

# **1. Title:** Traceability of Fruit Production Practices Enhanced by Trac Record-Keeping and Reporting Software

## **2. Project Leader(s):**

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Ernie Davis, Cornell Research Foundation, Ithaca  
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Apple Processors and Storages  
Motts Inc./Cadbury Schwepp's  
Yonder Farms Fruit Distributors  
Birds Eye Foods  
Bucolo Cold Storage Inc.  
Champlain Valley Apple Storage  
Pavero Cold Storage  
Ultimate Juice (Zeigler)  
Beech-Nut Nutrition Corp.  
Knouse Foods

Grape Juice Processors  
Canandaigua Wine  
Cliffstar Corporation  
Westfield Maid  
National Grape Cooperative  
Carriage House Co., Inc.  
Growers Cooperative Grape Juice Co.  
Meier's Wine Cellars, Inc.  
Mogen David Wine Co.

## **4. Funding Sources:**

New York Wine and Grape Foundation; \$6,000; Precision tracking of crop protection inputs from vineyard to processor.  
Rural Business-Cooperative Service, USDA; \$92,274; New York Farm Viability Institute: The Center for Value-Added Agriculture; IPM labeling and TracApple subproject.  
New York Farm Viability Institute; \$6,452; Computer Confidence, Internet Ease, Excel Basics & Trac Software: a workshop for apple growers to enhance their market edge.  
Canandaigua Wine; \$409; TracGrape 2005 development.

**5. Project location(s):** This demonstration and education project was located primarily in the apple-growing and grape-growing regions of New York State. The use of Trac software is applicable throughout New York and the United States.

## **6. Abstract:**

Trac software, an Excel-based record-keeping and reporting software program, enables fruit farmers to easily maintain and report accurate crop protection records that are, 1) vital to their market edge, when increasingly competitive global markets demand detailed pesticide records and product traceability, and 2) critical to their integrated pest management practices, especially when faced with pest or disease control failures and severe outbreaks. Trac Software was upgraded for apple and grape and new Trac Software was created for all other fruit crops commonly grown in New York. Trac Software support materials were created including a Software Manual, a Frequently Asked Questions website, and a training workshop module.

## **7. Background and justification:**

**Issue** - Fruit farmers face increasing need to produce crop protection and production records on demand. Pesticide records are required by the Environmental Protection Agency Worker Protection Standard (EPA-WPS), the New York State Department of Environmental Conservation (DEC), processors, marketers, etc and each has a different reporting form, required either by law or to market the crop. This necessitates that farmers fill out several different forms when marketing their crop, making record-keeping an unnecessarily burdensome task. In an expanding and increasingly competitive global market, farmers with the ability to produce detailed crop production records, including pesticide spray records, will have a competitive edge. As more consumers actively seek products with eco-labels, those grown without pesticides, those produced in an environmentally sound manner, or those produced under sustainable practices, the onus will be on the farmer, processor, and marketer to show auditors that such practices were indeed used. Furthermore, accurate crop protection and production records are critically important to the farmer, particularly when pest or disease control failures or severe outbreaks occur. Computerized records would allow farmers to easily search and judge pest management practices in light of such pest control failures or severe pest pressure.

**Response** - The apple farmers requested that record-keeping software be developed to generate the various pesticide spray record forms required by processors, buyers, and brokers, to aid in their record-keeping and market access requirements. The grape juice processors requested that similar software be developed for their grape farmers. Funds were secured from several sources to support software development in Microsoft Excel, a common spreadsheet program. In 2003, TracApple software was released for beta testing and in 2004 TracGrape software was released. A software license agreement was prepared and the software was copyrighted by Cornell University. Canandaigua Wine distributed 165 copies of the software to grape farmers they have contracts with. Each year the software is revised with pesticide registration updates and software improvements. Farmers using Trac software enter their data once and it automatically fills out the report forms of all the major apple and grape processors and buyers in the Northeast. Very simply, the user fills in the blanks on data entry worksheets. Trac software has drop-down lists for pesticides and pests, saving time and preventing typographical errors. The software also generates drop-down lists specific to the user's farm business. When a pesticide trade name is selected from the drop down list the program automatically fills in the EPA registration number, restricted entry interval, pre-harvest interval, and calculates the earliest harvest date.

## **8. Objectives:**

1. Upgrade TracApple and release the 2004 version.
2. Develop and release the beta test version of TracGrape 2004 software.
3. Write and publish, online and in print, supporting information for Trac Software.
4. Conduct Trac workshops, presentations and exhibits.
5. Develop Trac software for other fruit crops.
6. Initiate steps to develop Trac software for vegetable crops.

