

VIRGINIA AGRICULTURAL EXTENSION SERVICE

EXTENSION ENTOMOLOGY PLAN OF WORK
(Name of Project)

For

Calendar Year 1961

<u>Major phases of project or subdivisions of project covered</u>	<u>Name of Worker*</u>	<u>Percentage of time devoted to entire project by each worker</u>
Entomology	J. O. Rowell	85
	J. M. Amos	35
Beekeeping	J. M. Amos	50
	J. O. Rowell	2.5
Rodent Control	J. M. Amos	10
	J. O. Rowell	2.5
Cooperative Insect Survey	W. A. Tarpley	100
	J. O. Rowell	10
	J. M. Amos	5
Date submitted: <u>December 31,</u> . 196 <u>0</u> .	Signed: <u>J. O. Rowell</u> Project Leader	
Date approved: <u>December 31,</u> . 196 <u>0</u> .	Signed: <u>J. O. Rowell</u> Head of Department	
Date approved: <u>Dec. 31</u> . 196 <u>0</u> .	Signed: <u>James McD. Grayson</u> Acting State Director of Extension	
Date approved: <u>MAR 15 1961</u> . 196 <u>1</u> .	Signed: <u>W. H. Daughtrey</u> Administrator, Federal Extension Work, U. S. Department of Agriculture	

*If phases of project are divided between two or more workers, indicate assignment to each.

I. ANALYSIS OF PROJECT SITUATION:

In Extension Entomology (Project 22) are included actually four distinct specialties -- Entomology, Cooperative Insect Pest Survey; Beekeeping, and Rodent Control. The extension entomologists work cooperatively on the extension entomology projects. However, beekeeping, rodent control and fruit insect control are the extension activities specifically under the direct supervision of J. M. Amos, Associate Extension Entomologist; cooperative insect pest survey activities are the responsibility of W. A. Tarpley, Assistant Extension Entomologist - Survey, under the immediate direction of J. O. Rowell, Extension Entomologist. The last-mentioned activity is a cooperative undertaking and is supported by the Plant Pest Control Branch of the Agricultural Research Service, the Virginia Department of Agriculture, and the V. F. I. Agricultural Extension Service.

All crops and livestock and the products derived from these are subject to attack by insects. The loss from insect pests in the state varies from around fifteen million to twenty-five million dollars annually. These figures serve to indicate the importance of insect control. It has been demonstrated that some of this loss caused by insect damage can be prevented through careful planning in advance on insect control and through prompt and concerted action on the part of cooperative agencies when emergencies arise. In this

important aspect of entomology extension, the insect survey program is playing a big role.

It is very difficult to comprehend the extent of the monetary loss occasioned by insect damage on a national scale. The great losses to farm and industry incurred by insects, rodents, and other pests are estimated in the millions of dollars annually, not to mention the discomfort and the suffering brought upon the people by direct attacks of these pests and from the ravages of the diseases spread by them. It is estimated conservatively that stored grain insects and rodents each year take approximately one out of each 20 bushels of the grain harvested and stored in Virginia. These pests damage or destroy one out of every twenty bushels of grain produced in the United States as a whole each year.

The extension entomology project is organized on the basis of a year-round program. Emergency insect control activities, as in the past, will constitute a large part of the work of the extension entomologists. Attention will be directed toward insect surveys with the idea of foreseeing and releasing advanced information, when possible, to prevent heavy damage by insect outbreaks. Again, the insect pest survey program will be of immeasurable assistance. There will be constant changes in insect and rodent control recommendations as newer and more effective insecticides and rodenticides are developed.

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As the National 4-H Club Entomology Project goes into the tenth year, it is planned that 4-H Club work in entomology will be continued as more and more of the county agents and home agents become aware of the assistance which can be given by the extension entomology specialists. If possible additional time will be given by extension entomologists to working with county agents, 4-H Club members, and leaders at county 4-H Club meetings and at summer encampments.

Household pests, including insects and rodents, constitute a serious health and economic problem in Virginia. It is estimated conservatively that, in addition to their health hazard, household pests destroy over one million dollars worth of property annually in this state. Continued emphasis will be placed on assisting county extension agents with pest control as it affects the health and economy of our people.

The thirteenth V. P. I. Pest Control Operators' Short Course has been tentatively scheduled for November 8, 9, and 10, 1961. It is anticipated that this activity will be continued indefinitely and possibly be expanded, but expansion is limited by the facilities available at the present time.

