STATUS OF THE CURRENT FIRE ANT RESEARCH PROGRAM OF THE UNITED STATES DEPARTMENT OF AGRICULTURE

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It is a pleasure for me to appear before you today to present a review of the research being conducted by the U.S. Department of Agriculture (USDA) on the imported fire ants, *Solenopsis invicta* Buren and *S. richteri* Forel. Fire ant research by the USDA dates back to about 1949 when a small research laboratory was set up at Mobile, Alabama. There, over a period of about 4 years, research was conducted on the biology of fire ants (USDA, 1958) and methods for their control. Also, an extensive survey was conducted which demonstrated that spread of the fire ant throughout the Southeast was being accelerated by the shipment of nursery stock from the Mobile area (Culpepper 1953). Subsequently, as we all know, the fire ant continued to spread dramatically. Therefore, in 1957, the Congress of the United States appropriated funds for a cooperative state-federal program for control of the imported fire ant (Lofgren and Weidhaas 1972). In conjunction with this program, a Methods Improvement Laboratory of the Plant Pest Control Division of the Agricultural Research Service was set up at Gulfport, Mississippi, to work on improving old methods and developing new procedures for control of the fire ant. During the following 6 years, these studies culminated in the development of mirex bait which in 1963 replaced heptachlor and dieldrin for fire ant control (Lofgren et al 1964).

In 1967, the Agricultural Appropriations Committee of the U.S. Senate requested the USDA to determine whether it was feasible to eradicate imported fire ants with mirex bait. At that time, money was redirected from the control program, to the then Entomology Research Division to carry out these studies. Three trial eradication blocks were established in cooperation with the Animal and Plant Health Inspection Service (APHIS) to which three applications of mirex bait were applied at intervals of 3 to 6 months. It was concluded that there were no insurmountable technical problems so total elimination of fire ants from large isolated areas might be technically feasible (Banks et al. 1973). However, other problems, such as residues of mirex in nontarget organisms, made it impractical to embark on such an eradication program. Thus, in 1971, our research

effort was redirected away from mirex technology towards alternate methods of chemical or biological control and more intensive studies of the biology and ecology of fire ants. Also approximately $800,000 of money appropriated for control of fire ants during fiscal 1971 was diverted to extramural research and apportioned via specific Cooperative Agreements to various scientists at universities in the South. These funds increased our knowledge of imported fire ants greatly, but did not result in the development of new control techniques. In late 1976, the funds made available for our research program by the Congress of the United States were increased. We decided at that time to expand our program in 4 principle areas: toxicant screening and formulations, isolation and identification of the queen pheromone(s), initiation of a biocontrol program in South America and ecology as related to cultural control. Our decision to emphasize these areas of research was guided by the recommendations of an Imported Fire Ant Research Needs Committee appointed at the Annual Imported Fire Ant Workshop held at Gulfport, Mississippi, in March, 1976. This Committee was composed of 5 members[1] representing state universities, APHIS and ARS (since reorganization now known as Agricultural Research, Science and Education Administration, AR, SEA). They carefully reviewed the status of the total research effort at that time, identified gaps in the research effort and made recommendations and set priorities for additional research. Almost all of our expanded research program was taken from research areas that received the high priority rating.

With this brief review for historical perspective, I would now like to review for you the current status and some of the accomplishments of our research program in AR, SEA. Within the USDA there are 3 laboratories working on imported fire ants. Two of them are located in Gulfport, one, the Methods Development Laboratory of APHIS and the other a research laboratory of AR, SEA. The 3rd laboratory is located in Gainesville, Florida, as part of the Insects affecting Man and Animals Research Laboratory, AR, SEA. A total of 9 scientists (8 entomologists and 1 chemist) are conducting research on imported fire ants at the 2 AR, SEA laboratories. The research of these 3 laboratories is coordinated through a Technical Working Group Committee composed of 3 members each of AR, SEA and APHIS. My remarks today will be limited to the research being conducted in AR,

[1] Members of this committee were: W. F. Buren, Department of Entomology and Nematology, University of Florida, S. B. Vinson, Department of Entomology, Texas A&M University, D. A. Lindquist, USDA, AR,SEA, C. S. Lofgren, USDA, AR, SEA and C.L.Mangum, USDA, APHIS. Fowden G. Maxwell, Chairman, Department of Entomology and Nematology, University of Florida, attended the meeting and assisted in report preparation.

