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2007 EVALUATION OF THE MICHIGAN STATE UNIVERSITY EXTENSION SUGARBEET ADVANCEMENT PROGRAM: A DESCRIPTIVE CASE STUDY

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# 2007 EVALUATION OF THE MICHIGAN STATE UNIVERSITY EXTENSION SUGARBEET ADVANCEMENT PROGRAM: A DESCRIPTIVE CASE STUDY

By

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ABSTRACT

2007 EVALUATION OF THE MICHIGAN STATE UNIVERSITY EXTENSION SUGARBEET ADVANCEMNT PROGRAM: A DESCRIPTIVE CASE STUDY

By

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The Michigan Sugarbeet Advancement (SBA) program was initiated in 1997 to help sugar beet farmers adapt to economic and environmental changes through research and dissemination. In 2006 an evaluative study was conducted to understand SBA's impacts on Michigan's sugar beet industry. It attempted to understand (a) the credibility of SBA in beet research and educational information; (b) SBA's dissemination of research-based information to growers; (c) changes in sugar beet production practices by the growers due to this information. The study also attempted to learn about sugar beet grower concerns and specific suggestions from growers for educational program offerings.

After a careful review of SBA activities during the past ten years and discussion with SBA Michigan State University Extension Educator and affiliated growers, a survey instrument utilizing traditional mailing methods, was developed and delivered to MI sugar beet farmers. The population included 1,342 sugar beet growers across Michigan. The survey was administered during January – March 2007. The survey had a response rate of 23.4 percent.

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# CHAPTER I. INTRODUCTION

In 1996, the Sugarbeet Advancement (SBA) Program was established as a part of the Michigan State University Extension Field Crop Area of Expertise Team. In an effort to identify and solve some of the critical production problems that currently face the sugar beet industry in Michigan, the Great Lakes Sugarbeet Advancement Program was started in 1997. It conducts on-farm applied research and increases the educational opportunities for sugar beet producers. The committee is a partnership of sugar beet growers, the Michigan Sugar Company, the Monitor Sugar Company, Michigan State University and related agribusinesses. The mission of the Sugarbeet Advancement Committee is to utilize research and education in revitalizing the Michigan sugar beet industry through a cooperative effort involving Michigan State University, the sugar companies and producers. The SBA program has been funded through an assessment of fees to sugar beet producers and companies. The program also received grant dollars from the state funded Generating Research and Extension to meet Economic and Environmental Needs (GREEEN) initiative coordinated by the Michigan Agricultural Experiment Station.

This evaluation utilized a mail survey for data collection. The staff of the Community, Agriculture, Recreation and Resource Development Department at Michigan State University developed a mail survey instrument in collaboration with the representatives of the Sugarbeet Advancement Program. The questionnaire consisted of several sections (Appendix B). The first section was designed to assess the participation of sugar beet producers in the various educational activities supported by the program. The second part was intended to measure the adoption of new practices and/or changes in

sugar beet production practices as a result of the SBA program. Questions were asked to assess changes in production practices and associated economic impact of the SBA Program and the farmers' perceptions about the most credible and/or reliable sources of sugar beet production information. The last section consisted of demographic characteristics and open-ended questions. Here the farmers could suggest ways to improve the program and indicate their major concerns on which the SBA program should concentrate its efforts.

This survey instrument was based on the 2001 SBA evaluation (see Appendix C) conducted by the Michigan State University Center for Evaluative Studies and a series of meetings with Extension Educator and SBA contact, Steven Poindexter and several producers for additional information and needs. The 2001 evaluation also utilized a self-administered mail questionnaire and was sent to a random sample of 510 sugar beet producers drawn from an industry list of 1,600 beet growers (Suvedi, 2001). A standard mail survey design was implemented, which included a postcard reminder and a second survey packet to non-respondents. The 2001 evaluation's response rate was 36 percent. Results from the 2001 evaluation are compare throughout this study with 2006 responses for evaluation and suggestions for improvement of the SBA program.

### *The Study*

A part of Michigan's sugar beet industry's increasing stabilization has been MSUE's SBA program's delivery becoming more efficient. As many growers are unwilling to come to multiple classroom settings, comprehensive information packages have been developed such as the On Farm Research and Demonstration Report mailings (MAES, 2006). The SBA program is working to create more interactive and efficient delivery packages and reporting sessions for producers. As a part of this, statewide baseline and follow-up studies have been conducted to determine the impacts of SBA programming since 1997 concentrating on three main impact areas: 1) credibility in research and educational information, 2) primary ways of disseminating information and 3) future research and education needs.

The 2001 evaluation focused on: 1) assessing the participation of sugar beet producers in the various educational activities supported by the program, 2) measuring the adoption of new practices and/or changes in sugar beet production practices as a result of the SBA, 3) changes in production practices, and 4) farmers' perceptions about the most credible and/or reliable sources of sugar beet production information (Suvedi, 2001). The 2006 evaluative study builds on this with an overall goal of determining the impact and influence that the SBA program has had on changes in sugar beet production practices. Specifically, the objectives of the 2006 evaluation of the Michigan SBA program are to:

1) Determine the demographic, socio-economic characteristics of sugar beet growers. (Variables include: age, farm size, total beet acres under production in 1996 and 2007, years of sugar beet production experience, farm size – full time or

part time, type of ownership, whether the farm was passed from family member to member, educational level, county where farming and access to a computer, e-mail account and regularity of access to e-mail.)

2) Determine the grower participation in SBA educational programs and activities.
3) Identify the sources of information utilized by sugar beet growers: 1) the most preferred source of information, 2) the most influential source of information when selecting beet varieties and 3) the most heavily relied on source of current beet research information.
4) Document changes in production practices from 1997 to 2006.
5) Ascertain grower perceptions of the quality of SBA educational programs and activities.
6) Solicit growers' perspectives on their sugar beet yield and profitability.
7) Explore the major concerns of Michigan sugar beet growers.
8) Suggest how the SBA program could improve its role in helping Michigan sugar beet growers.

### *Importance of the Study*

Sugarbeet Advancement has worked closely with the MSC to offer many educational programs and conduct applied projects by facilitating efforts with company personnel to coordinate multi-partner efforts. Sugarbeet Advancement is working to deliver research information from all relevant sources to growers both within and out of Michigan. To continue generating research and utilizing education to enhance productivity and profitability of the Great Lakes sugar beet industry, SBA objectives include cooperative efforts involving MSUE, MSC, MAES, producers and agribusiness to identify research needs, conduct educational programming and identify promotional and financial support.

# CHAPTER II. REVIEW OF THE LITERATURE

The literature review is presented in three sections. The first section briefly describes the sugar beet industry in Michigan. The second section presents Michigan State University Extension efforts in support of this industry. The final section presents an overview of program evaluation. Each of the three sections is discussed under a separate heading in this chapter. This information follows a progression from historical information to specific details on current practices to help the reader better understand existing information.

## I. Sugar Beets in Michigan

### *Michigan Sugar Beet Production History*

In the early 1900's, the production of sugar beets was essential to Michigan as its development alleviated the burden from industrial decline brought about by exploitation of vast timber resources on which large populations once depended for their principle source of revenue (*Economic Geography*, 1927). The sugar beet industry was particularly important to Michigan farmers because beets were a major cash crop, an asset to the dairy industry and provided farmers with late season crops that adapted well to the "rigorous" climate of Michigan (*Economic Geography*, 1927).

The sugar beet is a member of the Amaranthaceous family and the Chenopodiaceous subfamily. Its root contains a high concentration of sucrose and it is grown commercially for sugar.