## 9. Procedures:

### 1. UPGRADE TRACAPPLE AND RELEASE THE 2004 VERSION.

Following the release of the beta test version of TracApple 2003 software, grower input on its improvement was solicited at meetings and exhibits, as well as via an email survey in February 2004. Very few people responded to the email survey. However, results of the survey showed that the Excel-based software was easy to use. Of those responding to the email survey, 57% used TracApple only for apple and 43% used it for other fruit crops. Some of the comments from the 2003 survey follow:

*"It was a big improvement over the other software I bought in the past."*

*"We would like to use it in 2004 and are going to order the 2004 program."*

*"We just got started with it, had some computer problems, but intend to use (it) more fully this year - want to get (the) 2004 version set to go."*

TracApple 2004 was upgraded and released in February 2004 with the following new features:

- ⌚ New reports automatically generated from entered data:
  - EPA Worker Protection Standard Central Posting form.
  - EUREPGAP-compliant pesticide usages report form.
  - Knouse Foods processor form.
- ⌚ Improved SprayData worksheet:
  - Earliest harvestable date calculated automatically.
  - Chemical costs calculated automatically for each spray applied.
  - Easier spray rate calculations.
  - Weather tracking columns.
- ⌚ Improved ChemTable worksheet:
  - No longer hidden, but accessible and easily viewed for quick reference.
  - Space for additional, user-defined chemicals.
  - Columns to record unit costs of chemicals to enable cost calculations
- ⌚ Improved BloomHarvest worksheet includes a harvest Tracking Number column.
- ⌚ A new FertData worksheet generates a EUREPGAP-compliant fertilization record.

The TracApple 2004 software was disclosed for copyright via the Cornell Research Foundation and a software license agreement was developed in conjunction with University Council. Language regarding the use of pesticides and the use of the software as it relates to pesticides was cleared through the Pesticide Management Education Program. Availability of the 2004 software was made known through Extension newsletters, trade magazines, Extension-sponsored grower meetings, the Fruit & Vegetable Expo, and via email to all 2003 TracApple recipients.

### 2. DEVELOP AND RELEASE THE BETA TEST VERSION OF TRACGRAPE 2004 SOFTWARE.

In May of 2004, the beta test version of TracGrape 2004 was released in collaboration with the major grape juice processors in New York. It was based on the TracApple 2004 version improvements listed above. The processor report forms specific to the grape industry were included in TracGrape (Canandaigua Wine, Cliffstar Corporation, Westfield Maid, Carriage House Co. Inc., Growers Cooperative Grape Juice Co., Meier's Wine Cellars Inc., and Mogen David Wine Co.) Copyright, software license agreements, and pesticide disclaimer language was used as for TracApple 2004. Canandaigua Wine distributed 165 copies of the CD to their growers. Cliffstar Corporation sent letters to their growers announcing the availability of TracGrape software. In addition, availability of TracGrape was announced in newsletter articles, presentations, and exhibits at Extension-sponsored grower meetings.

### 3. WRITE AND PUBLISH, ONLINE AND IN PRINT, SUPPORTING INFORMATION FOR TRAC SOFTWARE.

Information describing Trac software was written with links to further information on TracApple and TracGrape. This information was published online at

<http://www.nysipm.cornell.edu/trac/index.html>. The web pages contain detailed information about the data entry worksheets and report forms in each of the Trac Software programs. There is also contact information for ordering the software, available on CD from the NYS IPM Program. Additional web pages will be written and published online that describe the new Trac software programs for 2005.

Also online, we published the “Getting Started” instructions that accompany the software CD ([http://www.nysipm.cornell.edu/trac/tracfaqs/trac\\_basics.html](http://www.nysipm.cornell.edu/trac/tracfaqs/trac_basics.html).) Tips for using Excel that make data entry and creating reports from Trac Software were written also and are available online at [http://www.nysipm.cornell.edu/trac/tracfaqs/excel\\_tips.html](http://www.nysipm.cornell.edu/trac/tracfaqs/excel_tips.html) and [http://www.nysipm.cornell.edu/trac/tracfaqs/trac\\_tips.html](http://www.nysipm.cornell.edu/trac/tracfaqs/trac_tips.html).

Based on records of technical support inquiries on Trac Software, a set of Frequently Asked Questions (FAQs) and answers was written and published online at [http://www.nysipm.cornell.edu/trac/tracfaqs/trac\\_faqs.html](http://www.nysipm.cornell.edu/trac/tracfaqs/trac_faqs.html). Twenty-seven questions with comprehensive answers about Trac Software were written, covering everything from the basics of copying and pasting information to filtering and sorting data in Excel to generate customized reports specific to any farm business.

Convenient TracApple and TracGrape tri-fold brochures were developed detailing information about the software, its cost, and how to obtain copies. Brochures were made available with exhibits of the NY Agriculture Innovation Center, the NYS IPM Program, at Extension-sponsored grower meetings, and at the NY Fruit & Vegetable Expo.

The FAQs were edited and expanded into an in depth Trac Software Manual. The Trac Software Manual was printed and distributed at TracApple and TracGrape workshops and training sessions. The Manual is also included as a .pdf file on the CDs of the 2005 versions of Trac Software.