SEA. The research is subdivided into 6 different areas as follows: bait toxicants and formulations, insect growth regulators, pheromones, biological control, biology, ecology and physiology, and economic impact and agronomic practices. I will discuss each of these areas separately.

Bait Toxicants

The main effort in the area of chemical control for several years has been to develop a substitute for mirex bait. Mirex has been extremely effective and its use has demonstrated the fact that very little insecticide is required to control fire ants with a bait. For example, less than 0.5 gms of toxicant in 1 pound of bait currently gives good control. The effectiveness of mirex, is related to its high degree of toxicity and lack of repellency to fire ants and its delayed toxicological effect (Stringer et al. 1964). Unfortunately, chemicals with these properties are not easy to discover, primarily because the emphasis on development of commercial insecticides is placed on compounds with fast toxic action.

Two separate approaches are being used to develop a new delayed-action toxic bait. First, new chemicals are screened as they become available, and secondly, an effort is being made to formulate fast-acting toxicants in such a way that their toxic effect is delayed. In the screening program to date, 4,642 chemicals have been tested. Of this number, 3,995 were not toxic, 373 were toxic but gave very fast kill, 253 gave delayed kill over a 10X range of dosages, 20 gave delayed kill over a 10 to 99X range of dosages and 1 (mirex) gave kill over greater than a 100X dosage range. (Detailed explanations of the importance of the different categories for delayed kill are given in Banks et al. 1977). All of the promising compounds from our laboratory studies have been tested in the field against natural infestations of fire ants; only mirex and some of its analogues have consistently given adequate control (Banks et al. 1977).

Most of the chemicals that we have tested are those that have been sent to the Insects Affecting Man and Animals Research Laboratory over the past 20 years for evaluation as toxicants, repellents, attractants, etc. We are continuing to evaluate compounds from this source. Also, during this past year, we completed a Cooperative Agreement with the Mississippi State Chemical Laboratory for the synthesis of new chemicals. This will provide the opportunity to follow up on leads for toxicants based on the results of our general screening program. In addition, we are continuing our contacts with the chemical industry in an effort to encourage the submission of compounds for evaluation.

As all of you probably know, the Mississippi Authority for Control of Fire Ants is requesting an emergency label from EPA for a degradable formulation of mirex called Ferriamicide. This bait was developed by Dr. Earl G. Alley and his co-workers at the Mississippi State Chemical Laboratory. Primary responsibility for evaluation of the bait will be with APHIS, however, we will assist in the tests as needed.

Attempts to formulate fast-acting toxicants so that they can be used in a fire ant bait have followed two lines. First, an effort is being made to encapsulate or embed the toxicant in some type of polymer. One of the problems that needs to be resolved before proceeding effectively with this approach is to determine the size of solid particles which can be ingested by the worker ants, because to be effective the toxicant must be passed from ant to ant during trophollaxis. This size has not been determined with complete certainty, however, it appears that the particles must be about 5 micrometers or less since this is approximately the diameter of the pharynx of a medium-sized adult worker ant. Presently various types of formulations are being made in this particle size range so that they can be traced through the communal stomach of the ant colony. Also, the type of capsule wall or embedding material that is degraded at the proper rate in the digestive system of the fire ant must be determined. Too fast a release will result in kill of the worker ants before the toxicant is spread throughout the colony while too slow a release may not permit toxic levels to be reached within the individual ants.