"Encouraged by the results of much state-wide testing of sugar beet production, initiated by Dr. Robert C. Kedzie of the Michigan Agricultural College during the 1880s, the Michigan 1897 legislature passed a law, Act 48. Upon this 'sugar bounty' sugar production became wide-spread throughout Michigan. Later "the sugar beet industry in Michigan was termed an industry at risk when profitability declined for both producers and processing companies. This was due in part to decreasing crop prices, increases in foreign trade and changes in technology" (Suvedi, 2001). Sugar beet yields decreased from 20 to 19 tons per acre in the late 1980s to 16 tons per acre in 1991-1998 (Suvedi, 2001).

**II. Michigan State University Extension**

The Cooperative Extension Service was launched by the Michigan Agricultural College on July 1, 1914 (McDonel et al., 1941). Its objectives were "to aid in diffusing among the people of the United States useful and practical information on subjects relating to agriculture and home economics and encouraging the application of the same" (Simons, 1962). From this time forward MSUE has been growing and pruning its services to best support Michigan and its Great Lakes audiences through its vision of: strong and healthy families and optimistic youth from all cultural, ethnic and economic backgrounds; profitable, globally competitive and safe food systems in harmony with their natural resources base; a citizenry of all ages who understand their role as stewards of the land and; viable and caring communities capable of generating meaningful jobs and satisfactory income levels for all its citizens (MSUE, 2006).

To achieve this, the Michigan Council of Extension Agents, an empowerment committee, representing Extension agents and university specialists, expressed the need to continue increasing the expertise of staff members at the county level to meet ever-changing educational needs of their stakeholders (MSUE, 1994). Thus, the Area of Expertise (AoE) teams were established at Michigan State University in 1994 as: "...a more formalized strategy where off-campus Provost-appointed staff and campus specialists team up to deliver programs across a wider geographic area."

Area of Expertise teams are designed after self-directed work teams in business and industry. Their objective was to energize MSU's capacity to connect to its knowledge through various forms of scholarship and service, with priority issues identified by Michigan citizens and other stakeholder groups (Suvedi, 2002). Specific objectives include: 1) a desire for more integration and collaboration between campus specialists and county staff; 2) more integrated, interdisciplinary work across agricultural related academic departments; 3) expanded opportunities for county-based Extension agents to specialize; 4) more relevant Extension programs; 5) quicker response to constituent issues and concerns, and 6) more direct involvement of constituents in the development of Extension research and education programs (Rizzo, 2001).

The Michigan State University Extension system aids in identifying successful programs, meeting needs to communicate impacts for county, state and federal funding, further strengthening Extension through the Automated Reporting System and providing opportunities for local and state staff to share programming information. The MSUE information system is web based, meets current reporting requirements, staff receive

summer through fall training, adhere to reporting guidelines, success stories are reported on the Internet and a progress report is also maintained national wide.

*Field Crop AoE*

It was recommended by Habeeb, Birkenholz and Weston (1987) that agricultural Extension workers increase their amount of direct contact with clientele groups, refocus Extension programs, and expand delivery methods to address the needs of innovative farmers. Lavis and Blackburn (1990) also found a positive relationship between client satisfaction and contact with local Extension offices. They concluded that people who use Extension more intensively rate it higher than non-users. Warner and Christenson (1984) state that satisfaction is considerably greater among persons who are regular rather than occasional users of the services. Auburn and Backer (1992) suggest that communication between farmers and researchers usually has been one-sided and that researchers have not adequately considered the research priorities of farmers.

The importance of effective delivery methods to the impact of Extension programs has also been suggested (Israel, 1991). From 1996 and 1999 studies conducted by Suvedi, Lapinski and Campo (2000) it was found that 1) awareness of MSUE remains consistently high among agricultural producers; 2) participation among full-time farmers in MSUE programs and activities is high across producer groups; 3) The number of part-time farmers is increasing and these farmers participate less in all MSUE programs; 4) farmers desire more one-on-one interaction with Extension agents;

5) marketing, business management and farm economics were named important issues by more than half of participants in both 1996 and 1999. "The Field Crops AoE Team includes county and campus-based MSU Extension staff dedicated to helping producers improve themselves, their businesses and their environment through an educational process that applies knowledge, demonstration and research to critical issues" (Field Crop AoE, 2006).

*The Sugarbeet Advancement Program*

Through the Field Crop AoE, Michigan Sugar Company, producers and agribusiness, the Sugarbeet Advancement Program was developed in 1997 to help sugar beet farmers adapt to economic and environmental changes through research and dissemination. More specifically, the SBA program introduces "new technologies into current dry edible bean and sugar beet production systems that are profitable to the growers of these crops. New developments in varieties include increased yield and quality, disease resistance and growth habit that are requested by farmers and industry representatives working in cooperation with research scientists" (MAES, 2006).

The SBA program works with the Michigan Sugar Company which is the largest beet sugar processor east of the Mississippi River and fourth largest in the United States (MSC, 2006). Currently there are four operating factories (Bay City, Caro, Croswell, Sebewaing) and three warehouse terminals located in Michigan and Ohio. It generates nearly $300 million in direct economic activity annually in the local communities in which it operates (MSC, 2006).

Today, Michigan is the country's number four producer of sugar beets (MAES, 2006).

Sugarbeet Advancement has worked closely with the MSC in many educational programs and some research projects. The Michigan Sugar Co-operative is composed of approximately 1,200 growers in both Michigan and Ontario. Funding for research is obtained from the Michigan Sugar Company, Michigan State University Extension's Generating Research and Extension to meet Economic and Environmental Needs project, the United States Department of Agriculture, Ontario and private industry. Each year anywhere from 12 to 15 researchers are being funded in projects ranging from beet storage to seedling emergence (MAES, 2006).

Sugarbeet Advancement has worked to facilitate efforts with company personnel to coordinate multi-partner efforts. One large impact of the SBA program in solving industry problems has been increased efficiency and coordination in prioritizing problems and partnering with MSU, the Michigan Sugar Company and other industry professionals (MAES, 2006). For example, the Michigan Sugar Company's research efforts have always benefited the industry but its ability to educate the growers has not been as effective, (MAES, 2006). Therefore, the SBA program is helping deliver research information from all relevant sources to growers both within and outside of Michigan. Due in part to this, Michigan currently enjoys the fastest improving recoverable white sugar per acre in the nation (MAES, 2006). To continue generating research and utilizing education to enhance productivity and profitability of the Great Lakes sugar beet industry SBA objectives include cooperative efforts involving MSU, the Michigan Sugar

Company, producers and agribusiness to (MAES, 2006):

- Identify research needs,
- Conduct educational programming, and
- Identify promotional and financial support

**III. Program Evaluation**

Evaluation is a management tool that involves measuring and reporting on the results of programs and projects. Case, Andrews and Werner (1988) provides another definition: "...to make explicit judgment about the worth of all or part of a program by collecting evidence to determine if acceptable standards have been meet". "Evaluation is both an art and a science. The art of evaluation involves identifying purposes and audiences, creating appropriate designs, and interrupting data about a program, project or policy. The science of evaluation involves systematically gathering and analyzing evidence about impacts" (Suvedi and Morford, 2003). Patton (1997) describes three primary uses of evaluation: 1) to judge the merit or worth of a program, 2) to improve programs and/or 3) to generate knowledge.

"The primary focus in making evaluation decisions should be on getting the best possible data to adequately answer primary users' evaluation questions given available resources and time. The emphasis on appropriateness and credibility – measures, samples and comparisons that are appropriate and credible to address key evaluation issues" (Patton, 1997).

"Any definition of evaluation in the context of training and development should include a number of elements: what it is, what it involves and what it leads to" (Marsden, 1991). Evaluation is an analytical process. Evaluation involves the collection of subjective and objective data from a number of sources using a variety of techniques about a training program and the reduction of such data (Marsden, 1991). Evaluation leads to the synthesis of the data into a report containing a summary of results and recommendations, with validated rationales, about the program being evaluated (Marsden, 1991).

