

## Tactical Agriculture (TAg) for Eastern New York 2002

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**Cooperators:**

***Extension Educators***

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***Growers***

**Madison County**

Parsons Farm  
Marshall Farm  
Taylor Farm  
Russin Farm

**Onieda County**

Loughlin Farm  
Collins Farm  
Cosgrove Farm  
Champions Farm  
Humphreys Farm  
Smith Farm  
Stanimere Farm  
Zomback Farm  
Crane Farm  
Brady Farm  
Peck Farm

**Dutchess County**

Smith Valley Farm  
Lo-Nan Farm  
Coach Farm  
Myers Farm  
Pulver Farm  
Chihenden Farm  
Coon Farm

**Abstract:**

The Tactical Agriculture (TAg) program is an experiential, hands-on training, integrated pest and crop management educational program for field crop producers, and other agribusiness personnel, that has been active in New York State since 1990. The TAg program teaches field crop producers to better manage field crops, protect the environment and reduce health risks. Participants are actively integrated into the growing-season-long program, which focuses on the collection of data from their fields in conjunction with meetings to discuss critical pest and crop management issues that arise during the growing season.

In 2002, we implemented TAg in Madison, Oneida, and Dutchess Counties. Five teams, consisting of 21 farming operations and 42 fields (800 acres) enrolled in TAg. Fields enrolled served as meeting places to discuss, demonstrate and practice IPM and ICM methods. Collectively, this years grower participants are expected to utilize their IPM and ICM training on the approximately 20,000 acres of field crops they manage.

**Introduction:**

Sound crop and pest management is critical to economical and efficient field crop production in New York State. The diverse landscape of Eastern New York provides a variety of environmental conditions which foster different crop production and pest management challenges and provide opportunities for locally based and adjusted IPM and ICM training. Many growers have indicated that they would like to learn more about Integrated Crop and Pest Management as a way to increase profits while protecting the environment. The Tactical Agriculture program (TAg) was initiated in the early 1990s to help growers learn how to improve their crop and pest management. TAg is an intensive, growing-season-long, educational program that brings together Cooperative Extension educators, field crop producers, and agribusiness personnel to teach, learn, and implement IPM and ICM practices. The experiential hands-on educational philosophy is the foundation of the TAg program approach. TAg builds on the philosophy that a participant learning a new IPM or ICM tactic by hearing, demonstrating, discussing, and practicing, will more likely retain the information and adopt the practice when the information is reinforced throughout the growing season.

Ideally a "TAg team" consists of 3 to 6 producers, and agribusiness personnel from a local area. TAg groups are small comprised of farming neighbors who meet at a participants farm to learn, discuss, demonstrate and practice the IPM and ICM methods. Meetings are scheduled approximately every two weeks to capitalize on the educational and management opportunities of the growing season. This schedule enables participants to observe, assess real field problems and discuss, select, and employ practical integrated solutions. Each TAg participant brings their own experience and expertise, which can enrich

discussion and contribute to the groups' overall learning process. TAg participants enroll individual fields of corn, and alfalfa that serve as classrooms for TAg workshops. On-farm education has been shown to increase participation and rates of adoption (Wuest et al. 1995; Flora 1991). Producers want to see how an IPM and ICM method or new technology might work on their own farm. The small group educational design promotes learning and effective communication among and between TAg participants and Extension facilitators. Participants learn from each other what agronomic methods might work on their farm given their unique crops, soils, equipment, management, and other individual farm strengths and constraints. Designing TAg programs to meet local needs have great potential to dramatically increase the rate of adoption of IPM and ICM practices.

The TAg program focuses on pest and crop issues over the entire growing season. The philosophy is to help participants understand and better anticipate potential pest and crop management needs, challenges, and opportunities. Tag programs help train participants to be proactive and more effectively manage those situations in real time during the growing season when the pest or crop issues are occurring.

The TAg training calendar sequentially addresses critical crop and pest management needs and opportunities that may be expected over the typical NY growing season. When teaching IPM options, producers are familiarized with means to access sources of IPM and ICM information. Participants are also encouraged to understand, consider, and use a variety of pest management tactics, non-pesticide or chemical, based on appropriateness and availability of effective management options. In addition to addressing a set of standard topics, the flexible nature of TAg programs allows facilitators to address unique situations or local concerns. The typical TAg educational series includes the following principles, concepts, and topics:

April	May	June	July	August	September
<ul style="list-style-type: none"> <li>• Collect field history, conduct Pretest evaluation</li> <li>• Soil Fertility</li> <li>• Stand Counts</li> <li>• Calibrate Pesticide Application. Equip.</li> <li>• Weed Identification</li> <li>• Alfalfa Snout Beetle</li> <li>• Water quality issues</li> </ul>	<ul style="list-style-type: none"> <li>• Alfalfa Weevil</li> <li>• Corn Emergence Problems</li> <li>• Weed Management</li> <li>• Disease Management</li> </ul>	<ul style="list-style-type: none"> <li>• Alfalfa Harvest Considerations</li> <li>• Alfalfa Weevil</li> <li>• Early Season Corn</li> <li>• Initial Potato Leafhopper</li> <li>• PreSidedress Nitrogen Test</li> </ul>	<ul style="list-style-type: none"> <li>• Potato Leafhopper</li> <li>• Initial Corn Rootworm</li> <li>• Livestock Facilities Filth Flies</li> <li>• Alfalfa Harvest Considerations</li> </ul>	<ul style="list-style-type: none"> <li>• Corn Rootworm</li> <li>• Corn Harvest Considerations</li> <li>• Fall Weed Management</li> </ul>	<ul style="list-style-type: none"> <li>• Alfalfa Harvest Considerations</li> <li>• Fall Wrap-up</li> <li>• End of season survey, Post-test Evaluation</li> <li>• Soil Fertility</li> <li>• Calibrate Manure Spreader</li> </ul>

Field corn and alfalfa are common to most dairy and field production operations in NYS, our targeted audience. While these crops have been the main focus of TAg, other crops have been included when warranted by local interest. For example soybeans, small grains and grass hay production have increased in certain regions of the state. In other counties management of livestock pests has been added.

The use of real data from a team's own fields has proven to be very effective in producing educational and behavioral changes in participants. Summer assistants have been integral to the success of this aspect of the program. Specifically, TAg summer assistants (aka TAg field scouts) collect pest and crop data from the growers enrolled corn and alfalfa fields. TAg assistants collect, organize and develop excellent databases on crop, pest and management events on team farms. The field data is used in team meetings to emphasize IPM and ICM lessons. TAg participants are highly encouraged to apply the skills learned in the TAg meetings on the rest of the farm's acreage. Grower crop monitoring efforts, observations and the questions they raise have also provided much material to subsequent TAg field meetings. TAg field scouts also enter and summarize field crop data, assist with demonstration plots, and help with meeting preparations. TAg crop and pest field data has been an excellent source of information for extension personnel to highlight current or evolving issues, integrate other whole farm management topics, and identify subjects suitable for developing new educational materials.

### Objectives:

1. Define, design and implement the Tactical Agriculture program (TAg teams) throughout Eastern New York.
2. Collect pest and crop management data from fields enrolled in the TAg program to reinforce the use of IPM and ICM practices by field crop producers, and other personnel.
3. Measure the level of adoption of IPM and ICM practices by TAg participants.

### Materials and methods:

In 2002, TAg programs were implemented in Madison, Oneida, and Dutchess Counties. A total of 5 teams, comprised of 21 farming operations and 42 fields (800 acres) were enrolled.

County	Number of Farms	Acres Enrolled	Number of fields Enrolled	Total Acreage of Farming Operations
Oneida	10	370	20	3000
Dutchess	7	270	13	16,000
Madison	4	150	8	1000

### Educational Design

Each county identified key IPM and ICM educational needs, organized and held timely meetings to address their topics. Meetings were scheduled relative to the needs and opportunities identified. Meetings were held to provide relevant teaching in critical educational moments during the growing season. The following is a list of topics offered in county TAg meetings this summer:

Oneida County	Dutchess County	Madison County
Alfalfa Weevil Management/Stand counts and Soil Sampling Issues	Early Season Corn Pests, Alfalfa Weevil and Soil Issues (PSNT)	Early Season Corn Pests, Alfalfa Weevil and Soil Issues (PSNT)
Early Season Corn Pests/ Corn Planter calibration (fertilizer and seed drop)	Organic Production Field Crop Production	Potato Leafhopper Management and Alfalfa Harvest Issues
Potato Leafhopper, Management and Alfalfa Harvest Issues	Potato Leafhopper, and Corn Rootworm Management and Alfalfa Harvest Issues	Corn Rootworm Management, Potato Leafhopper and Crop management issues
Barn Fly Management	Wildlife Management in Field Crops	Weed Identification & Management and Corn Harvest Considerations
Corn Rootworm Management and Alfalfa Harvest Issues	Weed Identification and Management and review Corn Rootworm Management	
Weed Identification and Management	Farm Labor Law Issues and Corn Harvest Issues	
Manure Management		
Corn Harvest Issues		

### Field Scouting

Field monitoring helps document timely data on current crop condition and pest status. This information is highly relevant to producers, perks their interest and participation in TAg meetings and helps to more fully engage them in a fruitful learning and decision making process with direct application to their farms net profitability. In short, real data on pest and crop management issues from a producer's own farm is ultimately more convincing and effective at promoting behavioral changes than hypothetical examples. Summer assistants collect pest and crop data on a weekly basis from enrolled TAg fields. This data is shared with the producer once a week and is used during the educational meetings to reinforce the information being delivered. Each producer is encouraged to scout other fields on their farms during the growing season. This data was also used in other extension educational efforts like newsletters and pest alerts that were shared throughout New York State.

### Evaluation of the Program

Each county conducted a pre-test and a post-test to document participant's knowledge and IPM / ICM skill level prior to program participation. The post test evaluation documents change in the participant's level of understanding following conclusion of the TAg season. A post-season survey is also conducted to determine how many IPM or ICM practices participants expect to continue to do, on how many acres, and participants suggestions for improving TAg efforts in their county.

### Results and Discussion:

While each county conducted successful TAg programs during the 2002, there were differences in design, involvement and the degree to which specific IPM practices were potentially adopted. The different county implementation approaches reflect some of the differences county extension educators perceived as the needs of their producers.

### Scouting Efforts

Oneida and Madison Counties shared a full time scout to monitor their 28 enrolled fields. Dutchess County had a ½ time field scout who monitored 14 fields and also wrote a weekly pest report. Each week the data that was collected was shared with the producers, local Extension Educator and Ken Wise, the Eastern New York IPM Field Crops Area Educator. The crop data was used in the field meetings to emphasize the importance of monitoring crops for pests. The crop data was also used to prepare a weekly Eastern New York Pest Report that was distributed on the statewide Cornell Field Crops Staff Electronic list-serve.

### General Perception of the TAg Program by producers

TAg participants provided very positive feedback regarding their TAg training experience. One hundred percent of the TAg participants agreed the program helped them better understand pest and crop management issues. Growers all indicated that they would recommend the program to other farmers in their area.

**"TAg brings to the forefront upcoming pest problems"**  
TAg participant comment on post-season survey

### Knowledge and Adoption of IPM and ICM

Results of the pre and post-testing indicated that TAg participants dramatically increased their knowledge of IPM and ICM. Over all test scores increased 37 percent from the pre-test to the post-test (Figure 1).

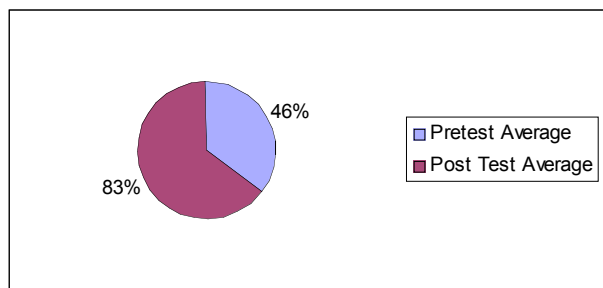


Figure 1. Pre-test and post-test averages (18 respondents)

While TAg participants increased their knowledge of IPM and ICM the long-term implementation of these practices is very important, and unknown. After the completion of the TAg program participants completed an exit survey depicting what IPM and ICM practices they would implement and on how many acres.

The following is a summary of IPM and ICM practices that would be implemented on a certain number of acres. Please note that some of the participants stated they would do certain IPM practices but did not indicate on how many acres.

### General IPM

All of this years participants were dairy farmers who grew their own field crops. Throughout the data presented, producers for the most part indicated that they would DO or would TRY to do most of the IPM and ICM practices that were taught. As shown in Figure 2 their responses to general IPM information, use of thresholds, action plans and record keeping were positive.

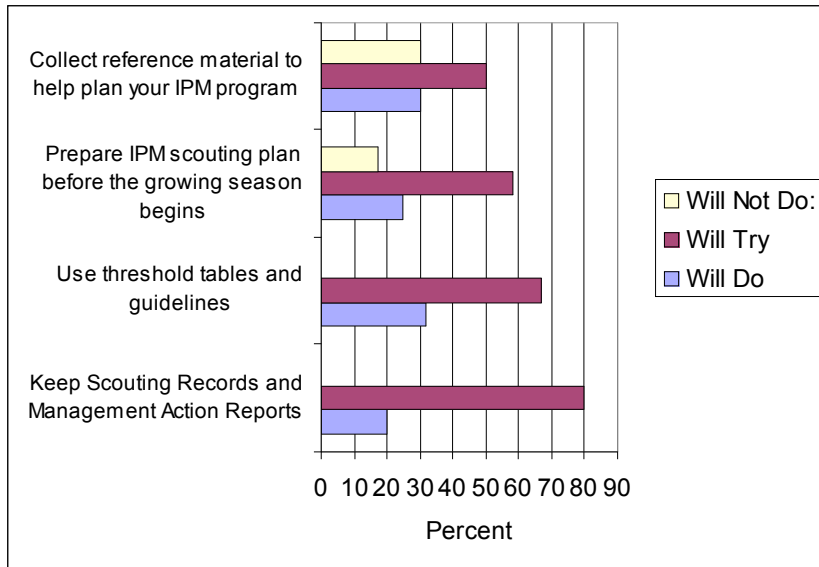
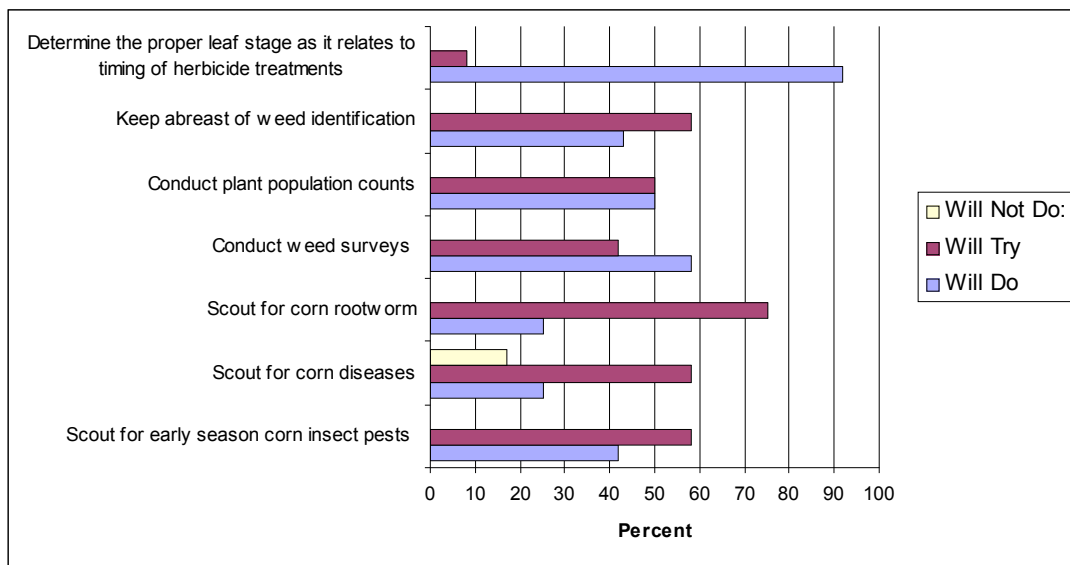


Figure 2. Implementation of General IPM Philosophy

### Field Corn Management

Field corn management is one of the main focuses of the TAG program. Producer responses by producers indicate that they will try or will implement many of the practices taught during TAG field meetings (Figure 3). Producers indicated that implementation of field corn IPM on their farms would total about 8,000 acres. Five of the 7 TAG participants in Dutchess and Columbia Counties did not complete the exit survey on what IPM practices they would implement. While they did not complete the survey, all the producers employ a professional Certified Crop Advisor to monitor their 16,000 acres.



**“TAg has made me more aware of what weeds & stages of crop growth in fields at specific times of the season.”**

TAg participant comment on post-season survey

### **Weed management**

It is not clear from the survey results if the TAg experience adequately equipped growers with skills to better evaluate weed management decisions beyond herbicide use. Clearly herbicides are commonly used for a variety of reasons including efficacy, cost and time savings over other alternatives. It is possible that future TAg efforts might also consider further discussion of weed control options including improved herbicide selection guidance, weed management decisions affected by soil type, crop residue, future rotations, reduced rates, alternative weed management options or other factors such as cultivation or use of cover crops.

### **Alfalfa Management**

Alfalfa management is the second main focus of the TAg program. When growers were asked, “Because of TAg “you will” be able to better manage alfalfa weevil and potato leafhopper in alfalfa,” 90% percent responded “Yes.” As the graph suggests below, producers will or will try to implement most of the alfalfa IPM practices delivered over the course of the program.

Producers indicated that implementation of alfalfa IPM on their farms would total about 1,500 acres.

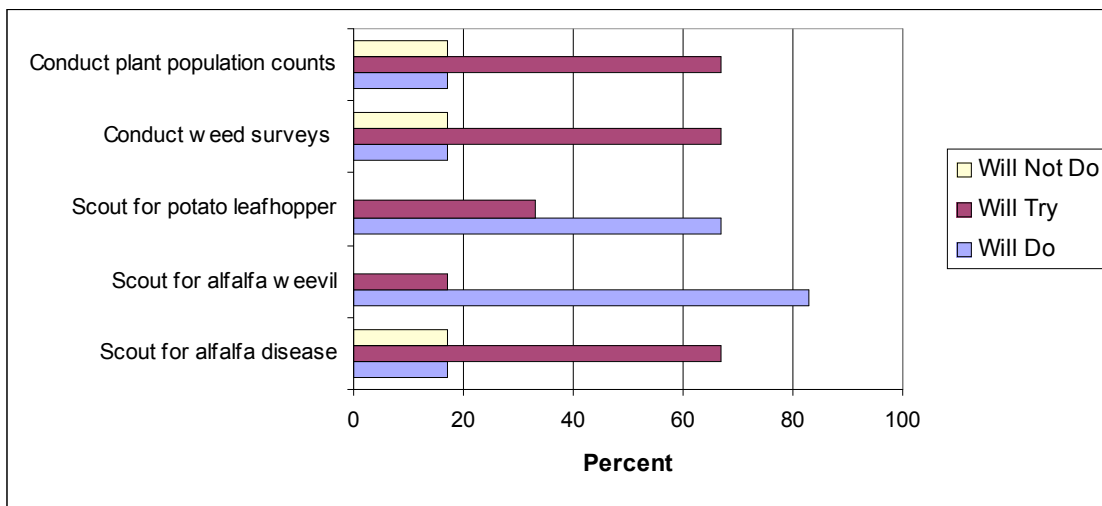


Figure 4. Implementation of Alfalfa IPM

**“TAg has helped me harvest higher quality forages.”**

TAg participant comment on post-season survey

### **General Crop Management**

As with the IPM practices, producers indicated the importance of ICM practices in their farming operations. As depicted in Figure 5, most growers indicated they will try or will implement many of the ICM practices taught during the TAg meetings. Producers indicated that implementation of ICM on their farms would total about 10,000 acres.

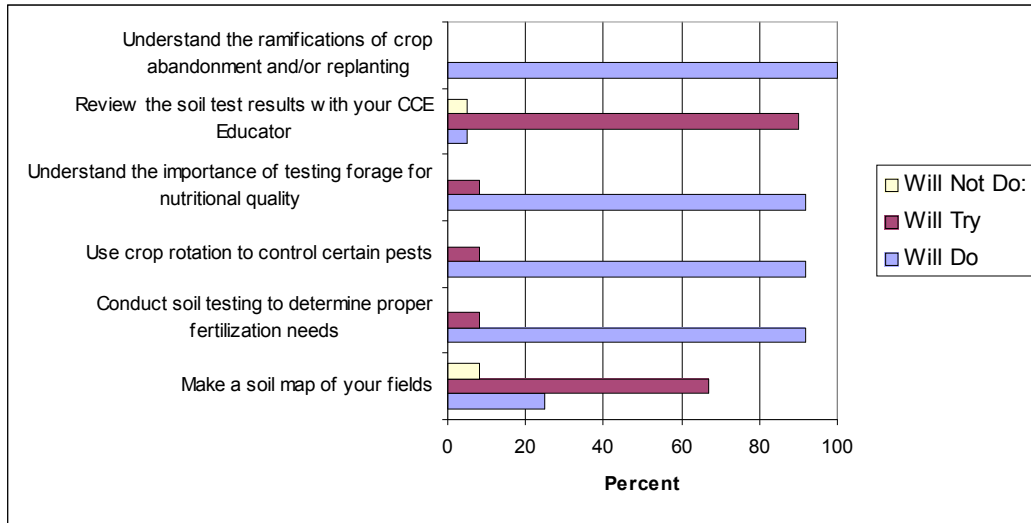


Figure 5. Implementation of ICM

### Summary

The TAg program in Eastern New York has proven to be a good educational model for producers to learn and implement IPM and ICM philosophy and practices in their farming operation. When the education is made personal to a producer's specific farming environment and is combined with good, interactive, and participatory learning, farmers will learn to adopt and implement IPM and ICM practices. Overwhelmingly, producers involved in the 2002 TAg programs indicated receptiveness to the TAg approach and have shown a willingness to implement many of the IPM and ICM practices highlighted in the course.

One-limitation producers voiced to adoption of IPM and ICM are farm labor issues. Most field crop producers in New York own and manage dairy farms which tend to be very labor intensive. Often producers may not have enough time to regularly monitor their crops. One addition to future TAg efforts might be a summer school for hired hands or prospective field assistants to learn how to monitor crops. These field scouts could be hired to help producers off set many of their labor issues relative to crop management.

Weed management is a very important aspect to field crops. About 90% of all field corn grown in New York use herbicides. Producers understand the importance of correct weed identification and conducting surveys to know what is in the field. But 75% of the respondents indicated they were not going to reduce herbicide use as a result of TAg. The TAg program could focus on education that relates to practical alternative controls and reduced rates of herbicides and guides to aide selection of herbicides best suited to individual field conditions, as a means to reduce costs and protect water resources.

Improve documentation of TAg impacts, future programs require each TAg participant to complete the pre & post-test and exit survey on implementation of IPM and ICM practices. The post evaluation process should also consider including other locally important crops, like soybeans and grass management.

### References:

Flora, B. F. 1991. Research Priorities for Sustainable Agriculture. Conference proceedings: Setting Priorities: Research, Practice and Policy for a More Sustainable Agriculture. Leopold Center for Sustainable Agriculture.

Wuest , S. B., Guy, S. O., Smith L. J. and Miller, B. C. 1995. On-Farm Tests as a Tool for Extension Programming. Journal of Extension 33: 4.