The second approach to formulating has been to chemically bond a fast-acting toxicant with a food component, such as a fatty acid or cholesterol, or with a polymer. With this approach, it is anticipated that after the new compound is ingested by the fire ant, the chemical bond between the toxicant and other component will be broken and the toxicant released within the ant. One of the biggest problems in developing this method has been the lack of effective insecticides with chemically reactive sites. However, preliminary studies have shown promise and we hope to accelerate this work during the remainder of this year. The research on formulations is being done in cooperation with the Insect Physiology Laboratory, AR,SEA, Beltsville, Maryland, which is under the direction of Dr. William Robbins and several laboratories of industry and private research.

Insect Growth Regulators

During the past several years, the effects on fire ants of insect growth

regulators have been investigated. Primary research effort has been placed on the juvenile hormone (JH) mimics. The laboratory phases of this research have been prepared for publication and will appear soon in the Journal of Economic Entomology (Banks et al. 1978). (Mr. W. A. Banks will give a detailed report on these studies at this meeting.) Basically, it has been found that certain of the JH mimics have the overall effect of stopping brood production. This effect may be reversible; with the more effective compounds about 66 to 75 percent of the colonies that have been allowed to feed for 24 hrs on the compounds in soybean oil or peanut butter have been killed. Field tests with the most promising of the JH mimics (AI3-36206; Stauffer MV-678; Benzene, 1-(8-methoxy-4,8-dimethylnonyl)-4-(1-methylethyl)-), have not been as encouraging as the laboratory studies although about 75 percent control was obtained in at least 1 test. However, the problem may be one of obtaining the most acceptable formulation so that the greatest amount of the JH mimic is picked up by the individual ant colonies. In any case JH look promising and their influences will be explored in depth. To this end, a Cooperative Research Agreement has been made with Dr. Murray Blum of the University of Georgia to isolate and characterize the natural JH of fire ants and to study the effect of natural and synthetic JH on colony and caste development.

Other chemicals besides the juvenile hormone mimics are being evaluated for inhibition of reproduction by fire ants. Some of these chemicals appear to interfere with reproduction. Since evaluation of these compounds as well as the JH mimics involves an assay of the effect upon reproduction, it is necessary to test them against entire fire ant colonies in the laboratory. This necessarily requires the maintenance of hundreds of colonies in the laboratory for long periods of time, usually 6-12 months. Fortunately, methods for colonizing, handling and maintaining colonies in the laboratory have improved immensely. Thus, this type of screening can progress at an accelerated rate.

Pheromones

Until recently, most of the research on pheromones of fire ants has been with the trail-following pheromone that is used by fire ants to establish trails from their nest or foraging tunnels to sources of food. While good progress has been made on isolating this pheromone and developing bioassay techniques that show its presence (Barlin et al. 1976), the elucidation of its chemical structure has proven to be very difficult. Glancey et al.

(1970) and later Walsh and Tschinkel (1974), reported the existence of a brood pheromone in *S. invicta* and Bigley and Vinson (1975) reported that triolein was a brood pheromone isolated from sexual brood. Currently, we are directing our efforts towards isolating and identifying the queen pheromone(s) of the imported fire ant. This pheromone was reported by Jouvenaz et al. (1974). Additionally, Dr. B. M. Glancey, who was at that time at our Gulfport laboratory, conducted extensive unpublished studies with the queen pheromone. This past year a full-scale commitment was made to the isolation and identification of this pheromone. The research is being conducted by Dr. Glancey and Dr. J. H. Tumlinson of the Insect Attractants, Behavior, and Basic Biology Laboratory of AR, SEA in Gainesville, Florida.

The queen pheromone is particularly interesting because it appears to be a chemical that could be used to induce worker ants to carry harmful chemicals or pathogens into the ant nest. For example, when extracts of queens are placed on inanimate objects these objects are usually carried into the nest by the fire ant workers. Since Drs. Glancey and Tumlinson will report in more detail on the queen pheromone research at this meeting, I will not mention any more about it in my presentation.