Hewitt (1989) sees the purpose of evaluation as providing data demonstrating the program's effectiveness on targeted behavior. Wigley (1988) has a broader view of the purpose to improve the program and facilitate informed decision making. A comprehensive view of the purpose of evaluation is given by Bushnell (1990) who identifies four purposes: "to determine whether training programs are achieving the right purposes... to detect the types of changes they [the trainers] should make to improve course design, content, and delivery". The ultimate purpose being to "balance the cost and results of training."

Integrating evaluation with program development is critical to producing educational programs that have demonstrable impact (Brown and Keirnan, 1998). Scriven was the first to define two types of educational program evaluation-formative and summative (1967). Recently, Patton (1994) outlined their sequential nature: first, formative data are collected and used to prepare for the summative evaluation; then, a summative evaluation is conducted to provide data for external accountability.

However, Patton and others emphasize that evaluation should be an integral part of the program development process and, therefore, place equal or greater weight on the first phase, formative evaluation. According to Patton (1994), a formative evaluation should provide feedback on the original program and improve program implementation, while a summative evaluation should determine if the desired outcomes are achieved and can be attributed to the revised program.

Chambers (1994) argues it is not the timing, but the use of evaluation data that distinguishes formative from summative. He emphasizes that formative evaluation provides data with which to modify the initial intervention and its delivery so that the final intervention is more effective as revealed by the summative evaluation. Scheirer (1994) recommends using formative evaluation in a pilot situation to collect information on the feasibility of activities and their acceptance by recipients, suggesting qualitative methods such as interviews, focus groups, and observations to gather these data. In sum, these researchers suggest that formative evaluation should examine the effect of the program, the process of delivery, and the reactions of participants in the program.

Extension professionals are increasingly being asked for more accountability in their work by stakeholders (Altschuld & Zheng, 1995). In response, they have turned to the processes and products of evaluation for methods in documenting impacts of their programs. Many evaluation models have been applied with varying degrees of success to Extension programs. Some models have followed a singular

structured format (Bailey & Deen, 2002; Garst & Bruce, 2003), while others have used a variety of activities to demonstrate program outcomes (Brown & Kiernan, 1998; Chapman-Novakofski et al., 2004).

The purposes of evaluation have evolved over time and are currently described by Mark, Henry, and Julnes (2000) as a) assigning the merit and worth of a program, b) improving the program or organization, c) oversight and compliance, and d) knowledge development or testing theory. The process of evaluation can occur before and during (formative), or after (summative) (Scriven, 1991) the program has been implemented. Formative evaluation is designed to facilitate program improvement, whereas, summative evaluations are designed to judge the merit and worth of a program or to focus on oversight and compliance issues (Kelsey, et.al 2005).

In designing a survey project it is first important to establish the goals of the project or what an organization is interested in learning more about. Second, the sample size or who is to be surveyed must be determined. Following this, the methodology most efficient to analyzing the organization's goals must to be determined. A questionnaire is then designed containing what will be asked. Then a pre-test, if practical, is conducted on stakeholders and evaluator experts. It is then time to conduct the actual survey, interviews or focus groups and enter data. Following this the data is analyzed and a report produced to inform stakeholders of study findings. (Survey Systems, 2006)

Determining the most efficient method of gathering data involves an understanding of best modes of reaching the study population, organization constraints

such as financial boundaries and resource capacity. In this study a mail survey was chosen due to a computerized tracking system connected to farmer population for efficiency; the generation and mailing of surveys and follow-up mailings, and ease of data entry and analysis.

Mail surveys have many advantages and disadvantages. Mail surveys are among the least expensive. This is the only kind of survey researchers can execute with names and addresses of the target population, but not their telephone numbers. The questionnaire can include pictures - something that is not possible in phone surveys. Mail surveys allow the respondent to answer at their leisure, rather than at the often inconvenient moment they are contacted for a phone or personal interview. For this reason, they are not considered as intrusive as other kinds of interviews. (Cancer Research Prevention Center, 2006)

Disadvantages may include time as they can take longer to conduct than other kinds. Researchers will need to wait several weeks after mailing out questionnaires before they can be sure that they have gotten most of the responses. In populations of lower educational and literacy levels, response rates to mail surveys are often too small to be useful. This, in effect, eliminates many immigrant populations that form substantial markets in many areas. Even in well-educated populations, response rates vary from as low as 3 percent up to 90 percent. Typically, the best response levels are achieved from highly-educated people and people with a particular interest in the subject (Cancer Prevention Center, 2006)

One way of improving response rates to mail surveys is to mail a postcard telling the sample to watch for a questionnaire in the next week or two. Another is to follow up a questionnaire mailing after a couple of weeks with a card asking people to return the questionnaire. Unfortunately, this increases mailing costs. (Survey Systems, 2006)

Another way to increase responses to mail surveys is to use an incentive. One possibility is to send a dollar bill (or more) along with the survey (or offer to donate the dollar to a charity specified by the respondent). Many people will consider their time worth more than a dollar therefore it is necessary to express the dollar as "thanks" rather than payment for their time. Another possibility is to include the people who return completed surveys in a drawing for a prize. A third is to offer a copy of the (non-confidential) result highlights to those who complete the questionnaire. Any of these techniques may increase the response rates. (Survey Systems, 2006)

In some instances, a mixed-mode strategy has been suggested such as Web surveys, focus groups and telephone surveys, minimizing non-response (Dillman 2000; Schaefer and Dillman 1998). To reliably use a mixed-mode strategy (e.g., mail surveys and Web surveys) or to select among alternative survey modes, researchers must understand and demonstrate the equivalency and complementarity, or relative strengths of alternative modes (Dillman 2000). Researchers have used survey response rates as one measure of equivalency. (Kaplowitz, et.al, 2004)

The cover letter is an essential part of the survey. To a large degree, the cover

letter will affect whether or not the respondent completes the questionnaire. It is important to maintain a friendly tone and keep it as short as possible. The importance of the cover letter should not be underestimated. It provides an opportunity to persuade the respondent to complete the survey. If the questionnaire can be completed in less than five minutes, the response rate can be increased by mentioning this in the cover letter. (Stat Pack, 2007)

Once a method of evaluating a program is chosen, it is "conducted during the life of a program to identify its strengths or weaknesses and enhance its quality and effectiveness" (Suvedi and Morford, 2003). Evaluation requires that managers identify "researchable questions" that can be answered by collecting and analyzing data about their program. Evaluators typically try to identify cause and effect relationships between an activity designed to induce change (such as a workshop) and a particular desired outcome (such as increased knowledge of participants). (Suvedi and Morford 2003)

Suvedi and Morford (2003) discuss twelve steps to conducting program evaluation. This begins with identifying the purpose of an evaluation or clearly identifying the reason for conducting an evaluation. Next, a review of program goals must be conducted to better understand changes program designers intended to create. Thirdly, it is necessary to identify key evaluation stakeholders. A stakeholder is one who has a stake in the outcome of the evaluation, not the audience targeted by the program or project. This includes people both inside and outside the organization. (Suvedi and Morford, 2003)

Fourth, it is important to contact these stakeholders. Their input is required regarding questions they have about the program. Also, the purpose of the evaluation should be revisited after conversations with stakeholders and the evaluator's purpose for conducting it. Successful evaluation relies on designers developing clear, specific and measurable objectives at the outset of a program. Objectives should state what changes or outcomes are expected as a result of the program or project.

