

Traceability of Fruit Production Practices Enhanced by Trac Record-Keeping and Reporting Software

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Fruit Processors, Storages and Wholesalers

Motts Inc./Cadbury	Pavero Cold Storage	National Grape
Schwepp's	Ultimate Juice (Zeigler)	Cooperative
Yonder Farms Fruit	Beech-Nut Nutrition Corp.	Carriage House Co., Inc.
Distributors	Knouse Foods	Growers Co-op. Grape
Birds Eye Foods	Centerra Wine Co.	Juice Co.
Bucolo Cold Storage Inc.	Cliffstar Corporation	Meier's Wine Cellars, Inc.
Champlain Valley Apple	Westfield Maid	Mogen David Wine Co.
Storage		Red Tomato

Funding sources (other than NYS IPM Program):

Centerra Wine Co. TracGrape 2006 development. \$306;

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

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 IPM practices, especially when faced with pest or disease control failures and severe outbreaks. Trac Software was upgraded in 2006 for all fruit crops commonly grown in New York and 330 CDs distributed. Trac Software support materials were also updated including a Software Manual, a Getting Started guide, and a comprehensive website. In 2006, the software was programmed for adding more rows to the forms, sending

information to specific processor reports, and filtering processor reports. In 2006, Trac Software development began for turfgrass, for fruit farmers in Ontario, Canada, and for the EcoApple report form of Red Tomato. A Trac survey of 253 recipients is underway.

Background and justification:

Issue - 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 - 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. 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, in 2004 TracGrape, and in 2005 TracPear, TracCherry, TracStoneFruit, and TracBerry were released. The software is licensed and copyrighted by Cornell University. Centerra Wine Co. distributes TracGrape to all 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 fruit 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. The software also fills out an EPA-WPS Central Posting Form to inform farm workers about safe re-entry.

Objectives:

1. Upgrade Trac Software for fruit and release the 2006 versions.
2. Update online and in print supporting information for Trac Software.
3. Conduct Trac workshops and presentations.
4. Facilitate development of Trac software for other crops and regions.

Procedures:

1. UPGRADE TRAC SOFTWARE FOR FRUIT AND RELEASE THE 2006 VERSIONS.

Grower input into improvement of Trac Software was welcomed from users and serves as the basis for most of the yearly revisions to the software. In 2006, a phone survey was developed

with the Survey Research Institute (SRI), Cornell University, for 253 Trac 2006 software recipients. As of this writing 75% of people have completed the survey, 4% were bad phone numbers, and 20% are still pending. The survey will be complete by mid-January 2007 and a full report on this IPM Special Project will be written for the 2007 NYS IPM Program Report.

In 2006, TracSoftware versions were upgraded with the following new features:

- Interactive processor reports allow filtering for easier printing.
- EPA-WPS Central Posting print button for printing and display of latest re-entry date/time.
- Knouse Foods processor form complies with SYSCO reporting requirements.
- Add More Rows button on the SprayData and FertData worksheets decreased file size.
- Processor Report Form column on the SprayData worksheet to customize reports.
- Pesticides list on the ChemTable worksheet can be customized.

Trac software was disclosed for copyright via CCTEC 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 (PMEP). Availability of the 2006 software was made known through Extension newsletters, trade magazines, Extension-sponsored grower meetings, the Fruit & Vegetable Expo, and via email to all 2005 Trac Software recipients.

A total of 330 Trac CD's were distributed in 2006, representing 253 individual farmers. Some farmers receive more than one type of Trac software. The following Trac Software CD's were distributed:

- 168 TracGrape (130 by Centerra Wine Co.)
- 95 TracApple (includes TracPear)
- 43 TracStoneFruit (includes TracCherry)
- 24 TracBerry

Because of the programming code in the 2006 Trac Software, technical support calls were received on the topic of enabling macros in Excel. Considerable expertise was, therefore developed on this topic and written information about this will accompany the 2007 versions. Despite this, only approximately 20 technical support calls were received, representing only 6% of 330 CD's distributed in 2006.

In 2006, a collaboration with PMEP IT staff to assist with development of Trac Software improvements for 2007 versions was explored. In addition, a "Trac Software for Farmers" project was listed in the catalog of Masters of Engineering in Computer Science Projects. The most challenging part of developing Trac 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 2006, Pritts 2006, Weigle and Muza 2006.)

2. UPDATE, ONLINE AND IN PRINT, SUPPORTING INFORMATION FOR TRAC SOFTWARE.

A complete Trac Software Manual and Getting Started quick guide were revised in 2006 and each released on the Trac Software CD's. The Trac Software Manual was distributed at workshops and training sessions.

Trac information posted on the NYS IPM Program website was revised, improved and reorganized and can now be easily accessed from the following main web page <http://nysipm.cornell.edu/trac/default.asp>. Information about the two bugs identified in the 2006 Trac Software was posted at <http://nysipm.cornell.edu/trac/bugs/default.asp>.

Convenient Trac tri-fold brochures were updated which detail information about the software, its cost, and how to obtain copies. Brochures were made available at the NY Farm Viability and NY Agriculture Innovation Center meetings, Extension-sponsored grower meetings, and at the NY Fruit & Vegetable Expo.

3. CONDUCT TRAC WORKSHOPS AND PRESENTATIONS.

In 2006, seven presentations and workshops on Trac Software were conducted across New York and in Ontario, Canada, reaching an estimated 223 people (Table 1). One outcome of the presentation in Ontario, Canada, was that Margaret Appleby, OMAFRA, secured a grant to develop Trac Software for fruit growers in Ontario.

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

Date	Title	Location	Audience	#
2/16	Trac Software Makes Spray Record-Keeping and Reporting Easier	Ontario Fruit & Veg. Conv.; St. Catharines, Ontario	Growers, extension educators and faculty	35
2/22	Trac Tutorial Demonstration	Hudson Valley Fruit School, Kingston, NY	Apple growers	7
3/3	Getting Started with TracGrape	Finger Lakes Grape Growers Convention, Waterloo, NY	Grape growers	20
3/3	Sorting and Reporting with TracGrape	Finger Lakes Grape Growers Convention, Waterloo, NY	Grape Growers	45
3/16	Trac Software Round Table	NYFVI AIC; Syracuse, NY	Apple growers, CCE Educators & Faculty	10
5/18	TracGrape updates for 2006	Lakewood Vineyard	Grape growers	100
8/16	Trac Software	Cornell, Ithaca	PMEP Program staff	6

4. FACILITATE DEVELOPMENT OF TRAC SOFTWARE FOR OTHER CROPS AND REGIONS.

Two other Extension faculty have received funding to develop iterations of Trac Software for their stakeholders. Jennifer Grant, NYS IPM Program, secured funding to develop TracTurf for sod farmers and turfgrass managers. The beta versions of TracTurf will be developed for field-testing in 2007. Margaret Appleby, OMAFRA, secured funding to develop TracApple, TracGrape, and TracStoneFruit for farmers in the Ontario Province of Canada. Carroll will meet with the Canadian workers in early March 2007 to begin developing Trac for Canadian audiences. Red Tomato secured grant funding with researchers in Massachusetts and New York for their Eco Apple protocol, the report form for which has been developed and will appear in 2007 TracApple.

Results and discussion:

Impact – Trac has effectively streamlined the burdensome task of record-keeping and reporting for fruit farmers. More will be learned about the impact of Trac use through the IPM Special Project Trac Survey to be completed next year. In 2006, 330 Trac Software CD's were distributed to interested farmers in NY, 15 other States and three Canadian Provinces. Trac Software has been successfully developed and deployed for all fruit crops commonly grown in NY. The six versions are released on 4 CD's and cover 15 fruit crops, including: apple, pear, grape, tart cherry, sweet cherry, peach, nectarine, apricot, plum, strawberry, blueberry, raspberry, blackberry, currant, and gooseberry. 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 directly, 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.

Publications:

Carroll, J.E. and Nedrow, J.A. 2006. Trac software makes spray record-keeping and reporting easier. Proc Cumberland-Shenandoah Fruit Workers Conference, 2005, Winchester, VA. pp 58 - 61.

Carroll, J.E. and Nedrow, J.A. 2006. Trac software makes spray record-keeping and reporting easier. Proc Great Lakes Fruit Expo, 2005, Grand Rapids, MI.

<http://www.glexpo.com/abstracts/2005abstracts/treefruit.pdf> pgs 8-11.

Carroll, J.E. and Nedrow, J.A. 2006. TracApple version 2006[©] software. TracApple CD, NYS IPM Program, Cornell University.

Carroll, J.E. and Nedrow, J.A. 2006. TracBerry version 2006[©] software. TracBerry CD, NYS IPM Program, Cornell University.

Carroll, J.E. and Nedrow, J.A. 2006. TracCherry version 2006[©] software. TracStoneFruit CD, NYS IPM Program, Cornell University.

Carroll, J.E. and Nedrow, J.A. 2006. TracGrape version 2006[©] software. TracGrape CD, NYS IPM Program, Cornell University.

Carroll, J.E. and Nedrow, J.A. 2006. TracPear version 2006[©] software. TracApple CD, NYS IPM Program, Cornell University.

Carroll, J.E. and Nedrow, J.A. 2006. TracStoneFruit version 2006[©] software. TracStoneFruit CD, NYS IPM Program, Cornell University.

Grants funded:

Carroll, J.E. 2005. NYS IPM Program, IPM Special Project. Impact of the NYS IPM Program's TracApple[©] and TracGrape[©] Software for Spray Record-Keeping and Reporting. \$7,652.

Grant, J. 2006. NYSTA (New York State Turfgrass Association) TracTurf: Software for Documentation of Pest Management Practices for New York State Turfgrass. \$5,831.

Grant, J. 2006. NYS IPM Program. TracTurf: Software for Documentation of Pest Management Practices for Sod Farms in New York State. \$3,015.

References:

Agnello, A.M. (ed.). 2006. Pest Management Guidelines for Commercial Tree Fruit Production. Cornell Cooperative Extension, Ithaca. 252 pp.

Pritts, M.P. and L.J. Bushway (ed.). 2006. Pest Management Guidelines for Berry Crops. Cornell Cooperative Extension, Ithaca. 89 pp.

Weigle, T.H. and A.J. Muza (ed.). 2006. New York and Pennsylvania Pest Management Guidelines for Grapes: 2005. Cornell Cooperative Extension, Ithaca. 93 pp.