While our research will be concentrated on the queen pheromone, we recognize that all types of chemical communication are important in the regulation and organization of ant colonies and we plan to conduct an exhaustive study of the secretions of exocrine glands. This area of research should be especially fruitful for developing some new ecologically acceptable methods for control of the fire ant.

Biological Control

Recent surveys conducted by personnel of the Insects Affecting Man and Animals Research Laboratory in conjunction with Dr. George Allen, University of Florida, have shown that populations of red and black imported fire ants in the southeastern United States are essentially free of disease (Jouvenaz et al. 1977). Only 1 pathogen, a microsporidium (Protozoa: Microsporida), was detected in 1 of 1007 colonies of *S. invicta* that were sampled from 285 sites in 6 states; however, the normal host of this parasite appears to be the tropical fire ant, *Solenopsis geminata* (F.), a species native to North America. A benign or mildly pathogenic mold associated with *S. invicta* in certain areas has also been discovered. It cannot be cultured on standard mycological media, but has grown slowly on an insect tissue culture medium. No other potential pathogens of *S. invicta* have

been detected nor have any been found in samples of 83 colonies of *S. richteri* from 22 sites in the 2 states in which this species is found.

The apparent rarity of disease in U.S. populations of the imported fire ants is in contrast to the relatively high frequency of disease in these ants in South America. Probably small numbers of healthy colonies of each of the species made up the original introduction. Preliminary surveys conducted in South America by AR,SEA personnel and by Dr. George Allen and Dr. William Buren of the University of Florida have revealed that 20-25 percent or more of the colonies in many areas to be infected with microsporidia; other pathogens also occur (Jouvenaz et al. 1977). It is not known to what extent these diseases affect fire ant colonies. Quite possibly the dry season and perhaps other abiotic factors may influence the epizootiology of fire ant diseases. Even when these factors are better understood, it may be difficult to predict the effects of these pathogens under the environmental conditions to which fire ants are exposed in the southern United States. However, the imported fire ants present a classical imported pest situation in which natural enemies are lacking or reduced. The successful introduction of pathogens and perhaps other natural enemies might reduce the imported fire ants to a non-pest status similar to our native species. Currently, plans are being developed for extensive studies in South America so that the effects of various diseases and parasites on these fire ant populations can be evaluated. Promising organisms can then be appraised for their potential introduction into the United States.

In the meantime, the diseases of the native species, *S. geminata*, are being studied to develop model systems for survey and culture, and to gain basic knowledge of the biology of ant pathogens. These techniques will make progress on the South American studies more rapid. To date, 1 virus, a neogregarine (Sporozoa: Neogregarinida), and 4 microsporidians (Sporozoa: Microsporida) are now known to infect this native fire ant. Also, 1 of the microsporidians has been transmitted to the native species and to both imported fire ant species. However, it does not persist in colonies of the imported fire ants. At this time, the disease is known to affect only the larval and pupal stages (Jouvenaz and Hazard 1978).

Biology, Ecology and Physiology

During the past 10 years, certain aspects of the biology, ecology and physiology of the imported fire ants have been studied: food transfer within and between colonies in the field, polygyny within the imported fire ants

and its extent and importance, the capability of newly-mated queens for establishing new colonies in the laboratory and field, the occurrence and importance of myrmecophiles in ant colonies and the impact of imported fire ants on other ant species (Summerlin et al. 1975; Glancey et al. 1973; Glancey et al. 1975; Glancey et al. 1976; Stringer et al. 1976; Wojcik 1975). Currently the bulk of the research in this area has to do with the effect of fire ants on other ants. Because Gainesville, Florida, is just now becoming infested with imported fire ants, a series of collections in baited traps have been made over the last 6 years to study the rate of infestation of *S. invicta* and the effect on the occurrence of other ant species. These studies will be continued but the results thus far are similar to those reported previously, i.e., once the imported fire ants become established in an area, the total numbers and diversity of other ant species diminishes (Roe, 1973; Whitcomb et al. 1972). However, the data and survey procedures that have been developed will permit efficient and accurate assessment of the impact of control measures used against the general ant population in treatment areas. Research into the physiology of the fire ants has been minimal. However, nutrition and reproduction are particularly interesting because of their relationship to new concepts of control. Therefore, these areas will be investigated as extensively as our time and resources permit.