At this point it may be necessary to re-write the evaluation. Sixth, it should be decided whether the evaluation should be conducted in-house or out. Based on the scope of the evaluation and the nature of questions, program implementers should decide whether it is possible to conduct the evaluation through program staff or outside personnel. A budget is then formed based on this decision. (Suvedi and Morford, 2003)

Steps seven and eight include determining and creating the evaluation method/design. This is based on formative or summative design, population and budget. It may be possible to update existing evaluative instruments or instead it may be necessary to create new ones. After the instrument is agreed upon and designed, it must be tested. The evaluation tool may be administered to a group of respondents who are willing to provide their feedback. This may include addressing questions that are not clear, missing information and misleading writing. (Suvedi and Morford, 2003)

Step 10, as discussed by Suvedi and Morford (2003) includes collecting evaluation data. This is followed by an in-depth analysis and lastly, preparing a report for stakeholders (Suvedi and Morford 2003). It is important to report accurately and fairly on

evidence as to program strengths and weaknesses. "Ways of measuring complex phenomena involve simplifications that are inherently somewhat arbitrary, are always constrained by limited resources and time, inevitably involve competing and conflicting priorities, and rest on a foundation of values preferences that are typically resolved by pragmatic considerations, disciplinary biases and measurement traditions" (Patton, 1997). Therefore, it is necessary to take every precaution to ensure data is accurately represented in a sensitive way while addressing areas for improvement.

Increased competition, fewer dollars, greater need, greater efficiency expectation, increased scrutiny, need for collaboration and increased accountability require that programs are able to document their improvement, growth and success. The Government Performance and Results Act of 1993 states that "The law...requires that we chart a new course for every endeavor...see how well we are progressing, tell the public how we are doing, stop things that don't work and never stop improving..." (Clinton, 1993).

In this light, this formative evaluation is designed to help program managers determine if adjustments are needed. Reporting is necessary for accountability, program monitoring, evaluation, improvement and sharing lessons learned with others. Therefore, needs are identified, productivity assessed, resource utilization acknowledged and decisions regarding future support can be better informed. Documenting such impact, or clear description of the value of a program to people can be found in increased knowledge and skills, modified behavior, financial gains, production efficiencies, conservation or environmental resources and improved conditions.

# CHAPTER II. METHODOLOGY

## *The Design*

The population for this study included sugar beet farmers across Michigan. The mailing list of the SBA program served as the sampling frame, totaling 1,342. This study followed a descriptive case study research design, utilizing a mail survey for data collection and analysis. A mail survey was chosen because of its low cost and advantageous uniform access to dispersed populations without interviewer bias (Dillman, 2006).

The survey instrument was developed after a careful review of the SBA program. Results from the 2001 study were utilized to facilitate development of new survey questions. The draft instrument was examined by the Center for Evaluative Studies, MSUE SBA program Educator and several SBA affiliated growers, who provided feedback upon which the instrument was revised. A six page survey instrument was developed to assess SBA impacts, credibility, informational avenues, future research and education using both closed and open-ended questions (Appendix A).

Respondents were asked to indicate their farming practices, information sources, profitability, SBA program participation, computer-use and suggestions/comments/concerns. Topics covered many farming practices concerning primed seed, planting dates, plant population, Cercospora Leafspot control, weed control, Rhizoctonia Crown Rot and more. Questions such as: "Do you use primed seed?", "On average, has your planting date changed during the last ten years?", and "What was your

2006 average seed spacing" were asked.

After each farm practice question, a follow-up question was asked to help researchers understand the most influential sources of information for current practices and any changes made. Also, general preferred sources of research and educational information questions were asked such as "Overall, who do you rely most heavily on for current research information?" and "Who do you feel should take the lead in providing educational programming for the sugar beet industry?"

Concerning profitability, respondents were first asked to indicate their average beet yields in 1997 and 2006. Second, participants indicated whether their sugar beet profits had increased or decreased during the last ten years. If profits had decreased, a follow-up question requested respondents to detail reasons for this.

Participants were also asked to rate the quality of SBA program events and media using a one to five scale with one representing "Poor" and five representing "Excellent". A Likert-type scale was implemented to gather information about SBAP participation and change in practices. The scale relied on a one to five numbering system with one being "Strongly Agree" and five being "Strongly Disagree." Open-ended questions solicited suggestions for SBAP improvement, grower concerns and comments.

This study also attempted to determine efficient electronic avenues for research and education dissemination by asking whether respondents had access to computer, the Internet, and email accounts. To understand if these means are efficient ways of

communicating, questions were also asked regarding daily and weekly use. Using a one to six scale (1 = "Never" and 6 = "Daily") participants were asked if they regularly used a computer, the Internet and accessed their email accounts.

The survey concluded with an open-ended question asking if respondents had any other information to share such as ideas, concerns and suggestions. Throughout the survey similar questions were asked such as "Please suggest how the SBA program could improve its role in helping Michigan beet growers" and "What are your major concerns for Michigan sugar beet growers?"

The data collection instrument was formatted using Adobe Pagemaker 7.0 and designed to be folded and taped shut with pre-paid postage and tracking number included on the front. The SBAP Extension Educator, representatives from the SBAP mailing list and Center for Evaluative Studies staff reviewed the survey to ensure usability and reliability. The survey instrument took no more than ten minutes to complete. The survey was approved by the MSU Social Science, Behavioral and Education Institutional Review Board in November of 2006.

***Study Population***

The target population included all 1,342 sugar beet farmers in Michigan. The survey population consisted of 1,342 sugar beet farmers from the SBA producer mailing list. Of these, about one-quarter of the surveys were returned. This totaled 305 usable

responses. Thirty-seven surveys were returned unusable for reasons including incorrect address, deceased contacts and recipients' change of employment. There was an overall response rate of 23.4 percent.

Surveys were mailed during the first week of January, 2007. The mail-out package consisted of the questionnaire, a cover letter and instructions for folding responses to expose postage ensuring free return. The cover letter emphasized the importance of the survey, guaranteed confidentiality and requested a prompt response. Data collection was concluded March 15, 2007.

**Analysis of Data**

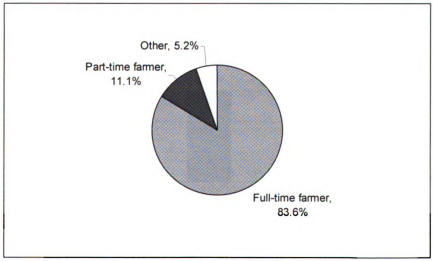
Data was analyzed using the Statistical Package for the Social Sciences (SPSS 12.0) computer software program. Descriptive statistics such as frequencies, percentages, medians, means and standard deviations were used to analyze the data. Qualitative responses were analyzed through data entry, coding and theme notation in Microsoft Word 2003.

*Socio-economic Characteristics of Respondents*

The number of farms in America has been on the decline since the 1970's (USDA, 2006). With this in mind, the study attempted to understand current Michigan farming demographics, such as the number of full-time farmers, their age and what they plan to do with their farm in the future (e.g., sell it, pass down to family members or rent it out).

Of the 305 respondents, most (83.6%, n=255) were full-time farmers as shown in Figure 1. This reflects 2001 results with respondents (85%) also considering themselves full-time farmers (Suvedi, 2001). Part-time farmers consisted of about one-tenth (11.1%, n=34) of respondents. Those that considered themselves something "Other" than farmers (5.2%, n=16) responded with, "retired" (n=10) yet still active on the farm or as "technical support" (n=6) such as consultants and field representatives for example.

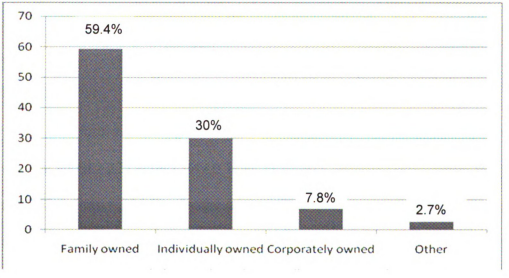
**Figure 1: Type of Farmer (N=305)**



Growers' needs, efficient communication avenues and future farm trends vary by age. To understand Michigan sugar beet farming population needs and avenues for disseminating educational information, respondents were asked how old they were. Most respondents (80.3%, n=232) ranged between 31 and 60 years old and averaged about 50 years old. This was followed by almost one-fifth (17.0%, n=49) at or beyond standard retirement age. The minority of respondents (2.8%, n=8) were 30 years old or younger.