#### 4. CONDUCT TRAC WORKSHOPS, PRESENTATIONS AND EXHIBITS.

In 2004, eight presentations, four exhibits, and one workshop on Trac Software were conducted across New York and in Ontario, Canada. They are listed in Table 1, below. In addition, a grant from the New York Farm Viability Institute was secured to develop a computer-training module for apple growers in conjunction with FLCC and KM Davies apple storage, Williamson, NY. To date, under this grant, four hands-on TracApple training sessions have been conducted, reaching approximately 40 growers.

Table 1. TracApple presentations, exhibits, and workshops conducted in 2004.

Date	Title	Location	Audience	#
2/10	Update on TracApple – Excel-based record-keeping system	Rochester, NY; Fruit & Veg EXPO	growers, industry, faculty, etc	200
2/10-2/12	IPM Exhibit –TracApple	Rochester, NY; Fruit & Veg EXPO	growers, industry, faculty, etc	400
2/26	IPM Exhibit – TracApple	Lake George, NY; HV Winter Fruit School	Apple growers, CCE, faculty, industry	50
2/27	Update on Fruit IPM – EUREPGAP & TracApple	Syracuse, NY; Statewide IPM GAC	Growers, faculty, Ag&Mkts	15
2/28	IPM Exhibit – TracGrape	Waterloo, NY; Finger Lakes Grape Growers Meeting	Grape growers, CCE, faculty, industry	25
3/25	TracGrape record-keeping software	Fredonia, NY	Grape growers, industry	18
3/25	TracGrape record-keeping software	Fredonia, NY	Grape growers, industry	25
3/25	IPM Exhibit - TracGrape	Fredonia, NY	Grape growers, industry	20
5/19	TracGrape & DMCAst model for downy mildew	Dresden, NY; Yates County	grape growers	100
6/4	TracApple Training Session	Highland, NY	apple growers	6
7/28	Placing simulation research and cybernetic technology in the hands of grape growers.	Geneva, NY Ontario County	grape growers	30
11/11	TracApple and TracGrape Excel-based records and reports for growers	Guelph, Ontario, Canada, Great Lakes Fruit Workers	Extension, Research, and Government personnel	75

		Conference		
11/15	IPM Labeling and Trac Software	Syracuse, NY	AIC Board Members	20

#### 5. DEVELOP TRAC SOFTWARE FOR OTHER FRUIT CROPS.

The major focus of our effort in 2004 was in the development of 2005 Trac Software for all other fruit crops commonly grown in New York. Along with this effort, TracApple and TracGrape were upgraded for 2005. TracPear was developed and released on the TracApple 2005 CD. TracBerry was developed and covers strawberry, raspberry & blackberry, blueberry, currant & gooseberry. TracBerry is distributed on its own CD. TracCherry (sweet & tart cherry) and TracStoneFruit (peach & nectarine, apricot, plum) were included on the TracStoneFruit CD.

The most challenging part of developing these Software programs is in maintaining and updating the chemical information for each crop. This effort is supported by the Cornell Pest Management Guidelines series and by faculty and staff involved in contributing to these publications (Agnello 2005, Pritts and Bushway 2005, Weigle and Muza 2005, Agnello 2004, Pritts & Bushway 2004, Weigle and Muza 2004)

#### 6. INITIATE STEPS TO DEVELOP TRAC SOFTWARE FOR VEGETABLE CROPS.

As part of the AIC project, we explored the potential for developing Trac Software for vegetables. Two grants were submitted in conjunction with Birds Eye and SYSCO to secure funds. Although neither of these grants was secured, we are confident that Trac Software for vegetable crops will be developed in the future.

## 10. Results and discussion:

**Impact** – Trac has effectively streamlined the burdensome task of record-keeping and reporting for apple and grape farmers. In 2004, 126 copies of TracApple and 307 copies of TracGrape were distributed to interested farmers in New York and also in 17 other states and two Canadian provinces. Apple growers using TracApple were able to generate their yearly pesticide records within 24 hours of the onerous Eurepgap certification audits and sail through this portion of the audit. One grape juice processor reported saving up to 25 percent in the time it takes them to process their grape growers' records when those records are generated with TracGrape. Development of TracGrape in conjunction with Canandaigua Wine enabled them to devise a report form for their grower contracts. Growers using the software state that it is easy to use and manipulate their crop production and crop protection data in Trac. Trac software costs \$20 to purchase, compared to other farm-related software that costs much more and is more complicated to learn, Trac software provides a simple answer to bringing more farmers into the computer age and digitizing New York's agricultural industry. Although this has not been measured, growers that are able to easily access computer records of pesticide and fertilizer applications and compare practices from year to year, tracking costs and harvests, will be better able to manage their farm businesses, make more informed IPM decisions, all of which will provide a solid foundation for farm sustainability.

## 11. References:

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