Economic Impact and Agronomic Practices

The economic impact of the imported fire ants on man, his crops and farm animals, and the environment has always been a controversial issue. Thus, a part of our research effort has been expended in trying to document more clearly the actual problems and economic importance of fire ants. Over the last 3 or 4 years, the main emphasis has been placed on determining the medical and public health importance of the fire ant and the effect of fire ants on soybean harvest.

In 1976, we conducted, in cooperation with the County Health Departments of Lowndes and Sumter Counties, Georgia, a survey to determine the incidence of fire ant stings to humans. Approximately 1 percent of all the households in the counties were contacted by telephone and a preliminary questionnaire filled out. These households were then contacted monthly by telephone to determine the frequency of fire ant stings to the individuals living there. In both counties, approximately 20 to 25 percent of the people were being stung during the period of peak fire ant activity, that is April through September, an indication of the very high degree of

contact between man and the ants. Contacts with hospitals and medical doctors to determine the number of people reporting in for treatment because of fire ant stings did not provide useful data. More recently we surveyed 3 of the military bases of the Department of Defense to determine the number of people reporting in for treatment because of various types of arthropod stings or bites. Preliminary results showed that on 2 of the bases about 40 percent of the military personnel and dependents reporting for treatment for arthropod stings or bites had been stung by fire ants. Additional data will be collected in an effort to obtain an even better evaluation of the overall medical and economic impact of the imported fire ants on man.

Studies with soybeans have shown that the fire ants are a problem because their mounds interfere with efficient harvest of the crop. In studies in Georgia and North Carolina, losses to the farmer were about $2.50 to $5.00 per acre because of incomplete harvest because combine operators raise the cutter bar of the combine to avoid the mounds or because soybean plants are pushed over by dirt if the mounds are hit directly (Adams et al. 1976; Adams et al. 1978). Other losses which have as yet no estimated monetary value are damage to soybean harvesting equipment and contamination of the soybeans by foreign material. The latter could possibly be the largest cost factor; however, efforts to document this loss during the last 2 years have been frustrated because of extremely wet or dry weather. It was determined in a preliminary test in Mississippi this past fall that the amount of contamination in soybeans from fields with 20-30 *S. richteri* mounds per acre was about double that in soybeans from fields with only a few mounds.

We have also reviewed the problem of fire ants in hay fields. In past years, this has been an area where farmers have registered complaints because the ant mounds interfere with mowing equipment and the ants move their colonies under bales of hay that are left in the field. It appears now that these problems may be circumvented by the use of new equipment. New rotary mowers or hay conditioners are available that are not as subject to damage when they strike ant mounds and hay stackers or round balers are made that compact the hay in large bales or stacks which do not seem to be invaded by the ants.

In the future, we intend to continue these studies and extend them to various other agricultural crops. Eventually, those problem areas that cause the greatest losses to the farmers will be identified. Then specific

control procedures can be developed to eliminate or reduce these problems to the farmer.

Summary and Conclusions

In summary, we have developed a well-rounded research program on the imported fire ants in support of the Federal-State Imported Fire Ant Control Program. The major goals we have set are to: (1) develop a substitute toxicant for mirex bait so that temporary control measures can be applied as needed; (2) isolate and identify the queen pheromone(s) as an adjunct to the use of toxicants and diseases; (3) intensify our biological control and ecological studies in South America to develop long-range natural solutions to the problem; and (4) increase ecological studies related to cultural control. Studies on biology, physiology and economic effects will be continued as they relate to our primary goals listed above. While our research program is broad there are gaps which need to be supplemented with additional research. The Imported Fire Ant Research Needs Committee, which I mentioned previously, recommended about twice the current amount of scientific effort for a period of 10 years. They indicated this amount of effort and time was necessary if an effective pest management program was to be developed. We believe that this additional research needs to be undertaken and supported, and FR,SEA will work with interested parties in seeking the additional funding. Let us hope that this goal can be achieved in the near future so that ecologically and economically sound programs for fire ant control are developed.