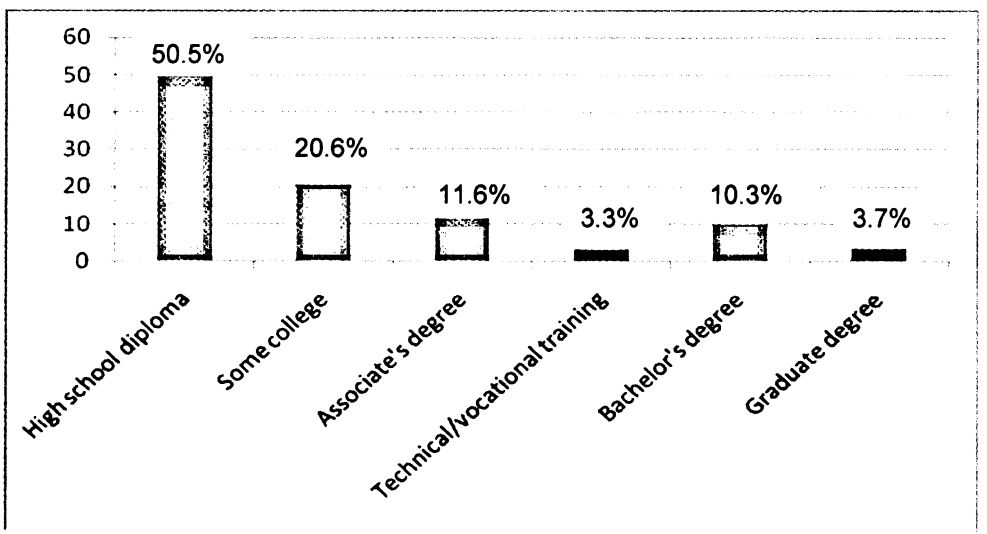
Survey results demonstrate that more than half (59.4%, n=174) of Michigan sugar beet producers operate family owned farms (Figure 2). Almost one-third operate individually owned farms (30.0%, n=88) and less than one-tenth of beet farm are corporately owned (7.8%, n=23). "Other" farm type responses (2.7%, n=8) included "partnership", "technical support to beet growers" and "land privately owned, farming under corporation".

**Figure 2: Type of farm operated (N=293)**



In this study respondents were asked to indicate their level of education (Figure 3). Responses will help researchers understand how best to communicate with growers and which channels to use. About half of the respondents (50.5%, n=152) indicated their highest level of education to be a high school diploma followed by some college (20.6%, n=62). This was followed by about one-tenth having earned an associates degree (11.6%, n=35) or a bachelor's degree (10.3%, n=31).

**Figure 3: Level of education (N=301)**




The farm size of sugar beet growers ranged between 39 and 6,900 total acres and average about 1,325 acres (Stdv.= 1188.3). Of this, farmers plan to grow about 250 acres (*M*=253.4, Stdv.= 256.5) of sugar beets in 2007 as shown in Table 1. This sugar beet acreage ranged from nine to 1,500 acres. Average beet acreage has increased from 1996 by about 25 acres. When asked how long they have been growing beets, farmers

responded with a range from one to sixty years with an average of about 27 years ($M$=26.7, Stdv.=12.8). Similarly, the 2001 study also found that more than half of respondents (56 %) had grown beets for more than 20 years (Suvedi, 2001).

It was found that farmers plan to grow sugar beets on about 253.4 acres (Stdv.= 256.5) ranging between nine and 1,500 in 2007. This has increased from 1997 when harvested acres totaled about 224.9 (Stdv.= 221.1). In 2001, the mean acreage contracted was 223, with a minimum of 13 and a maximum of 1,200 (Suvedi, 2001).

**Table 1: Socio-economic characteristics of sugar beet farmers**

| | Median | Mean (Stdv.) |
|---|---|---|
| What was your age as of last year? (N=289) | 50 | 50.4 (10.5) |
| What is your total farm size including all crops?(N=292) | 980 | 1324.6 (1188.3) |
| On how many total beet acres do you plan to grow in 2007? (N=285) | 160 | 253.4 (256.5) |
| How many total harvested acres did you have under sugar beet production in 1996? (N=260) | 150 | 224.9 (221.1) |
| How many years have you been involved in growing beets?(N=294) | 29 | 26.7 (12.8) |

Respondents represented 15 sugar beet producing counties in Michigan. The most commonly sited sugar beet farming counties were Huron, Saginaw, Tuscola and Sanilac or some combination of these and/or Arenac, Bay, Clinton, Gratiot, Isabella, Lapeer, Midland, Montcalm, Ogemaw, St. Clair and Shiawassee. Combinations included some such as "Midland, Gladwin and Bay" or "Sanilac and St. Clair".

Farm ownership is a key factor to family economic wellbeing in the farming community. Respondents were asked to indicate the nature of ownership of the farm they operate and whether they inherited the land on which they grow sugar beets. Slightly more than three-quarters (78.4%, n=229) of farmers said their farms had been passed down from family member to family member as shown in Figure 4. In the future, also about three out of four of (75.2%, n=203) plan on passing their farms to the next generation (Figure 5). Of those who do not plan to pass on the farm to their family members (24.8%, n=52) most of them plan to rent (70.3%, n=52) or sell (16.2%, n=12) (Figure 6).

**Figure 4: Farm passed down from family member to family member (N=292)**

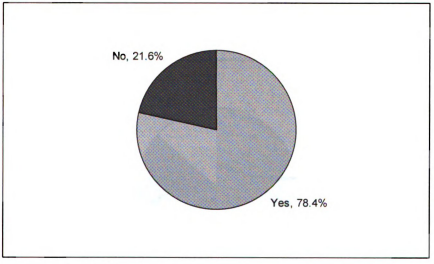


**Figure 5: Intent to pass down farm to family in the future (N=270)**

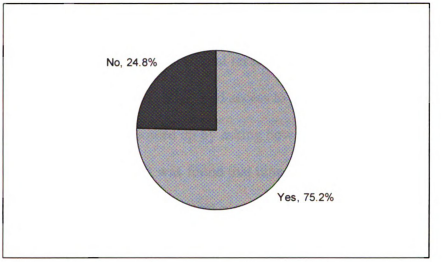
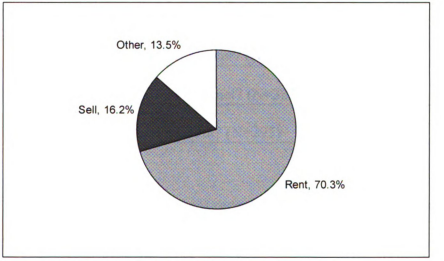



**Figure 6: Farmer intention after retirement if not passing farm down (N=74)**



*Computer and Internet Use*

Questions regarding computer access and use were asked in an attempt to better understand avenues for educational research and information dissemination. First, respondents were asked if they had access to a computer, the Internet and an e-mail account. This was followed up by asking how frequently each was used on a monthly, weekly or daily basis. It was found that nine out of ten participants have access to a computer (90.1%, n=274), almost nine out of ten have access to the Internet (88.1%, n=266) and almost three-quarters (70.2%, n=207) have access to an e-mail account as shown in Table 2.

