Impact of the NYS IPM Program's Trac Software for spray record-keeping and reporting

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Abstract: The impact of Trac Software on spray record-keeping and reporting of fruit growers was evaluated with a 16 question phone survey conducted by The Survey Research Institute (SRI), Cornell University. The survey was completed with 226 people who had ordered Trac Software in 2006. Of those surveyed, 167 used the software. 61% of respondents agreed that Trac Software has helped their farm business bottom line: primarily through improved office staff efficiency, avoidance of fines for non-compliance, and estimating pesticide needs for bulk purchases. Fully 28% agreed that Trac Software had improved their access to new markets. The survey clearly found that Trac Software improves the pesticide spray record-keeping and reporting ability of farmers. Trac makes record-keeping easier – 70% agreed; improves accuracy – 76% agreed; streamlines reporting – 76% agreed; and helps meet reporting requirements – 84% agreed. The fact that 98% will continue using it underlines the positive impacts of Trac Software for farmers.

Background and Justification: Accurate pesticide spray records are crucial to managing pests, are pivotal to IPM practices, and are included in the IPM Elements for crops. TracApple$^{©}$ and TracGrape$^{©}$ were created in 2003 and 2004, respectively, and have been updated each year since. Approximately 100 apple and 150 grape growers receive Trac Software yearly. In 2005, Trac Software was created for pear, stone fruit, cherry, and berry crops. Outcomes and impacts of Trac Software had not been effectively assessed. Therefore, people who have received Trac Software CDs were surveyed to determine the impact of Trac Software's use on pesticide spray record-keeping, improved reporting, ease of creating reports, and improved market-access. The survey aimed to quantify Trac's impact, plan for future improvements, and justify future funding.

Objectives:
1. Develop a series of 10 to 20 questions on key impacts of Trac software.
2. Develop a database of at least 250 names and phone numbers of Trac software users that will be surveyed.
3. Contract with The SRI to conduct a phone-based survey.
4. Project Evaluation – the SRI will analyze the survey responses and results.

Procedures:
1. Develop a series of 10 to 20 questions on key impacts of Trac software.
Sixteen questions (yes/no; scaled; and multiple-choice) were developed (see Results) covering the impact of Trac on pesticide spray record-keeping, improved reporting, ease of creating reports, and improved market-access. A few questions were devoted to Trac software design and use. The SRI assisted with development of the questions and flow of the survey.

2. Develop a database of at least 250 names and phone numbers of Trac users that will be surveyed.

A listed sample of 253 phone contacts of people who had ordered Trac Software CDs (TracApple[©] & TracPear[©], TracGrape[©], TracStoneFruit[©] & TracCherry[©], and TracBerry[©]) was developed and provided to the SRI. Centerra Wine provided contact information for TracGrape[©] recipients, since they distribute the majority of these software CDs.

3. Contract with The SRI to conduct a phone-based survey.

The Survey Research Institute was contracted to conduct a phone survey of Trac Software recipients in order to quantify Trac Software's impact, plan for future improvements, and justify future funding. Surveys were designed to last approximately 5 minutes and to help assure a high level of meaningful responses. Surveys were conducted over the phone by trained SRI interviewers. All interviews were conducted using a Computer Assisted Telephone Interviewing (CATI) software system. Data collection began on December 12, 2006. Data collection ended January 9, 2007.

4. Project Evaluation – the SRI will analyze the survey responses and results.

The SRI will collate and analyze the survey responses. To achieve a 95% confidence on the survey results, approximately 241 surveys should be completed out of the sample of 253.
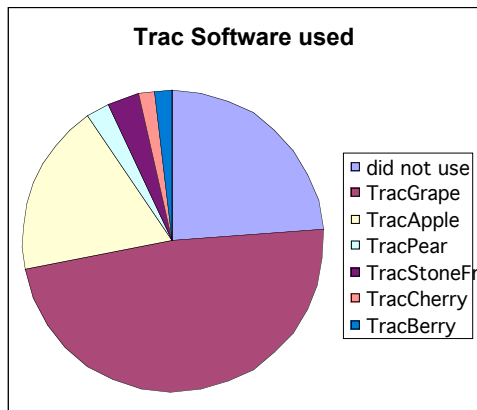
Results and Discussion:

Table 1. Response Outcome

Outcome	Total
Completed survey	226
Bad #	12
Too Ill/Dead	0
Language problem	0
Ineligible (under 18)	0
Refused	0
Pending	15
Total	253

In total, 226 surveys were completed out of 241 people reached (Table 1), excluding bad numbers. The survey did achieve 95% confidence with a response rate of 95.3%.

The first question in the series determined if Trac Software had been used. Those who had not used Trac Software exited the survey. Of 226 people who received a Trac CD, 59 never used the software. The remaining 167 people completed the rest of the survey questions.

Survey Results

1. Which of the Trac Software did you use in 2006? Interestingly, 24% of Trac Software CD recipients did not use the software. Most Trac Software users are grape growers: Centerra Wine requires use of Trac Software. The next largest group of Trac Software users are apple growers.

Trac Software records, in conjunction with the survey results, allowed us to determine the rate of software use for each fruit version, as shown in Figure 1. Results may be skewed for TracPear, included on the TracApple CD, and TracCherry, included on the TracStoneFruit CD.
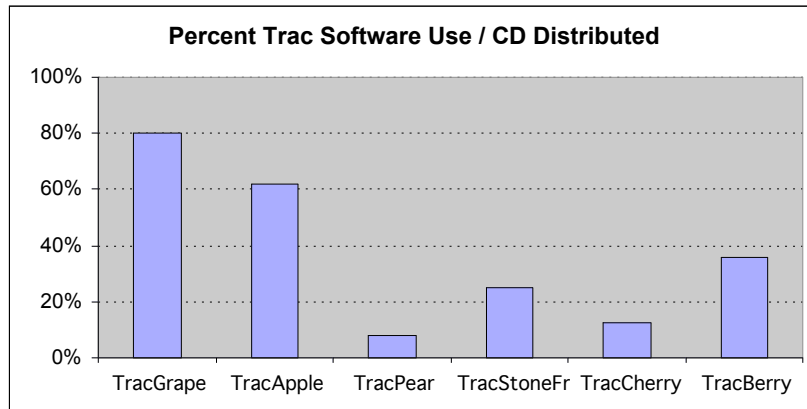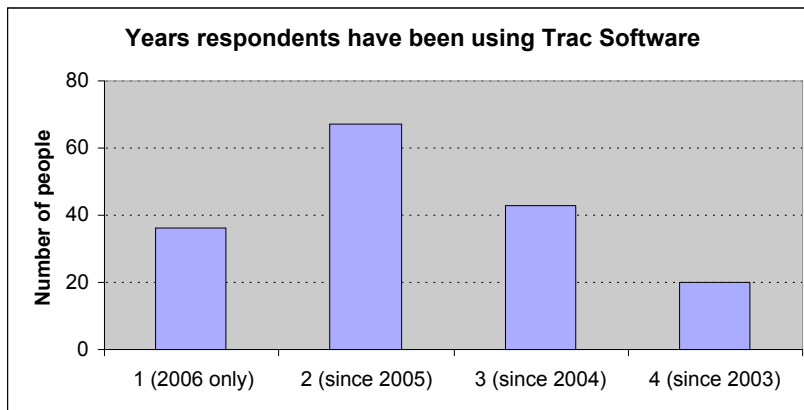
Percent Trac Software Use / CD Distributed

Figure 1. Percent use for each of the fruit versions, comparing Trac Software survey results with Trac orders received.

Years respondents have been using Trac Software

2. For how many years have you been using Trac Software?

Responses to this question show a general trend for about 20 new Trac users to begin and continue using Trac Software each year.

Strongly disagree, disagree, neither agree nor disagree, agree, or strongly agree summaries (Fig 2).

3. Trac Software has made my pesticide spray record-keeping easier.

4. Trac Software has made my pesticide spray record-keeping more accurate.

5. Trac Software has streamlined the preparation of my pesticide spray reports.

6. Trac Software has improved my ability to meet market and buyer reporting requirements.

7. Trac Software has made it easier for me to sell fruit to new and different markets and buyers (i.e. it has improved my access to alternate markets).
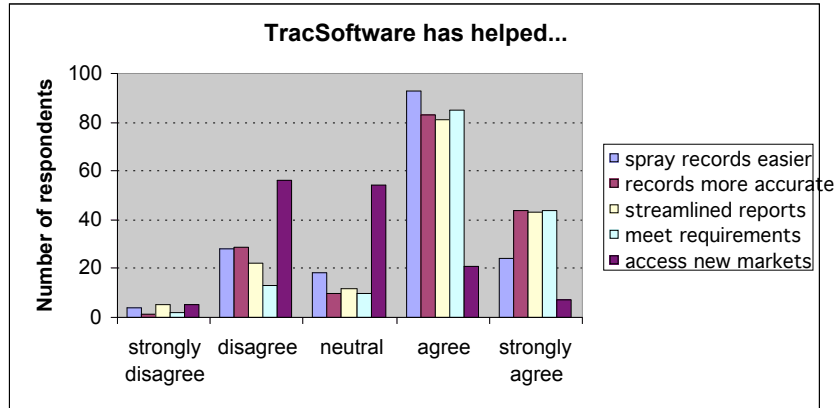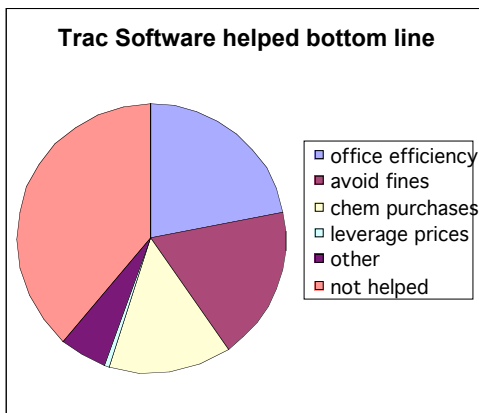
Figure 2. Reactions of respondents to four statements (questions 3, 4, 5, 6, and 7) about Trac Software.

Most respondents find that Trac Software makes spray record-keeping easier, improves accuracy of records, streamlines reporting, and facilitates meeting reporting requirements. It was not anticipated that many would think the software made it easier for them to access new markets, but 20% agreed or strongly agreed with this statement.

8. Trac Software has improved my net income by:

      1%   increasing revenue
      4%   reducing costs
      3%   both
    92%   Trac Software has not improved my net income

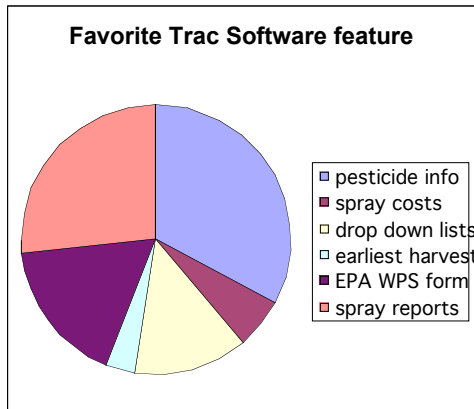9. Help us identify how Trac Software has helped your bottom line:

1. improved efficiency by saving time of office staff
2. avoided fines for noncompliance with EPA laws
3. estimated pesticide needs for the next crop year and purchased in bulk at lower cost
4. leveraged higher farm gate prices to cover calculated costs of pesticide inputs
5. other
6. Trac Software has not helped my bottom line

Improving office efficiency, avoiding fines (EPA, DEC), and bulk chemical purchases were anticipated to be the areas where Trac impacts farm business economics and the survey confirmed this.

10. Did you use the Environmental Protection Agency (EPA) Worker Protection Central Posting Form generated by Trac Software? Y/N – Only 48% answered yes to this question. Several farms have an alternate system for creating the central posting form as determined from notes taken during the survey.

11. If yes, do you think the Trac Software EPA Worker Protection Central Posting Form improved farm worker awareness of safe re-entry after spraying? Y/N – Of the 84 respondents who are using the EPA Central Posting Form, only 54% think it improves farm worker awareness. 16% of respondents do not know and 30% do not think it improves worker awareness of safe re-entry. In survey notes, some farmers cited that workers may not understand the form or be able to read it.
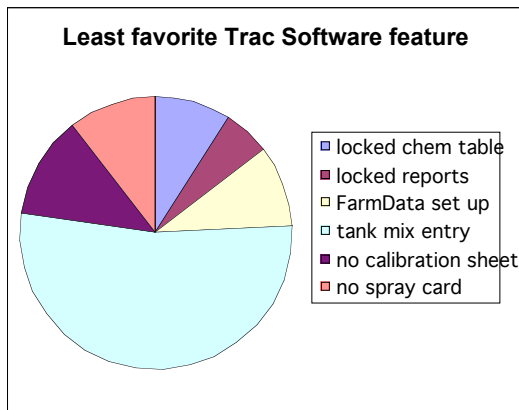
12. What one Trac Software feature do you like most?

Favorite Trac Software feature

- □ pesticide info
- ■ spray costs
- □ drop down lists
- □ earliest harvest
- ■ EPA WPS form
- □ spray reports

1. pesticide information that filled in automatically
2. spray costs calculated automatically
3. drop down lists
4. earliest harvest date calculated automatically
5. EPA Central Posting Form that filled in automatically
6. Reports for processors, buyers, and markets that filled in automatically

Preferences determined in the survey were in line with the objectives of the software. Knowing 14% of respondents favor drop down lists will help improve the FarmData sheet.

13. What one Trac Software feature do you like the least?

Least favorite Trac Software feature

- □ locked chem table
- ■ locked reports
- □ FarmData set up
- □ tank mix entry
- ■ no calibration sheet
- □ no spray card

1. lack of access to pesticide information on the ChemTable
2. lack of access to the processor, buyer and market report forms
3. how the information needed to be entered on the FarmData sheet
4. having to enter tank mixes on several rows
5. lack of a sprayer calibration worksheet
6. lack of a "spray card" to give to the pesticide applicator

Clearly, it will be beneficial to improve the way tank mixes can be entered in the software and to conduct training sessions and write instructions to show users simple Excel shortcuts for this.

14. Would you recommend Trac Software to other farmers? Y/N – Most people who are using Trac Software, 86%, would recommend it to other farmers. The main drawback seems to relate to the use of computers.

15. Do you plan to continue using Trac Software? Y/N – 98% of people using Trac Software plan to continue using it. This is an excellent result. Once they start, they continue.

16. Has using Trac Software made you interested in more advanced computerized record-keeping for your farm? Y/N – Respondents were essentially split, with 44% saying no and 56% saying yes to this question. Because the intent of Trac Software is to remain simple it was thought it could serve as a bridge to more advanced record-keeping software.

Outcomes/Impacts: The survey yielded specific results on the following:

    a) Number out of 226 producers using Trac software for spray record-keeping and reporting.

The survey identified 167 people who are using Trac Software or 76% of those surveyed. Carroll was aware that many who ordered the software did not use it. The main issues may relate to lack of computer expertise and a hesitancy to change from current record-keeping practices.

    b) Economic benefit of Trac software to producers.

Trac Software improved the net income of 8% of respondents by increasing revenue and reducing costs. When stated another way, 61% of respondents agreed that Trac Software has helped their farm business bottom line: primarily through improved office staff efficiency, avoidance of fines for non-compliance, and estimating pesticide needs for bulk purchases.

    c) Improvement in pesticide spray record-keeping and reporting (ease, accuracy, access.)

It was clear from the survey that Trac Software improves the pesticide spray record-keeping and reporting ability of farmers. Trac makes record-keeping easier – 70% agreed; Trac improves accuracy – 76% agreed; Trac streamlines reporting – 76% agreed; and Trac helps meet reporting requirements – 84% agreed. The fact that 98% plan to continue using Trac Software points to very positive impacts for farmers.

    d) Level of improved market access.

Though thought to be a long-shot, fully 28% agreed that Trac Software had improved their access to new markets.