References

Adams, C. T., J. K. Plumley, W. A. Banks, and C. S. Lofgren. 1977. Impact of the red imported fire ant, *Solenopsis invicta* Buren, (Hymenoptera: Formicidae) on harvest of soybeans in North Carolina. J. Elisha Mitchell Sci. Soc. 93:150-152.

Adams, C. T., J. K. Plumley, C. S. Lofgren, and W. A. Banks. 1976. Economic importance of the red imported fire ant, *Solenopsis invicta* Buren. I. Preliminary investigations on impact on soybean harvest. J. Ga. Entomol. Soc. 11: 156-9.

Banks, W. A., C. S. Lofgren, and J. K. Plumley. 1978. Red imported fire ants: Effects of insect growth regulators on caste formation and colony growth and survival. J. Econ. Entomol. 71:75-8.

Banks, W. A., C. S. Lofgren, and J. K. Plumley. 1978. Red imported fire ants: Effects of

insect growth regulators on caste formations and colony growth and survival. J. Econ. Entomol. 71: 75-78.

Banks, W. A., C. S. Lofgren, C. E. Stringer, and R. Levy. 1977. Laboratory and field evaluation of several organochlorine and organophosphorous compounds for control of imported fire ants. ARS-S-169. 13 p.

Barlin, M. R., M. S. Blum, and J. M. Brand. 1976. Fire ant trail pheromones: Analysis of species specificity after gas chromatographic fractionation. J. Insect Physiol. 22:839-44.

Bigley, W. S. and S. B. Vinson. 1975. Characterization of a brood pheromone isolated from sexual brood of the imported fire ant. Ann. Entomol. Soc. Am. 68: 301-4.

Culpepper, G. H. 1953. Status of the imported fire ant in the southern states in July, 1953. USDA, Bur. Entomol. and Plant Quar. E-867. 8 p.

Glancey, B. M., C. H. Craig, C. E. Stringer, and P. M. Bishop. 1973. Multiple fertile queens in colonies of the imported fire ant, *Solenopsis invicta*. J. Ga. Entomol. Soc. 8: 237-8.

Glancey, B. M., C. E. Stringer, C. H. Craig, and P. M. Bishop. 1975. An extraordinary case of polygyny in the red imported fire ant. Ann. Entomol. Soc. Am. 68: 922.

Glancey, B. M., C. E. Stringer, C. H. Craig, P. M. Bishop, and B. B. Martin. 1970. Pheromone may induce brood-tending in the fire ant, *Solenopsis saevissima*. Nature 226: 863-4.

Glancey, B. M., D. P. Wojcik, C. H. Craig, and J. A. Mitchell. 1976. Ants of Mobile County, Al., as monitored by bait transects. J. Ga. Entomol. Soc. 11: 191-7.

Jouvenaz, D. P., G. E. Allen, W. A. Banks, and D. P. Wojcik. 1977. Survey for pathogens of fire ants *Solenopsis* sp. in the southeastern United States. Fla. Entomol. 60: 275-9.

Jouvenaz, D. P., W. A. Banks, and C. S. Lofgren. 1974. Fire ants: Attraction of workers to secretions of queens. Ann. Entomol. Soc. Am. 67: 442-4.

Jouvenaz, D. P. and E. I. Hazard. 1978. New family, genus, and species of Microsporida (Protozoa: Microsporida) from the tropical fire ant, *Solenopsis geminata* (F.) (Insecta: Formicidae). J. Protozool. 25: 24-9.

Lofgren, C. S., F. J. Bartlett, C. E. Stringer, and W. A. Banks. 1964. Imported fire ant toxic bait studies: Further tests with granulated mirex-soybean oil bait. J. Econ. Entomol. 57: 695-8.

Lofgren, C. S. and D. E. Weidhaas. 1972. On the eradication of imported fire ants: A theoretical appraisal. Bull. Entomol. Soc. Am. 18: 17-20.

Roe, R. A., II. 1973. A biological study of *Solenopsis invicta* Buren, the red imported fire ant, in Arkansas with notes on related species. M.S. Thesis, University of Arkansas, Fayetteville, AR. 135 p.

Stringer, C. E., Jr., W. A. Banks, B. M. Glancey, and C. S. Lofgren. 1976. Red imported fire ants: Capability of queens from established colonies and of newly-mated queens to establish colonies in the laboratory. Ann. Entomol. Soc. Am. 69: 1004-6.

Stringer, C. E., C. S. Lofgren, and F. V. Bartlett. 1964. Imported fire ant toxic bait studies: Evaluation of toxicants. J. Econ. Entomol. 57: 941-5.

Summerlin, J. W., W. A. Banks, and K. H. Schroeder. 1975. Food exchange between mounds of the red imported fire ant. Ann. Entomol. Soc. Am. 68: 863-6.

USDA, ARS, Entomol. Res. Div. 1958. Observations on the biology of the imported fire ant. ARS-33-49. 21 p.

Walsh, J. P. and W. R. Tschinkel. 1974. Brood recognition by contact pheromone in the imported fire ant, *Solenopsis invicta*. Anim. Behav. 22: 695-704.

Whitcomb, W. H., H. A. Denmark, A. P. Bhatkar, and G. L. Greene. 1972. Preliminary studies

on the ants of Florida soybean fields. Fla. Entomol. 55: 129-42.
Wojcik, D. P. 1975. Biology of *Myrmecophodius excavaticollis* (Blanchard) and *Euparia castanea* Serville (Coleoptera: Scarabaeidae) and their relationships to *Solenopsis* spp. (Hymenoptera: Formicidae). Ph.D. Dissertation, University of Florida, Gainesville, FL. 74 p.

USDA ROLE IN THE IMPORTED FIRE ANT PROGRAM

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One of the essential facts of life in almost every organization we know of these days is change. Change and dealing with change have become almost the only constant we know.

Change in programs, change in tools, change in politics, change in philosophy has come to Federal agencies just as it has come to individuals and groups in the private sector. And there has hardly been a better demonstration of change than the imported fire ant program. Over the years, it has been one of the most fluctuating programs on record.

But regardless of the changes in the elements of the program — the chemical, the formulation, the equipment, the personnel, the acres treated, the cooperators, the friends, the enemies — and all the other parts that make up this program — the U.S. Department of Agriculture has remained constant in its position since 1973 — if we have the tools available, we will provide relief, and hope for eradication, to those who are suffering with this pest. As long as we are funded to do so, through our research and control efforts, USDA will carry out as many aspects of the program as we have available to us.

I'm sure everyone here is well aware that we have no control material available for use at this time. Since the proposal by the Mississippi Authority for the Control of Fire Ants was presented to and accepted by the Environmental Protection Agency in October 1976 for aerial use of mirex to end December 1 of last year, we have no control tool available. Although ground application of mirex, using remaining stocks of the material, is available to us through June 30 this year, we have never had a role in ground application other than offering technical assistance since this method of application is costly and less effective than aerial treatments.

So, quite obviously, where there is no registered material that is environmentally acceptable, there is no control program. But USDA is continuing to remain in a position to conduct a control program, once a registered pesticide is made available.

Until that time, there are all the other aspects of the program that are still ongoing. Although Cliff Lofgren and Don Lindquist are covering the specific research being done by the Science and Education Administration