Extension entomologists fully realize that their mission is to keep county extension agents informed on entomological, insect pest survey, beekeeping, and rodent control matters. They have, therefore, planned their educational program with this thought in mind.

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II. MAJOR PROBLEMS

The problems listed are all of major importance; however, this list does not constitute all of the phases of entomology to which attention will be given during 1960-1961. Problems are not listed necessarily in the order of their importance.

1. Losses in milk and meat production as a result of feeding, annoyance, and transmission of organisms of disease in dairy and meat cattle.
2. Damage to health and property by direct attack and by spread of organisms of disease by household pests, including rodents, insects and related animals.
3. Destruction of and/or contamination of stored products, including stored grain, seeds, grain products, cured meats, cheeses, processed cereals, and other food stuffs.
4. Losses in yield and quality of products as a result of insect and related pest damage to field crops, fruit crops, pastures, forests, gardens and miscellaneous crops and ornamentals.
5. Reduction in pollination service and in honey and wax production by bees as a result of damage by diseases and insects and other pests, and as a result of the use by beekeepers of improper management practices, such as, continued use of box hives by beekeepers and the incorrect location of apiaries. Burning bees as a control for diseased colonies instead of treating with antibiotics further reduces our bee numbers.
6. Providing an adequate vigilance for harmful insects and providing an effective insect presence and insect outbreak forecasting service to agriculturists.
7. Providing an adequate entomology educational program in the form of short courses and/or schools for county extension agents.
8. Elimination of chemical residues on food crops for man and livestock.

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III. WORK TO BE DONE AND METHODS OF PROCEDURE:

A. Some Goals for 1961 --

1. To conduct 4 demonstrations on spraying dairy barns and other farm buildings with currently recommended insecticides to control flies.
2. To assist in rodent control through personal visits, circular letters, news articles, TV shows, and radio programs in one county in the state to carry out county-wide rat control program.
3. To assist county agents conduct one demonstration with 4-H Club members to control cattle grubs in each of four counties on the use of Co-Ral, or other systemic insecticide.
4. To conduct, in cooperation with county agents and 4-H Club members and leaders, 5 demonstrations (one in each of 5 counties) on the use of Co-Ral to control cattle lice.
5. To assist county agents in at least 2 counties conduct demonstrations on fumigation of stored grain, beans, and peas for the control of insect pests, and assist county agents in 2 counties conduct demonstrations on use of Grain Protectants to control insects in stored, husked ear corn or shelled corn.
6. To assist county agents and/or home agents present illustrated talks on garden insect control at group meetings in 4 counties in the state.
7. To assist district agents in each district with meetings (or schools) on general insect identification and control matters for county agents in their respective districts (this, if requested by the district agents).
8. To assist home agents conduct one illustrated household pest control (including rodents) leader-training school for home demonstration club leaders in each of 4 counties in which the schools have not been conducted previously.

9. To present a nature study course in entomology in 6 county 4-H Club camps (three each by Amos and Rowell); and attend and instruct in the 1961 State 4-H Club Conservation Camp at Camp Farrar.
 10. To prepare for publication at least 50 timely news articles on entomological subjects, rodent control, beekeeping, and insect pest survey.
 11. To make 25 radio talks on entomological subjects, rodent control, beekeeping, and insect pest survey, and to present 2 TV programs (Amos-Rowell) on subjects of an entomological nature.
 12. To conduct the tenth Annual Virginia Beekeepers Short Course at Lynchburg, Virginia, in August, 1961.
 13. To assist county agents in 15 counties with spring and fall management problems in beekeeping, especially to 4-H Club members enrolled in the Beekeeping project.
 14. To treat ten or more colonies of bees to collect more evidence of the value of antibiotics in treating American foulbrood and requeen 10 colonies to improve stock.
 15. To conduct the thirteenth V. F. I. Pest Control Operators' Short Course, (November 8, 9, and 10, 1961).
 16. To make a fall density survey of European corn borers in 20 counties, to assist the Virginia Division of Forestry in making density survey of Virginia pine sawfly in the state, to prepare and release 36 survey reports, and to make accurate predictions of several insect outbreaks for 1961.
 17. Assist J. F. Shoulders and Allan Kates with 50 alfalfa management demonstrations.
- B. Methods and Procedure --
1. Demonstrations: The demonstration method has been found effective and most useful in establishing good insect control

practices on the farms. To the farmer, especially, seeing is believing. When appropriate, method demonstration will be conducted to show the effective use of the different types of dusts and sprayers, the preparation for spray and dust materials, the construction of insect control devices, the application of rodenticides and insecticides, treatment of diseased colonies of bees, methods of making insect pest surveys, and other practices. Result demonstrations will be conducted to point out the value of insect and rodent control in terms of dollars and cents saved for the farmer and/or home owner. The same procedure will be followed with regard to extension beekeeping introduction of queen bees, detection of bee diseases, transferring, and other bee management practices. Extension entomologists agree that the demonstration is the most effective method of instruction for use when attempting to explain or establish an insect or other pest control practices.

2. Group Meetings and Conferences: Through group meetings and conferences new ideas and timely information will be disseminated to county agents. This means will be employed, when it is appropriate and at the request of county agents, for the purpose of giving information on specific insect and rodent control problems, bee management problems, and insect survey problems. Many such meetings and conferences will be conducted jointly with the extension plant pathologist, vegetable garden specialist, agronomist,

agricultural engineer, animal husbandry and dairy specialists, and other specialists. Similar meetings and conferences will be held also with members of the teaching and research staff in these subject matter fields.

3. Training Schools and Short Courses: Advantage will be taken of every opportunity to present entomological information at training schools and short courses. Short courses offer an excellent opportunity for the extension entomologists to present practical information on timely subjects. Several such short courses have been planned for 1961, including the Beekeepers' Short Course at Lynchburg in August, and the V.F.I. Pest Control Operators' Short Course, November 8, 9, and 10.

4. Local Leader Training: In cooperation with and at the request of county agents, extension entomologists will continue to employ this means in conducting leader-training schools in household pest control, garden insect control, livestock pest control, ornamental plant and lawn pest control, and other phases of the extension entomology program. Local leaders, insecticide manufacturers and dealers, seedmen, druggists, farm equipment dealers, food and feed dealers, and others dealing with and interested in such problems will continue to be depended upon to a great extent to spread information on insect identification and control, rodent control, insect survey, and beekeeping. At these leader-training

meetings and conferences, planned by the county extension agents, a special effort will be made to give current insect and rodent control information to those in attendance.

5. Campaigns and/or Area-wide Pest Control Programs: A rapid and very effective way to establish any insect or rodent control practice, whether or not of an emergency nature, is by the way of campaigns. The campaign idea has been employed already on several occasions. It will be continued in 1961, especially in connection with the household pest control project and the ornamental and lawn pest control project. A planning meeting for an anti-rat campaign is to be held in Hopewell in February, 1961.

6. Surveys: It has been demonstrated that prevention is the best way to avoid serious insect troubles. Insect pest survey activities have proved an effective way of serving county extension agents and farmers and homemakers. Through insect surveys, it is hoped that entomologists will be able to foresee certain insect outbreaks, such as by spotted alfalfa aphid, fall armyworm, alfalfa weevil, pea aphid, tobacco and tomato hornworms, cattle grub, horn fly, armyworm, Virginia pine sawfly, and corn earworm, in time to caution county agents and farmers before the insect damage is widespread. W. A. Tarpley is full-time survey entomologist, and it is planned that this service will be continued during the succeeding years. An endeavor will continue to be made through surveys to

anticipate insect outbreaks, and to prepare and establish an early control program against the pests before damage by them is extensive, or to advise against the application of expensive control measures when such would seem impractical.

7. Tours: In cooperation with other specialists and at the request of county agents and, where possible, through organized county farm tours, farmers, local leaders and cooperators, and others will be taken on special trips in counties to observe demonstrations of improved practices on insect control, rodent control, and beekeeping. In locating demonstrations, an attempt by county agents has been made to establish such demonstrations where they are easily accessible to groups of farmers attending county farm tours.

8. Visual Aids: Extension teaching is made easier and more effective through the use of visual teaching aids. Extension entomologists are finding many additional uses for visual aids, such as motion pictures, film strips, color slides, flannel graphs, enlarged photographs, chalk talks, charts, and exhibits. Insect-Tac-Too visual and teaching aid was developed in 1959 and "refined" and improved in 1960. New ways of using this teaching aid will be studied and perfected. They are gradually building up a stock of these visual aids. The U. S. D. A. film strip and colored slide service and commercial slide and film service have been employed to advantage in entomological work in this state. During 1961, some of

the best photographs will be converted into 2 x 2 slides for use in connection with talks on specific subjects. Every opportunity will be taken to photograph insects and insect damage, insect control practice demonstrations, rodent control practices, and beekeeping demonstrations. These photographs will be used later in the preparation of slides, enlarged photographs, and exhibits.

9. Exhibits: Another important special type visual aid to the extension entomologist is the exhibit. During the past year our exhibit material was considerably expanded. However, more insect and rodent control exhibits are needed and are being developed. Extension entomologists are preparing exhibits for use in connection with stored grain pest control demonstrations, rate control demonstrations, 4-H Club camps and short courses, beekeeping short courses, household pest control demonstrations and meetings, pest control operators' short course, and the V. P. I. Agricultural Exposition.

10. 4-H Club Entomology Activities: With the 4-H Club Entomology Awards Program entering its tenth year, it is intended that continued emphasis be put on this extension activity. The services of entomologists will be available on requests from county extension agents, and where schedules can be arranged, to assist with entomology projects and activities in the counties and at encampments. It is planned that extension entomologists will spend four days at each of six encampments during which time they will

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conduct nature study courses in entomology, lectures on rodent control, beekeeping, and on survey entomology. As in the past, extension entomologists will take an active part in the programs at each State 4-H Club Conference and Short Course and at the State 4-H Club Conservation Camp.

11. Publications, Press Articles, Radio and TV: Circulars, leaflets, circular letters, and other publications will present information on timely topics on insect pest survey, insect control, rodent control, and beekeeping. Supplies of these releases will be furnished to county agents for distribution to professional agricultural workers, and farmers, and homemakers in their respective counties. Newspaper articles on timely subjects will be prepared as needed and will be released through the extension editor to county agents and home agents. Some of these articles will be applicable to certain communities or counties and will be released by the extension editor as he sees fit. As in the past, extension entomologists will continue to present radio talks and TV programs on timely subjects. The extension entomologist and the associate extension entomologists plan to present 25 or more radio talks and 2 TV programs in 1961.

12. Letters, Telephone and Telegraph: Perhaps the most convenient and quickest way to get information to the county agents, home agents, and farm people in reply to their requests, is through

letters, telephone calls, and telegrams. Constant use will be made of letters as a means of transmitting information to those requesting it. Most requests will be answered by letter, although in emergencies, telephone and telegraph will be used.

C. Cooperation --

1. Cooperative Agencies within the Extension Service: At all times, extension entomologists will work in cooperation with county extension agents and with other agencies of the Extension Service in an effort to fulfill their mission by keeping county agents and home agents informed on entomological matters. Many of the extension entomology programs will be coordinated with other specialists' activities, especially with those of the extension plant pathologists, agricultural engineers, horticulturists and agronomists. The extension entomologists will cooperate, where possible, with the extension plant pathologist, vegetable garden specialist, livestock and dairy specialists, agronomists, agricultural engineers and others. They will cooperate with and assist county agents, district agents, and the Extension administration in any manner possible, with the implementation of the farm and home development program.

2. Other Cooperative Agencies: Extension entomologists will continue to cooperate, when possible, with workers of the teaching and research staffs of the V. F. I. and branch experiment

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stations; Virginia Department of Agriculture; various branches of USDA; Vocational Agricultural Education Department; U. S. Fish and Wildlife Service; Federal, State, and County Health Departments; Virginia Forest Service; civic groups, and others. The extension entomology program lends itself well to cooperation with other agencies, and every advantage will be taken to work with other cooperative agencies to make its services more effective.

D. Calendar of Work -- J. O. Rowell (full-time)

Activity	Total Days in Field*	Field Work											
		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Livestock Pests	30		x	x					x	x	x	x	
Household Pests	20		x	x	x	x				x	x	x	
Stored Grain Insects	20					x	x	x	x	x	x		
Home Garden Insects	10			x	x	x	x	x	x	x		x	
Field Crop Insects - Tobacco, Corn, Cotton, Peanuts													
Soybeans	10					x	x	x	x	x			
4-H Club Entomology Activities	15						x	x	x	x	x	x	
Forage Crop Insects	20					x	x	x	x				
Insecticides, Miscellaneous Insects, Short Courses, Insect Survey, and Rodent Control	15	x	x	x	x	x	x	x	x	x	x	x	x

*Note: The remaining work days will be spent in the office, preparing bulletins and circulars, radio and TV programs, reports, news articles, exhibits, and other visual aids, and in answering correspondence and attending to other routine office duties.

D. Calendar of Work -- J. M. Amos (full-time), continued.

Activity	Total Days in Field*	Field Work											
		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
<u>Beekkeeping</u>	35	x	x	x	x	x	x	x	x	x	x	x	x
<u>Fruit Insect Control</u>	30			x	x	x	x	x	x	x	x	x	
<u>4-H Club Work and Miscellaneous Insect Activities, Survey</u>	20	x	x	x	x	x	x	x	x				
<u>Rat and Mouse Control Programs</u>	5	x	x	x							x	x	x
<u>Miscellaneous Insect Problems, Insecticides, Short Courses, etc.</u>	35							x	x	x			x

*Note: Much time is required for preparing news articles, radio scripts, TV shows, exhibits, bulletins and revising printed material. This work is scattered throughout the year when field activities are not pressing.

D. Calendar of Work -- W. A. Tarpley (3/4-time survey), continued.

Activity	Total Days in Field*	Field Work											
		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Cereal & Forage Crop Insects	44				x	x	x	x	x	x	x		
Cotton Insects	6					x	x	x	x	x			x
Forest & Shade Tree Insects	15				x	x	x						
Fruit Insects	1				x	x	x	x	x	x			
Household Insects	1				x	x				x	x	x	x
Insects Affecting Man & Animals	15										x	x	x
Nursery & Ornamental Plant Insects	6				x	x	x	x	x	x	x	x	x
Stored Food Product Insects	8				x	x				x	x		
Structural Wood Insects	1				x	x				x	x	x	x
Tobacco Insects	2				x	x	x	x	x	x			
Truck Crop & Garden Insects	12				x	x	x	x	x	x	x		x
Beneficial Insects	As the occasion arises												
Miscellaneous Insects	As the occasion arises												
Total	111												

*Note: The goal is to spend 50% of the working days in the field.

IV. RESULTS EXPECTED AND METHODS OF MEASURING:

Through the educational aspects of the insect survey and insect and rodent control activities in Entomology Project 22, and through the cooperation of the extension entomologists with county extension agents, it is anticipated that farmers and homeowners will be informed in advance of actual insect outbreaks to the extent that heavy losses by insects will be reduced in 1961. As a result of the services rendered (mainly through county extension agents) in extension entomology, and providing recommendations are followed, it is believed possible, by conservative estimates, that the people of Virginia can effect a saving of approximately a million and a half dollars annually, not to mention a possible marked improvement in general health conditions and a reduced incidence of diseases among humans and domestic livestock.

In the field of beekeeping, it is anticipated that, as a result of the expanded educational program and the annual short course, improvements will continue in the employment of approved bee management practices and in an increase in 1961 honey production. These expected improvements are based on the assumption that recommendations will be followed by the presently established and new beekeepers throughout the state.

In extension entomology, results will be measured in terms of accomplishments as actually observed by extension entomologists and as shown in reports from county extension agents and as is shown in answers to questionnaires sent to county agents and others.

V. PROJECTED PROGRAM NEEDS:

The primary needs in extension entomology in Virginia is for additional trained personnel to do the job. In beekeeping, for example, only 50% of one specialist's time is available for this important activity. If through the efforts of an extension bee specialist, the honey production could be increased by three pounds per colony, this could mean an additional \$105,000.00 income to the beekeepers in Virginia. The Extension Service urgently needs a full-time extension beekeeping specialist.

The insect survey program could be made more effective if an additional specialist could be employed, to mention but one need in this necessary aspect of extension entomology. Extension entomologists' time is spread so thinly over such a wide variety of essential activities that a thorough service can be given to no one undertaking. Extension entomology needs an additional specialist to devote his time to fruit insects.

Another need is in the field of program aids such as TV short films and regular-length motion picture films on entomological subjects. Educational films of this kind would be immeasurably valuable, especially here where there is a need for additional extension entomology specialists, in the educational aspects of the insect and rodent control program as well as in developing interest in the solution of other problems in the project area.

Additional state cars are also an urgent need. At the present time five specialists have the use of only one state car.