**Table 2: Sugar beet farmer computer/internet access**

| | | Frequency | Percent |
|---|---|---|---|
| Do you have access to a computer? (N=304) | Yes | 274 | 90.1 |
| | No | 30 | 9.9 |
| Do you have access to the Internet? (N=302) | Yes | 266 | 88.1 |
| | No | 36 | 11.9 |
| Do you have an e-mail account? (N=295) | Yes | 207 | 70.2 |
| | No | 88 | 29.8 |

Following this, questions regarding frequency of Internet use were asked to determine the most efficient avenues for SBA communication. Together, over half of the respondents indicated either using the computer daily (38.4%, n=112) or two to three times per week (17.5%, n=51) as shown in Table 3. Similar results were recorded for Internet use with about half of the respondents indicating either daily (35.8%, n=105) or

two to three times per week access (16.4%, n=48). Email accounts were used less frequently by just over a quarter of participants on a daily (27%, n=78) or two to three times per week (13.1%, n=38) basis. Therefore, though many have access to the computer, Internet and e-mail accounts, electronic means of communication may not be as effective as traditional mail based on frequency of use findings.

**Table 3: Use of computer, internet and e-mail account**

| | | Frequency | Percent |
|---|---|---|---|
| Do you have access to a computer? (N=304) | Yes | 274 | 90.1 |
| | No | 30 | 9.9 |
| Do you have access to the Internet? (N=302) | Yes | 266 | 88.1 |
| | No | 36 | 11.9 |
| Do you have an e-mail account? (N=295) | Yes | 207 | 70.2 |
| | No | 88 | 29.8 |

*Preferred Sources of Information*

One of the objectives of this evaluative study was to ascertain information sources utilized by the sugar beet growers. It attempted to understand through three questions who farmers rely on most for production practice information. First, respondents were asked who they prefer to get their information from. Second, farmers were asked who they felt should take the lead in providing educational programming for the sugar beet industry. Third, it was asked who they relied on most heavily for current research information.

**Figure 7: Source of preferred information (N=259)**

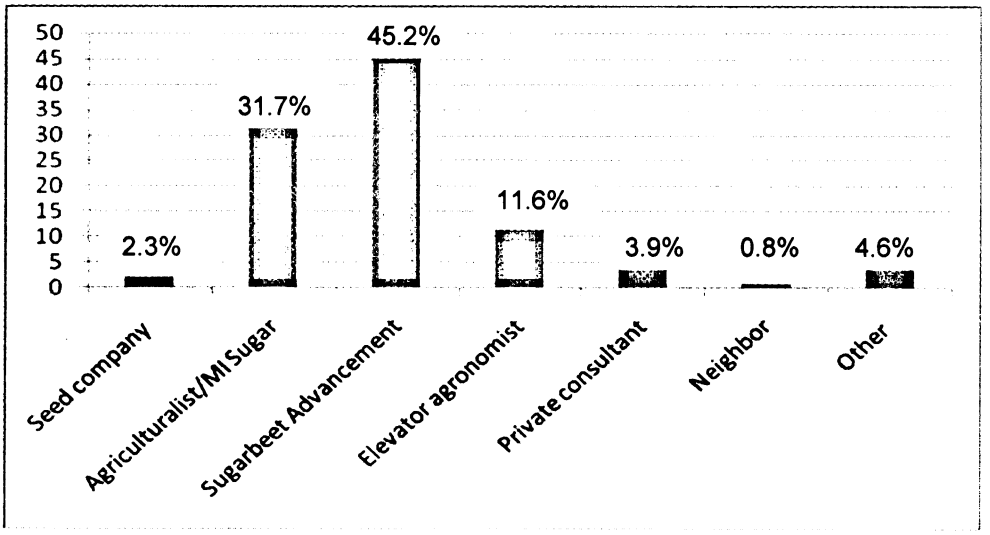



**Figure 8: Preferred lead educational programming source for the sugar beet industry (N=238)**

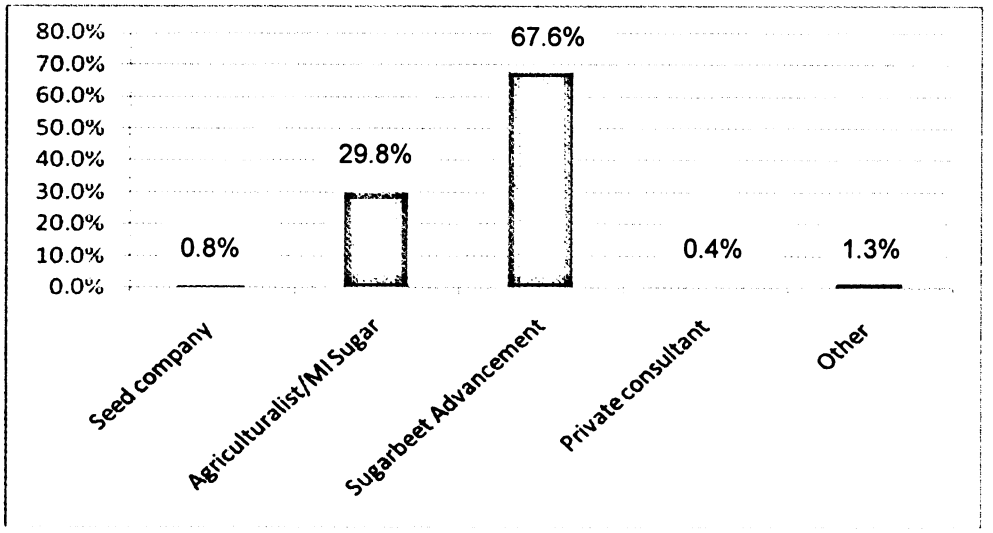
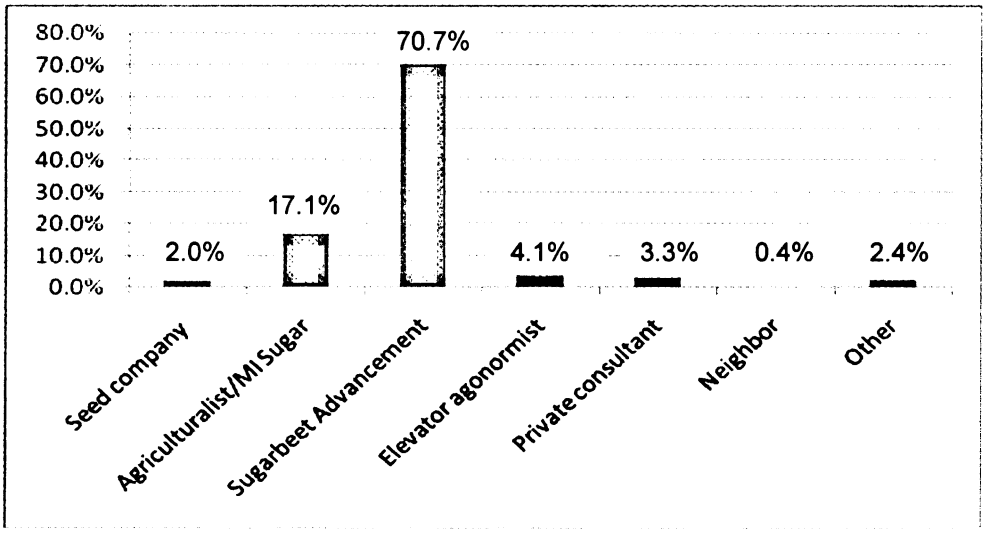


**Figure 9: Most heavily relied on source of information for current research information (N=246)**




In 2001, survey respondents were asked if they had ever heard of SBA. Almost all of the respondents (98%) responded affirmatively. In 2006, Sugar Beet Advancement was most frequently mentioned as the preferred source of information (45.2%, n=117) for Michigan sugar beet farmers also shown in Figure 7. This is followed by Agriculturalist/MI Sugar (31.7%, n=82) and Elevator agronomist (11.6%, n=30). When asked who should take the lead in providing educational programming for the MI sugar beet industry two-thirds of respondents (67.6%, n=161) felt that SBA should be responsible (Figure 8). This was followed by Agriculturist/MI Sugar (29.8%, n=71) and "Other" (1.3%, n=3) answers included combinations of SBA and the MI Sugar Company and "someone that doesn't have financial interests in selling chemicals".

When asked who respondents relied on most heavily for research based sugar beet

information overall, once again SBA received almost three-quarters of responses (70.7%, n=174) as shown in Figure 9. This follows from 2001, when 66 percent of respondents considered SBA the most credible source of sugar beet information. Similarly, this was again followed by Agriculturalist/MI Sugar (17.1%, n=42). "Elevator agronomist" (4.1%, n=10) and "Private consultant" (3.3%, n=8) were also acknowledged in 2006.

*SBA Program Participation*

The SBA program was established in 1996 to provide research and education to Michigan beet growers. Beginning in 1997, SBA organized various kinds of educational programs for farmers. This study attempted to determine what types of SBA programs respondents have participated in and what SBA information they have received. SBA activities included farm meetings/workshops, field days/research tours, Bean and Beet Symposium, Seed Week and harvester clinics. Media and SBA information used includes "On Farm Research and Demonstration" publication, quarterly newsletters, Cercospora Leafspot bulletin, tip cards, contact with MSUE Educator, SBA website and mass media. Respondents were asked to indicate if they participated in these educational programs or benefitted from these activities. Findings are displayed in Table 4 below.

**Table 4. Farmer participation in SBA programs/activities**

| | N | Frequency | Percent |
|---|---|---|---|
| Attended sugar beet related farm meetings/workshops | 296 | 253 | 85.5 |
| Participated in sugar beet field days/research tours | 296 | 178 | 60.1 |
| Participated/attended the Bean and Beet Symposium | 297 | 194 | 65.3 |
| Participated in Sugar Beet Seed Week | 292 | 197 | 67.5 |
| Used "On Farm Research Demonstration" SBA publication | 295 | 219 | 74.2 |
| Used information from quarterly newsletters | 297 | 271 | 91.2 |
| Used Cercospora Leafspot bulletin information | 294 | 259 | 88.1 |
| Used production tip cards (tips for maximizing sucrose production) | 291 | 208 | 71.5 |
| Gained information through mass media (newspaper, radio or TV) | 288 | 129 | 4.8 |
| Had contact with an MSU Extension Specialist | 291 | 127 | 43.6 |
| Had a local Extension Educator(s) visit my farm | 285 | 57 | 20.0 |
| Attended harvester clinics | 284 | 104 | 36.6 |
| Used the SBA website | 289 | 101 | 34.9 |

Respondents indicated participating in most SBA activities and receiving direct publications as shown in Table 4. The majority of respondents indicated receiving information and/or participating in activities such as farm meeting and workshops (85.5%, n=253); field days/ research tours (60.1%, n=178); Bean and beet symposium (65.3%, 194); Seed Week (67.5%, n=197); On Farm Research and Demonstration (74.2%, n=219); Information and newsletters (91.2%, n=271); Cercospora Leafspot bulletin (88.1%, n=259) and; tip cards (71.5%, 208). It should be noted, however, that information gained through mass media (44.8%, n=129); contact with MSU Specialist (43.6%, n=127), local Extension Educator farm visit (20.0%, n=57), harvester clinics (36.6%, n=104) and; SBA website (34.9%, n=101) were less frequently used sources of information for sugar beet production.

This is approximately the same as 2001, when most respondents (92%) indicated receiving quarterly newsletters and/or bulletins. However, also in 2001, more respondents indicated receiving the "On-farm Research and Demonstration: Sugarbeet Advancement" publication (89%). Four out of five (80 percent) attended sugar beet-related farm meetings/workshops.

*SBA Program Ratings*

After gaining a clearer picture of what sources of information sugar beet growers prefer, including SBA programs, this study asked participants to rate these programs. Using a scale of one to five with one indicating "Poor" and five indicating "Excellent", participants were asked to rate SBA programs such as educational programs, field and research tours, communications and services. Results are shown in Table 5.

**Table 5: Educational research program quality ratings by farmers**

| | N | Poor (%) | Fair (%) | Good (%) | Very Good (%) | Excellent (%) | Mean (Stdv.) |
|---|---|---|---|---|---|---|---|
| Educational programs such as workshops/ meetings | 256 | 1.6 | 2.7 | 19.5 | 50.0 | 26.2 | 3.96 (.84) |
| Educational field/research tours | 221 | 1.4 | 5.0 | 28.5 | 44.8 | 20.4 | 3.78 (.87) |
| Communications such as newsletters, tip cards and bulletins | 284 | 2.1 | 3.9 | 23.6 | 42.6 | 27.8 | 3.9 (.92) |
| Services such as Extension contacts and farm visits | 217 | 10.1 | 24.0 | 29.0 | 22.1 | 14.7 | 3.07 (1.21) |

Combined, over three-fourths of participants rated educational programs as "Good", "Very Good" or "Excellent". Educational programs were rated the most highly with half of the respondents (50.0%, n=128) rating them as "Very Good" and over a quarter rating them as "Excellent" (26.2%, n=67). Educational field/research tours were rated "Good" by almost one-third of participants (28.5%, n=63) and "Very Good" by almost half of the respondents (44.8%, n=99). Communication tip cards were also highly rated by about two fifths (42.6%, n=121) responding that they are "Very Good" and almost one-third (27.8%, n=79) indicating they are "Excellent". Services such as Extension contacts and farm visits were rated as "Good" by almost one-third of the respondents (29.0%, n=63) and "Very Good" by almost a quarter of respondents (22.1%,

n=48). These findings are presented in Table 5.

*Perceptions of Sugarbeet Advancement*

This evaluative study attempted to ascertain Michigan sugar beet growers' perceptions of the SBA program. This information will help researchers understand SBA strengths and weaknesses to better deliverable future improvements. It was agreed by almost half of the participants that they gained new, research-based information that helped them make positive farming practice changes while increasing yield and income. Findings are demonstrated in Table 6.

**Table 6: Perceptions of the Sugarbeet Advancement program**

| | N | Strongly Agree | Agree | Neutral | Disagree | Strongly Disagree | Mean (Stdv.) |
|---|---|---|---|---|---|---|---|
| Program provided research-based information | 254 | 32.7 | 42.5 | 12.6 | 9.8 | 2.4 | 2.07 (1.03) |
| Program provided information not readily available elsewhere | 254 | 18.5 | 49.6 | 19.7 | 9.8 | 2.4 | 2.28 (.96) |
| I gained new information/practices about beets | 258 | 24.8 | 43.0 | 19.0 | 10.1 | 3.1 | 2.24 (1.03) |
| It helped me make positive changes in my farming practices | 255 | 22.0 | 44.7 | 20.0 | 9.4 | 3.9 | 2.29 (1.04) |
| My average yield has increased because of this information | 257 | 19.8 | 37.7 | 27.6 | 10.5 | 4.3 | 2.24 (1.05) |
| My farm income has increased due to changes I made in beet growing practices | 255 | 18.0 | 32.2 | 34.5 | 9.0 | 6.3 | 2.53 (1.08) |

When asked if the SBA program provided research-based information, about two-thirds "Agreed" (42.5%, n=108) or "Strongly Agreed" (32.7%, n=83) that they do. This was followed by asking if the SBA program also provided information not readily available anywhere. Again, about two-thirds responded either "Agree" (49.6%, n=126) or "Strongly Agree" (18.5%, n=47) with this statement. It was also agreed (43.0%, n=111) or strongly agreed (24.8%, n=64) that information or practices provided by SBA were new by about two out of three participants (Table 6). This reflects 2001's survey results in that most respondents (81 percent) agreed that the program provides research-based information.

These SBA new information/practices were determined to have made positive changes in farming practices. About two out of three participants either "Agreed" (44.7%, n=114) or "Strongly Agreed" (22.0%, n=56) that SBA information and practices had helped them make positive changes. From this over half of respondents either "Agreed" (37.7%, n=97) or "Strongly Agreed" (19.8%, n=51) that their yields have increased due to SBA information. Though increases in yield do not necessary equate increases in profit, it was found that about half of the respondents either "Agreed" (32.2%, n=82) or "Strongly Agreed" (18.0%, n=46) that their farm income had increased due these changes in their beet growing practices (Table 6).

*SBA Program Impacts*

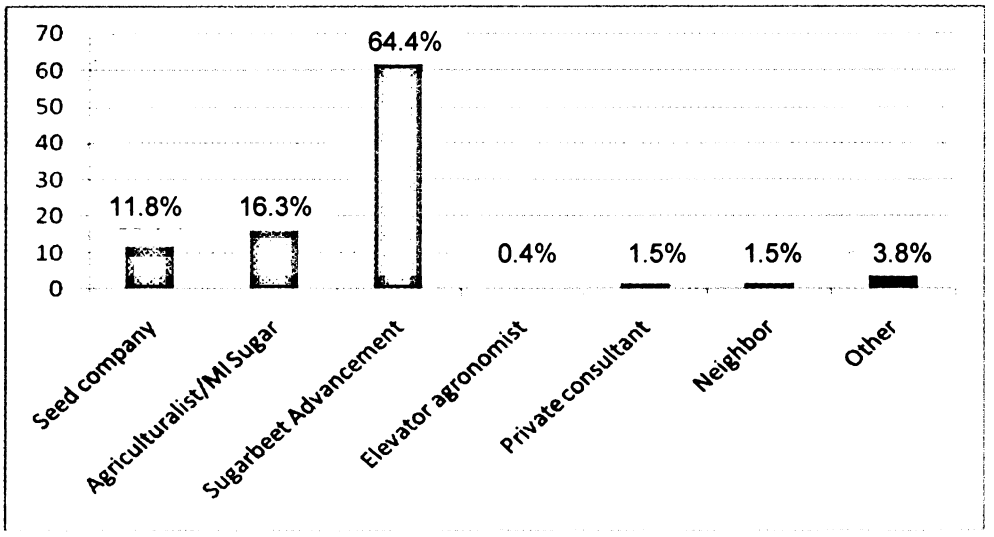
Respondents were asked to provide feedback regarding their sugar beet planting

practices from variety selection to the use of planter seed tubes. After asking for general information regarding practices, each topic was followed up with a question regarding what source of information was most influential to the practice change. Specific impacts are discussed below by sugar beet production practice.

### *Variety Selection*

Each year SBA conducts large on-farm trials for variety selection. The Michigan Sugar Company also conducts small plot trials for variety approval. "Variety trials contain experimental lines to evaluate their adoption, productivity and quality in this area. Sugar beets are evaluated for resistance to mildew, resistance to curly top, beet yield, sucrose content, pulp nitrate and pulp conductivity (MAES, 2003) This study attempted to understand the most influential source of information regarding sugar beet variety selection in Michigan. Respondents were asked, "when selecting beet varieties, who provides the most influential source of information?" Responses are reflected below in Figure 10.

**Figure 10: Most influential source of information when selecting beet varieties (N=263)**



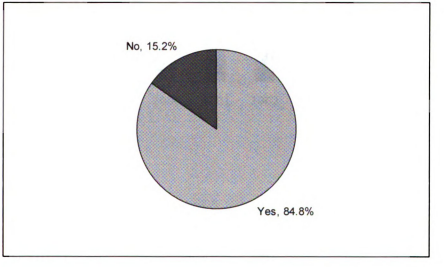

Prior to 1997, growers had only two sources of information on variety selection: the sugar company and the seed company (Suvedi, 2001). In 2006, about two-thirds of the respondents (64.6%, n=170) indicated SBA as their preferred source of information when selecting beet varieties. This was followed by Agriculturalist/MI Sugar (16.3%, n=43) and Seed Company (11.8%, n= 31). "Other" (3.8%, n=10) responses included "My own experience", "Salesman" and combinations of SBA, crop consultant, seed company and MI Sugar company.

*Primed seed*

Sugarbeet Advancement has been conducting research on the speed of emergence and yield enhancement for primed seed in Michigan. Primed seed promotes early top

growth of sugar beet, uniformity, rate of germination and resistance to moisture conditions during germination (Mukasa, 2002 and Orzeszko and Podlaski, 2003). Prior to 1997, no primed seed was planted. By 2000, 45 percent of sugar beet acreage was grown using primed seed (Suvedi, 2001). In this study beet growers were asked to indicate if they use primed seed, when they began using primed seed and who was the most influential source of information regarding primed seed. Findings in Figure 11 show that over four out of five respondents (84.8%, n=251) are using primed seed as shown.

**Figure 11: Use of primed seed (N=296)**




Those indicating the use of primed seed were further asked to indicate the year they began using such seed. As shown in Figure 12, use of primed seed has become more prevalent since 2003 (15.1%, n=32) and 2004 (21.2%, n=45). As shown in Figure 13, the most influential source of information regarding primed seed is SBA (44.1%, n=112).

This is followed by the seed company (24%, n=61) and Agriculturalist/MI Sugar (22.8%, n=58). A few also indicated "Other" (3.8%, n=10) as the most influential source of information. These responses included "equipment manufactures", "family members" and "personal experience".

**Figure 12: Year farmers began using primed seed (N=212)**

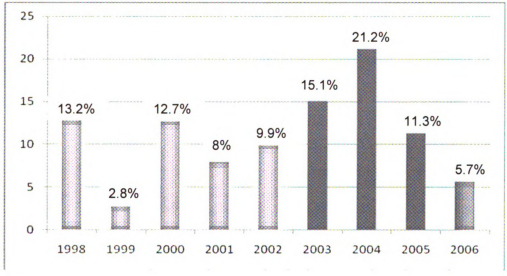
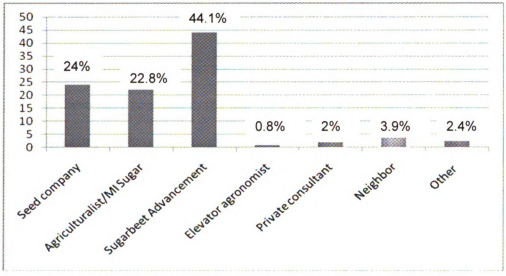


**Figure 13: Most influential information source for use of primed seed (N=254)**




*Planting date*

Planting date significantly affects sucrose and purity percentages of sugar beets as well as root and sugar yields (El-Razek, 2005). By planting early and harvesting late, growers may take advantage of the entire growing season allowing for above average sugar yields (Lauer, 1997). Producers traditionally start planting around April 15th even though there may be opportunities to plant earlier (Suvedi, 2001). It was found in the 2001 survey results that approximately 27 percent of producers will have changed planting dates and started planting, if conditions were right, beginning April 1 in 2001 due to SBA programming.

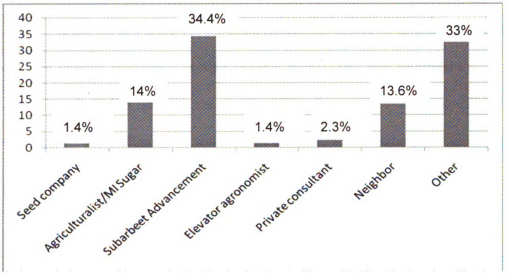
Sugarbeet Advancement education has demonstrated the benefits of earlier

planting on yield and quality. In this study it was also asked if grower's planting date had changed in the last ten years. If they had changed their planting date, it was also asked who the most influential source of information or education was regarding this change.

Almost three out of four participants (72.0%, n=213) indicate their average planting dates have changed in the last ten years. For those who are planting earlier (n=123) a range of two to 30 days earlier was recorded with an average of about 11 days (M=10.6, