest control recommendation business. Miller says that is one of the original objectives of the Extension crop pest management program. “We want to encourage the development of a private CPM industry. The Agricultural Extension Service does not have the resources to serve a large portion of Minnesota farmers with a large-scale CPM program,” Miller said.

However, the university will continue to be heavily involved in research and information dissemination that can be used by the private CPM industry to help farmers. “We need more pest management research to establish precise threshold levels for certain pests,” Miller added. The research is also needed to evaluate economics of CPM practices and improve practical recommendations for growers.

Potato Problems

With the potato project, the Colorado potato beetle was the most troublesome insect in non-seed potato fields in 1979. “We set the economic or action threshold at 10 percent defoliation, except during bloom,” Hutter said. The 10 percent figure and the thresholds used for sucking insects on potatoes were determined from research conducted by entomologist E. B. Radcliffe and his University of Minnesota graduate students.

“With few exceptions, potato farmers generally apply a foliar insecticide when the Colorado potato beetle damage is well below the 10 percent damage level. This means farmers repeatedly spray to control the beetle. If this trend continues, we may soon need different chemicals or higher rates

to achieve current control levels,” Hutter said. “That’s already happening in eastern states. By using the concept of economic thresholds, we can avoid insecticide applications for low populations of Colorado potato beetle that will not cause a yield loss.” He said he knows of cases in Minnesota where, for some reason, registered insecticides did not adequately control Colorado potato beetle infestations.

Hutter added that certified potato seed growers spend lots of money for aphid control. A typical seed grower will apply a systemic insecticide at planting and follow with two to three applications of another insecticide in August. Some growers use even more, he said.

Such “calendar spraying” may give farmers some peace of mind. But the costs and risks may outweigh the benefits, Hutter emphasized. “Costs mean dollars, but one risk is that of losing good chemicals through a buildup of resistance. The green peach aphid is already resistant to many insecticides. We have found populations that are resistant to some of our better aphicides, but if good chemicals are used judiciously they will have a good chance of remaining effective.” □

Cotton Growers Battle Pests

Sam Carroll
County Extension Agent
Alabama Cooperative Extension Service

Higher yields, less insecticide applications, and lower production costs are foremost on the minds of most cotton growers during these days of near 20 percent inflation.

By using pest management practices, farmers in Dallas County, Alabama, are progressing in each of these areas. In fact, they've almost doubled their yields. They're also spraying less for insects.

Yields Rise and Costs Fall

Farmers in the county usually grow about 17,000 acres of cotton each year. In 1977, they averaged about 350 pounds of lint an acre, which is below the break-even point. This figure was low primarily because 1977 was an extremely bad year for cotton bollworms, boll weevils, and plant bugs. In fact, it was so bad growers realized they had to take another approach to fighting insects.

This was a major concern of the Dallas County Extension Council's Cotton Committee. The council found that only about 60 percent of the growers were implementing an insect scouting program. Starting a pest management program in the county was the number one goal set rolling in the 1978 work plan.

The council determined that if growers could save one pesticide application, they could reduce their production costs by \$7.50 an acre. That would be a savings of at least \$125,000, or the entire cotton acreage in the county.

In 1978, 75 percent of the growers were on a pest management program. Yields jumped to 539 pounds per acre. By 1979, word had spread throughout the committees and everybody wanted to participate in the program. Ninety-five percent of the cotton was under a pest management program by that year.



Growers on a pest management program saved between one and one-half and two applications in 1979, which amounted to a savings of \$10 to \$15 an acre. In some cases, this meant the difference between making a profit or a loss. During these days of high inflation and rising production costs, pest management will prove even more profitable in the years to come.

"We've been on a pest management program since we started growing cotton in 1967," said Wood Till, a Sardis grower. "We figure it's best for us to hire a trained scout to do this chore for us because he can be more objective. We tend to be a little more lenient when we do it because we are thinking about costs. This also frees us to work on other management practices on our farm," he added.

Tyler Moore, Jr., another Sardis grower, followed the pest management concept of fighting insect pests for the first time in 1979. "I've been growing cotton all of my life," the 57-year-old farmer said. "I made my best yield in 1979. I credit my good yield—1,050 pounds of lint per acre for 51 acres—to pest management.

"In 1977, my yield was 350 pounds," he continued. "It was 400 pounds in 1978. My eyesight just wasn't good enough to check for insects. By the time I could see worms, they were so big about the only way to kill them was by pressing them between two bricks.

"My scout was trained in identifying insects. He could even predict when they would hatch. I even used an ovicide to kill worm eggs."

The Program

Under this pest management program, an Auburn University Extension Service trained scout, who is hired and paid by the grower, checks each field once or twice a week. He supplies growers with a written report giving insect conditions—both beneficial and harmful. This provides the grower with a basis for deciding when to treat. And he sprays only when harmful insects reach a level that justifies treatment. The report also gives bollworm and egg conditions. This helps determine when to use an ovicide to destroy worm eggs.

The program is a big contrast to the approach growers once took. About the Fourth of July they would begin their battle with insects, making weekly applications until the bolls were mature.

Another part of the current pest management program is to shred stalks in the fall as soon as the cotton is harvested. The goal here is to eliminate the weevil's food supply as soon as possible. Growers whose crops have a high weevil count at defoliation time also include an insecticide with their defoliant to reduce the number of weevils going into hibernation for the winter.

Many people worked to increase the number of farmers following a pest management program. Farmers who were not practicing pest management were endangering the crops of others, since the insects would travel from field to field.

County agents made many visits to leading farmers in the county,

with two primary purposes in mind—to "sell" them on the idea of pest management and to persuade them to tell other growers about the program.

The county Extension Service also aired radio and television spots and sent newsletters to all growers, explaining pest management and its impact and benefits to the county.

After several weeks of planning and implementing the program, more and more farmers became interested and adopted the objectives. Those desiring a local scout indicated this by returning the postage-paid, self-addressed cards that county agents sent to growers.

Agents also assisted farmers in locating prospective scouts, but the actual hiring was done by the farmer. Scouts attended the Extension Service-sponsored cotton scouting school. At the beginning of the season, agents visited each scout to help with problems they encountered. Glenn Worley, Extension entomologist, assisted throughout the insect season.

During the summer, the county Extension Service held a cotton pest management tour for scouts and farmers. Their purpose was to bring the group up to date on what to look for in present and future insect situations.

Will 100 percent of Dallas County growers follow pest management in 1980? That's the county Extension Service's goal. □

Wood Till, left, and county agent Sam Carroll make plans to hire an Auburn-trained scout to check Till's cotton for insects.

Hog Farming No Handicap to Small Farmer

Woody Upchurch
Extension News Editor
North Carolina State University



Joe Farmer steadied himself on one crutch and leaned over the fence to scratch the big hog's back. "This is Oscar," Joe said, eyes twinkling and a broad grin spreading across his face. "The one over there is Roger," he said, pointing to a grunting Duroc.

"We usually name them after the man we buy boars from," the 38-year-old Hoke County, North Carolina, man said. "The hogs don't seem to mind and we never tell the people we buy them from," Farmer chuckled.

Even when the subject of depressed hog prices came up, Farmer maintained the happy, jovial mood as he showed a visitor every nook and cranny of his small pork production unit.

The visitor had toured many hog farms—most larger than this one and some as efficient and well run—but none whose owner had quite the pride and enthusiasm as Joe Farmer showed in his.

But Joe isn't an ordinary farmer—although he probably would argue the point. He is severely crippled by cerebral palsy. He didn't walk a step until he was almost 9 years old, spent over a year in the Lenox Baker Hospital in Durham in 1951 and 1952, and underwent 11 operations.

"His first step was between two parallel bars," said Joe's father and farming partner, Joe, Sr. "He

For cerebral palsy victim Joe Farmer, raising hogs is more a matter of personal triumph than of economic security. His bulldog Duchess is a constant, but "camera-shy," companion.

graduated from that to a heavy brace and crutches and then to the one crutch he uses now."

It was Joe's grit and determination plus the strong support and love of his parents that got Joe on his feet, allowed him to finish high school, hold an office job briefly, and become a hog farmer.

Joe became interested in raising hogs in 1971. "He always felt he could do anything anybody else could," said his father. "He wanted to do something worthwhile and was always trying. Not a day went by that he didn't ask if he could help me with whatever I was doing. He couldn't, but he never stopped asking."

Getting Started

Phil Ricks, former Hoke County agricultural Extension agent, helped Joe get started with his first hogs. "His greatest assets are his sharp mind and his positive attitude," said Ricks, who is now on the Johnston County Extension staff.

It was largely through the help of Ricks and his successor in the Hoke Extension Service office, Freddie O'Neal, and the understanding of a representative of the Division of Vocational Rehabilitation that Farmer got started.

The hog unit Ricks designed is for 50 sows, although Joe hasn't had more than about 30. He sells the pigs when they reach 50 pounds, or soon after they are weaned.

"I started out with two 40-pound gilts," Joe explained. "I paid \$40 apiece for them and thought that was outrageous, but they eventually produced 13 litters each, so I guess we got our money out of them."

Farmer said he has sold pigs for as much as \$60 a head and for as little as \$20. "It's costing us about \$30 a head to raise the pigs to 50

pounds now," said Joe, "and we're only getting about \$20 a head for them, so we're looking forward to improvement in the market."

The pigs are born in a small farrowing building that Joe's father built himself from a design worked out by Ricks. It incorporates features that allow Joe to work in it with his physical limitations.

O'Neal, who now is in Jones County, later worked out a flush waste disposal system that eliminated the most difficult job the farmer had. "We had to borrow about \$1,000 to raise the floor and put in the flush system," Joe said, "but it was the best money we ever spent."

The new system has paid off in more pigs saved, also. Before the floor was raised and the flush system installed, Joe's herd averaged just over 9 pigs weaned per litter. Under the new system, the average weaned litter size is 11.5. The state average is just over 7.

Wendell Young, Hoke County agricultural Extension chairman, said Joe's was the first flush waste system in the county.

"Freddie (O'Neal) worked very hard, a lot of it after his regular working hours, to help make this thing work," Young said. "Now we're using it as a demonstration unit to show other small producers what

they can do with a similar design."

Farmer credits Young, Ricks, and O'Neal with helping to make him a good pork producer. "We couldn't have made it without their help and the assistance from Vocational Rehabilitation," Joe said.

Industry Supporter

Young said Farmer has become one of the strongest supporters of the pork industry in Hoke County. "He's interested in not just his operation but everything that affects the welfare of the industry," Young said. "He goes to educational meetings, reads everything he can find on hogs, and calls us regularly when questions come up."

Despite depressed hog prices, Farmer is planning for the future. He and his father have a nursery building about 70 percent completed. "We don't owe a cent on it, although we have slowed down on it until pig prices go back up," said Joe, ever the optimist.

Said Young, "This is more than just another hog operation. It has made it possible for a man to feel that he is earning his own way in the world. There's no substitute for that."

O'Neal agrees. Recalling his work with Joe, the former Hoke Extension agent said, "Joe's smart, eager to learn, and does an exceptionally good job within his physical limitations, and his father picks up there and does the rest. The most important thing about it is that he can say, 'I raise hogs for a living.' That's pretty impressive when you think about it."

Ricks observed: "I've worked with farmers who had as much drive and determination as Joe, but theirs came from a desire to make money. Joe's comes from a burning desire for personal achievement." □

Scientists Scout Pest Secrets

Howard Frisbee
Cooperative Extension Service
The Ohio State University

Most insects in Ohio have almost no privacy these days.

Scientists, armed with computers, weather heat-unit reports, insect life-cycle information, and movement data gathered by troops of field scouts, know almost as much about the lives of Ohio insects as the Internal Revenue Service does about taxpayers. Now they are charting almost every insect movement in the state.

In fact, if insects beat Ohio residents to a meal of sweet corn or devour their alfalfa or roses, they can no longer claim it was a sneak attack—Ohioans could have known the facts in time to outmaneuver them. Similar information is also available there about plant disease germs and viruses.

Farmers and homeowners in Ohio can get up-to-date information on the insect or disease situation by dialing the "Pest Management Hotline," (614) 422-8264, to listen to short tapes prepared daily during the growing season by Extension specialists at The Ohio State University (OSU). This dial-a-tape service began in early May.

"In recent years Extension specialists have intensified efforts to learn more about insect and disease movements and to keep county agents better informed about conditions in their counties," said Bruce Eisley, research associate at OSU. The link between the specialists and agents includes newsletters, phone calls, and training meetings. Also in 1979, for the first time some

important newsletters were fed to a few county offices through computer terminals. Additional counties will be equipped to receive instant delivery of these computer newsletters during 1980.

This intense look at insects and diseases and efforts to alert plant growers of potential damage to crops or gardens is part of a nationwide Integrated Pest Management Program (IPM), conducted by various state Extension Services in cooperation with SEA-USDA. The program is designed to reduce economic loss due to pest damage through early detection of potential hazards. In most cases, early awareness of the intensity of a pest infestation can mean more effective applications of costly control measures or, perhaps, show that no such measures are needed.

Methods

"Ohio Extension specialists have been able to keep on top of insect and disease information through a variety of methods," said B.D. Blair, Extension entomologist and coordinator of the Ohio Pest Management Program.

For example, accumulated heat-units or day degrees help predict insect events. Blair explained that insects develop according to the amount of heat units during a season. Thus entomologists can check the accumulated units at any given time and tell at what stage of development some of the insects will be.

Light traps also guide insect movement predictions. Much insect damage is caused by worms, but before the worms there are eggs and, in many cases, before the eggs, moths. Many moths are attracted to

light and can be captured in light traps. A network of light traps in Ohio, Indiana, and Kentucky was established in 1978.

In Ohio, daily catches from these traps are mailed to OSU to be identified. And Ohio plus other midwestern states report these daily catch data—identifications and numbers—to a computer at Purdue University in Indiana where the material is stored for use by pest management personnel. These data can be accessed by the specialists at OSU through a computer terminal.

Since movement of many moths is from southwest to northeast in the U.S., moth trap catches are helpful in determining what species may be moving into a given area and when crop growers should start looking for them.

Temperatures are recorded each day at Ohio national weather stations with the ag-weather unit at Purdue. These are translated into accumulated heat units at a base of 48°F, day degrees at a base of 44°F and a base of 50°F. They are used to predict insect events including hatching, growth stages, flight, mating, and oviposition. They also help determine a more exact timing for control applications to alfalfa weevils and other insects.

In 1979, 50 scouts checked 600 fields per day for signs of insect activity or diseases in such crops as alfalfa, corn, soybeans, and tomatoes. During the growing season, they monitored 49,067 acres in 27 counties in about one visit per week.

Most of these scouts were college students specially trained in insect and disease identification by Extension entomologists. They reported field conditions regularly to the crop producers and Extension personnel. These early reports of insect infestations permit control implementation before significant damage is done.

During the growing season, Ohio plant growers send damage reports and specimens of insects and plants for identification to specialists in all pest-related OSU departments: Entomology, Plant Pathology, Agronomy, and Horticulture. Many of these reports originate with people involved in the pest management program, including the scouts. Specialists at OSU also keep informed of developments in nearby states by letter, phone, meetings, and conference calls.

In 1979, three newsletters, aimed at different audiences, kept concerned personnel throughout the state informed about pest management. Scouts received 37 newsletters, county agricultural agents with organized pest management programs received 17 newsletters, and each Ohio county agricultural agent received 37 newsletters about pest and pest-related problems.

Other Services

In addition to the dial-a-phone service for Ohio producers and industry personnel, a second dial-a-phone setup recorded messages about twice a week for Extension personnel. This machine carried information on how to do a "push test" for stalk rot in corn, how to sample roots for laboratory counts, and identifying nematodes.

Another pest management tool is the programmable calculator. Three counties are currently storing pest management field history information in these calculators. Scouts visit fields weekly for about 20 weeks each year to gather insect, weed, and disease data. This information is

recorded, then filed for future reference. Some counties now have information on fields scouted for the past 7 years. This involves seven files with about 140 weekly surveys in them.

The calculator can store this information and record it on magnetic strips. By assembling the information on specific fields and storing it on these tapes, entomologists are able to quickly review events in the fields without looking through a number of files.

"We are constantly competing with insect and disease pests for use of all types of plants," said Blair. "More and more, modern science is permitting us to outwit the pests and protect our sources of food, beauty, and health. Scientists are learning more about the lives of pests and are using this knowledge to improve the lives of people." □



Involvement Grows Through Landscaping

Kurt Rogers
Former Publication Editor
Mississippi State University

The very human needs to dig, plant, and make the environment more attractive are being met by a short course in landscaping developed by the Mississippi Cooperative Extension Service (MCES). Through this course, Mississippians met last winter to plan new or amended landscaping for their homes.

Jim Perry, MCES landscape specialist, developed the course when he became concerned 3 years ago about the lack of results from landscaping meetings. Clients came to his sessions, but rarely followed through with any actual landscaping improvements. And county agents also teaching landscape design told Perry essentially the same story. A new approach was needed.

New Approach

Perry began by developing new educational materials. A tabloid newspaper, *Selecting Landscape Plants*, details plants ranging from ground cover to large trees. It teaches the cultural requirements of various plants and how they can fulfill such landscaping purposes as foundation plantings, screening, and shading.

He also put together a landscaping workbook, *Planning the Home Landscape*, which leads the reader through a step-by-step process from making a plot plan to completing a planting plan. It contains a drawing instrument, tracing paper, and a scaled grid. With the workbook, an individual can create and utilize an original landscaping plan for his or her home in 1 year or when finances permit.

With materials in hand, Perry canvassed county personnel about interests in landscaping and sought agent input on what the course should cover.

After completing a detailed line of study, he began field testing in 1979. Seven short courses were offered in four locations throughout the state.

Enthusiastic Response

The results were dramatic. A survey in the summer of 1979 following the field testing revealed:

- 100 percent of the participants had developed a workable landscape plan for their property
- 50 percent had begun installation according to their plans
- 25 percent had completed all of their planned landscaping
- 25 percent had not yet begun installation.

In addition, county Extension personnel reported enthusiasm and a sense of satisfaction among course participants.

Perry believes it's individual involvement that makes the course work. "The client must register for the course and be committed for four 2-hour sessions," Perry says. "Then he or she begins by making a plot plan of the property that leads to a completed landscaping plan. The client simply has too much invested in the plan not to carry through with the actual planting."

Fred Rose, assistant county agent in Oktibbeha County, believes the course is successful because it meets a real public need. Rose, who gave the course for the first time in February 1980, said that 23 of the 28 registrants completed all four sessions.

"We wanted to limit class size to 18 so that we could give more individual help," Rose said, "but the response was too great." He added that participants take sincere pride in their completed plans because they appear so professional.

Course Content

In the course's four sessions, the participants begin by identifying landscape problems. They complete an overall site analysis, and develop a plot plan.

In the second session, clients work on their individual plans and develop ideas on foundation plantings and tree and shrub placement. They also bring soil samples to be analyzed by MCES, free of charge.

The third session details plant selection and requirements. Participants tour local homes and nurseries where different varieties of landscape plants are labeled and are shown how they will appear when well established.

The fourth session covers transplanting, soil preparation, and plant propagation. Pruning, fertilization, and other cultural practices are also discussed.

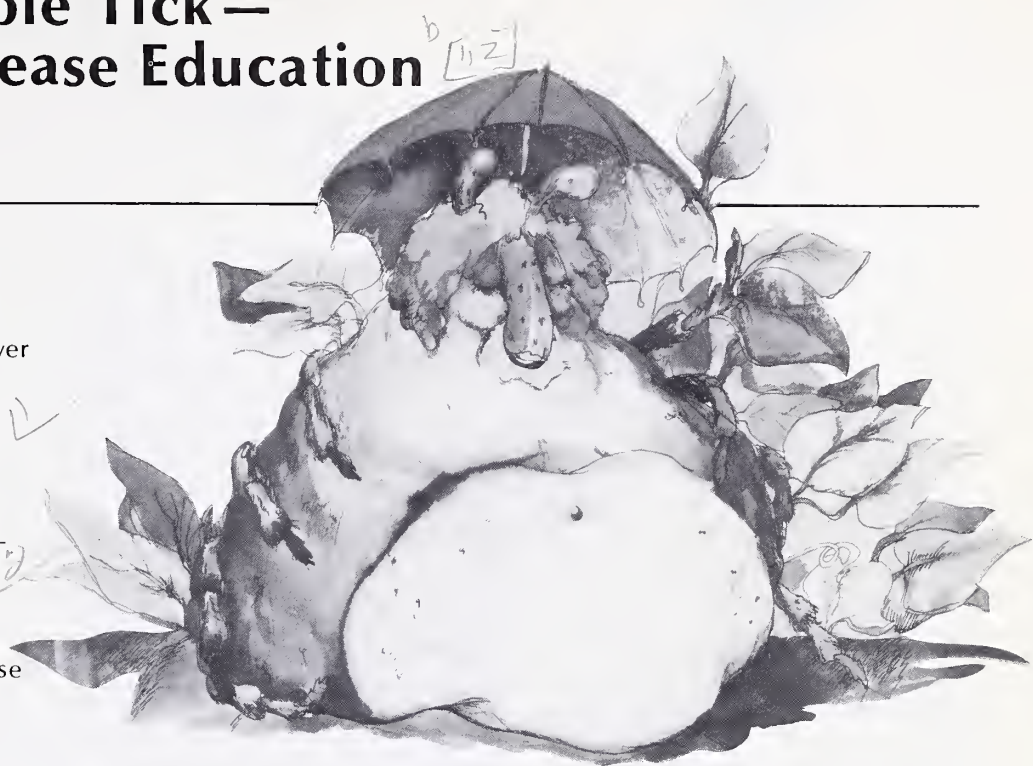
After the final meeting, the Extension worker teaching the course spends 15 to 20 minutes with each participant in a critiquing session, reviewing his or her completed landscaping plan. This helps create pride and further encourages the client to complete the actual landscaping. □

Tilda the Terrible Tick — Preventive Disease Education

Barbara Whaley
Former Extension Specialist
North Carolina State University

Tilda the Terrible Tick has turned traitor to her cohorts by warning school children in North Carolina about Rocky Mountain spotted fever (RMSF)

She is the mascot for the children's segment of an Extension educational program designed to teach children, teenagers, adults, and health and educational professionals in North Carolina how to prevent RMSF. North Carolina has led the Nation in both number of cases and deaths due to this disease for the last 6 years.



Southern Problem

In the southeastern U.S., ticks often cause significant nuisance and health hazards, especially in recreational areas. One species, the American dog tick, is particularly bothersome because it can transmit RMSF germs to humans.

The disease was named for the region where it was first discovered, but in recent years it has become more of a problem in southeastern states. The number of cases in North Carolina has increased from 141 in 1972 to 204 in 1978—with the 1978 figure representing about one-third of the total cases reported for the surrounding six states. The disease claimed 11 lives during 1977 and 1978.

There is no effective vaccine against RMSF. Control of the American dog tick over large areas is not practical because of its diverse habitat and widespread distribution. Therefore, preventive disease education is an important approach to this problem.

In March 1978, Charles Apperson, Extension entomologist for North Carolina State University, received a \$12,000 grant from the North Carolina Agricultural Extension Service to develop a pilot edu-

cational program about RMSF. That spring, he met with other entomologists, Extension agents, health and medical professionals, and graphics specialists to discuss the problem. The lack of any visual aid program about ticks and RMSF—for any age level—convinced the groups that a slide-tape presentation would be the most appropriate format for reaching a large audience.

Problems Overcome

The problems of communicating preventive disease education, especially about ticks, to groups of varied ages and educational levels could not be solved by one general information program.

Jane Coble and Barbara Whaley, Extension program specialists, suggested that several programs—one for young children, one for teenagers, and one for adults—would probably be a more suitable answer to the problem. A fourth program, designed for the special informational needs of health and education professionals, was also planned.

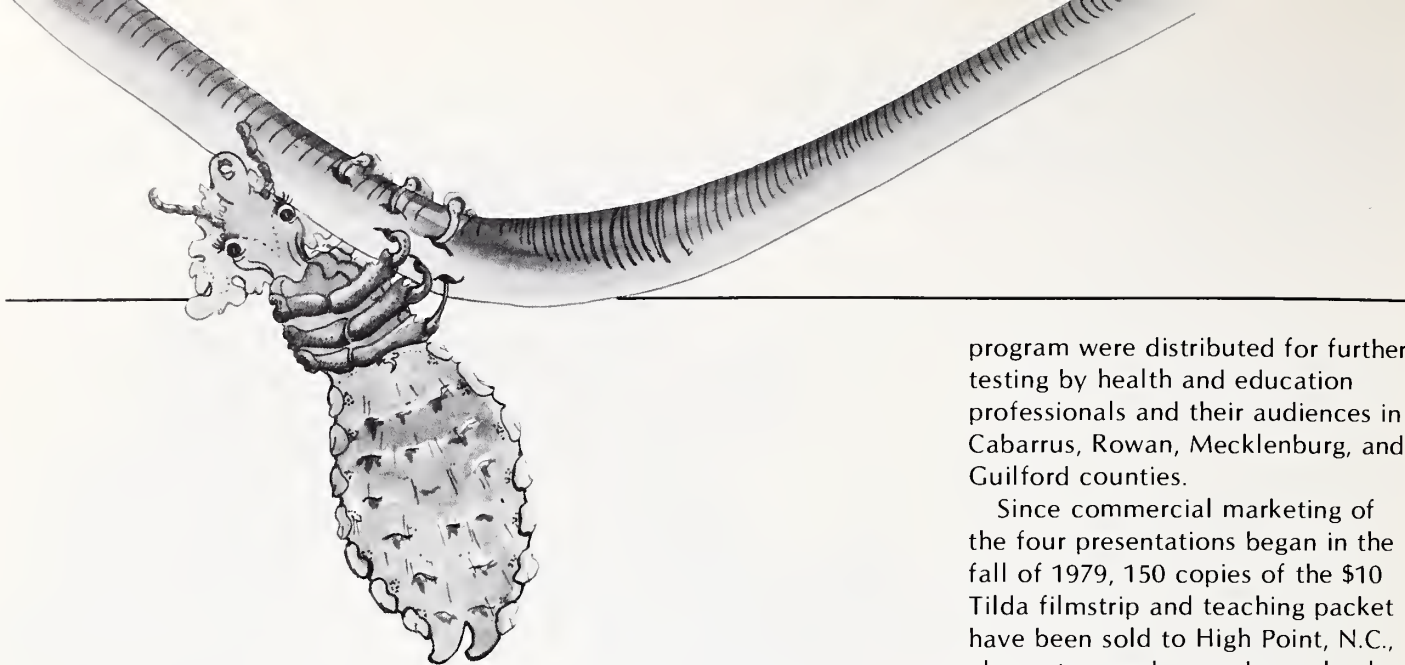
The programs had to overcome

several common misconceptions about ticks held by all of these groups. Even an enthusiastic and receptive audience might need some convincing that a burning cigarette is not the most effective method of removing an attached tick. Other fallacies about tick biology and the RMSF disease cycle had to be dispelled, and preventive exposure measures discussed and reviewed.

Also, explanation of the symptoms and the seriousness of RMSF had to be handled in a skillful and sensitive manner. Most importantly, Apperson and the team knew that the program had to be entertaining to gain and hold the interest of the audience.

Tilda the Terrible Tick

Three of the programs were formatted in a conventional slide-tape presentation. However, the children's program required a more creative approach. Al Brothers, head of the North Carolina Graphic Design Division suggested using a cartoon character; and Krista Brickey, graphics illustrator, undertook the task of creating "Tilda, the Terrible Tick."



Characterizing Tilda

The character of Tilda had to be dichotomous—scary yet enticing.

Brickey, remaining true to the eight-legged, sightless anatomy of the American dog tick, painted Tilda as a pleasantly fat, yet menacing evil arthropod. Tilda's voice was captured on tape by a professional actress who managed to produce a convincing mixture of coarse, scratchy laughs and enticing yet cautious warnings about her potential danger. Background music, pulsating to a crashing climax, completed the total effect of making Tilda really terrible.

Program Content

In order to hold the interest of young children, Tilda had to say a lot in just a few minutes.

Personal responsibility for bodily health in the form of prevention needed to be emphasized. Also, the possibility of serious illness and death had to be dealt with realistically to avoid exaggeration of the facts and panic reaction.

In less than 10 minutes, Tilda talks about her family's biology, habitat, and eating habits. She warns children about sickness which may result from tick bites. Then she urges children to have an adult remove a tick immediately using

tweezers or the fingers covered with a piece of paper towel.

Preventive measures—such as using insect repellent, putting flea-tick collars on pets, and checking the body two or three times daily for ticks—make up another part of Tilda's discussion. After showing the audience what she looks like in real life, Tilda warns children to, "Remember to look out for me 'cause I'll be looking for you!"

In classrooms where Tilda has been previewed, teachers comment favorably on her reception. Third, fourth, and fifth graders especially enjoy the slides of an overstuffed Tilda burping as she talks about eating a long, leisurely meal.

"We'd like to see more programs produced by this group," said a fourth grade teacher who showed Tilda to her class. "The approach gave children an opportunity to see that some things need to be talked about even if they are unattractive because they must be faced during the growing up process."

Program Distribution

Tilda and her three counterparts were pilot tested by Extension, health, and educational agencies in four North Carolina counties. The slide sets were first reviewed and revised in late 1978.

In early 1979, copies of the

program were distributed for further testing by health and education professionals and their audiences in Cabarrus, Rowan, Mecklenburg, and Guilford counties.

Since commercial marketing of the four presentations began in the fall of 1979, 150 copies of the \$10 Tilda filmstrip and teaching packet have been sold to High Point, N.C., elementary and secondary schools. The three other presentations, available in slide-cassette form with teaching packets for \$35, are shown at PTA meetings and by various agencies. Although the programs are available to anyone in the country, distribution thus far has been in North Carolina only.

Louise Joins Tilda

Louise the Louse is preparing to join Tilda in her educational crusade. Louise is the character in a new filmstrip created to teach children about head lice control. Slating it for distribution in North Carolina elementary schools this year, Extension officers there hope the film will help halt the spread of head lice, which has reached epidemic proportions in some elementary schools.

Like Tilda, Louise is a friendly, but scary character. She entertains children while she teaches them about the biology and control of head lice. Since head lice are considered more of a nuisance than a serious health problem, only one film about them—directed at a school-age audience—has been produced.

Those interested in obtaining the children's films or the slide-cassette tapes can write to the North Carolina Extension Service, Visual Aides, G-5 Ricks Hall, North Carolina State University, Raleigh, North Carolina 27607. □

"The Backyard Gardener" Takes Root

Kathleen DeMarco
Extension Editor
University of Georgia

From a distance, most backyard gardens seem harmonious. They're a quilt of greenery and vegetable color.

But when viewing a home garden closer, you see a giant network of vines, leaves, and creepy crawlers. Then you realize that gardening is composed of many elements. The same is true of gardening television shows. Imagine the complexities involved in not one, but several programs of "The Backyard Gardener" (BYG), presented statewide by the Georgia Extension Service (GES).

The series is a joint venture of the University of Georgia campus Public Broadcasting System (PBS) affiliate, WGTV (Channel 8-Athens/Atlanta) and the communications department of GES. Two of its editors, Joe Courson, television-radio editor in Tifton, Ga., and Kathy DeMarco, television editor in Athens, Ga., cohost the series, which runs 10 weeks every spring and 4 weeks every fall. The last program in the spring is a live, call-in show. DeMarco is the series' producer.

What's in the TV Garden

Each program, except the call-in, is divided into four main parts: vegetable gardening, floriculture, ornamentals, and lawn and turf. Each section usually has an "anchor person," who is both an expert in some type of gardening and has on-camera experience. They are joined by entomologists, plant pathologists, and nutritionists who appear on about 30 percent of the programs.

For instance, when the calendar dictates that the floriculturist, Doug Crater, discuss annuals, Extension also includes an explanation of disease control in flowers by one of their plant pathologists, Gene Moody.

This year, they added a section on



Dick Collier, Columbus (Ga.) City Extension Director, presents a vegetable gardening show-and-tell for viewers on "The Backyard Gardener."

designing the home landscape and took it up during earlier programs. Programs aired in late spring addressed problems with lawn maintenance.

Although the series concentrates on horticulture, it also deals with nutritional aspects of a garden. Paulette Ybarra, Extension home economist in food and nutrition, covers topics like storing garden vegetables, identifying and drying herbs, and cooking vegetables on the grill.

TV Garden Grows

What the home viewer sees in front of the camera is only one-tenth of what goes on behind the lens. Putting many 30-minute programs

together takes months to prepare.

Plans for the spring series are made the previous fall. At that time, DeMarco meets with the WGTV program director to choose the dates of the spring telecasts. Then she contacts the production department to determine the days for videotaping and logs them in the schedule. Next, the head of the production department assigns one of his directors, Clate Sanders, to the BYG project and the first of many meetings between Sanders and DeMarco begins.

After DeMarco presents a rough format to Sanders, they discuss how it will be implemented. A more efficient series has fewer guests and no guest speaks longer than 5 minutes. Bridges between segments are filled by the cohosts. Courson introduces most programs, and DeMarco closes them.

From this original plan, Sanders introduces other innovations. For example, rather than seat all of the talent on a mock patio, he suggested that a newslike set be built for the hosts, surrounded with decorative panels and a chromakey board. Although a low-budget series, BYG is on statewide television and must compete with such syndicated productions as "P.M. Magazine."

While the set is built, other visual requests go out from the producer. Extension artists prepare designs for the chromakey board and panels, set type for word slides, and prepare the mechanical for a large poster to be used in promoting the programs.

Now, the guests are invited. County agents cover areas that involve two or more horticultural disciplines. Specialists prepare their notes and decide which props they will need. Detailed sheets of their subtopics, slides, props, and dates available for taping are sent to



Georgia Extension horticulturist Gerald Smith demonstrates how to "airlay camillias" on a segment of "The Backyard Gardener."

DeMarco. She funnels requests to the art department, juggles schedules to match available studio time, and assigns a program assistant to order the nearly four dozen plants needed on the set from the university greenhouse.

Plans for promoting BYG begin, too. Duties are handled by the WGTV promotion department, which prepares on-air promotion and news releases for statewide newspapers and radio stations. An equal amount of promotion work is done by Virgil Adams, Extension news editor, and Roland Brooks, Extension radio editor, who write materials for the statewide news and broadcast release packets.

Soon, DeMarco prepares detailed

formats for each of the nine programs that will be videotaped. Copies are distributed to the director, studio manager, and guests. The cohosts write their on-camera copy.

This copy and the program outlines for individual specialists and county agents are then transferred to station teleprompter paper. Increased use of the teleprompter has helped on-camera appearances of guests, by improving their eye contact and making them appear less rigid on the set. But only the cohosts read them verbatim; specialists and agents are not encouraged to "read or lecture" to the home audience.

At last, the week of taping arrives.

The first morning is reserved for station engineering. As gaffers check lights and cameras are chipped, the set is dressed for the week and last-minute negotiations between director and producer continue.

Monday afternoon is set aside for taping the first program. A rehearsal is scheduled for 1:30 and actual taping is begun by midafternoon. For the next 4 days, two programs are rehearsed and taped per day and by Friday afternoon the last program is "wrapped."

Produce Goes To Market

The fruits of Extension's labor are distributed 2 weeks after taping. April through June broadcasts are aired on both WGTV and the Georgia Educational Network (GETN), which has transmitters in cities throughout the state. WGTV plays BYG at 6:30 p.m. Friday, and GETN replays every show but the call-in at 2:30 p.m. on Saturday.

Last minute promotion to state garden clubs and commercial garden centers alerts the public to upcoming telecasts. At last, Extension and PBS personnel can sit back and savor the harvest from April through June.

Before the staff rests on its laurels, though, it indulges in what it calls "weed pulling," or self-criticism. Improving camera performances is one priority. The staff also has considered holding a television workshop for guest horticulturists and showing them in active poses. Finding a better replay for GETN broadcasts has been recommended, but getting a slot in a crowded PBS lineup is difficult.

By pulling these "weeds" after their spring season, the staff hopes to reap a better crop of programs in the fall. □

A Poultry Professor's Magic

Sally Dana Willson
Extension Editor
Cornell University



"Which came first, the chicken or the egg?" Learning becomes meaningful, especially when it relates to a "living" classroom experiment.

In rural upstate New York, second graders hurry to school in the early morning to see if their incubating chicks have hatched.

With the confidence of college professors lecturing to a biology class, sixth graders at a school in Albany explain the life cycle of the chicken to a group of parents.

On a barren street in Harlem—with neither tree, flower, nor blade of grass in sight—a crowd huddles outside a bank window to watch a scraggly chick fight for life. This living exhibit is part of a 4-H-sponsored school project.

Teacher-training Workshop

Throughout New York over the past 15 years, scenes like these have occurred because of the work of Edward Schano, professor of poultry science education for youth at

Cornell University in Ithaca, New York. Schano is a teacher-trainer of incubation and embryology.

Schano travels around the state, delivering teacher-training workshops set up by local 4-H agents. In his 15 years as a teacher, he has developed an educational package on incubation and embryology that includes lesson plans, charts, slides, cassette tapes, and posters. The package is available to the public through the New York State 4-H Poultry Science Program.

Designed to help teachers use incubation and embryology as a method of teaching children problem solving and life appreciation, his workshops have been a success.

"The incubation and embryology material is exciting," said one 4-H agent. "It inspires kids to want to know more about biology, math,

composition, and the use of the library. It opens the door to one of the greatest miracles of life—the transformation of a seemingly lifeless egg into a fully developed living chick!"

Describing the effect of Schano's program on schools in his area, another agent said: "This school has been electrified—it's an excellent teaching tool. It shows youngsters how life begins and can also be tied in with sex education."

It's been estimated that about 4,000 teachers and 80,000 school children from rural, suburban, and urban areas in New York participate in the program annually. Requests for Schano's materials have come from Maine, Rhode Island, Massachusetts, New Jersey, and states farther to the south and west.

Television Debut

Because the demand for teacher-training workshops and materials have increased over the years, last year Schano created a three-part television series called "Incubation and Embryology." In the series, produced by the Educational Television Center (ETV), Schano explains how to construct and operate an incubator, observe and care for embryos, and brood chicks. The series is part of the New York State 4-H Poultry Science Program and is available to the public in five different color formats from ETV, Cornell University, Ithaca, New York 14853.

Schano's television series is benefiting an increasing number of teachers throughout the United States. And this means more scenes of children hurrying to school, children teaching parents, and crowds huddled together learning about life. □

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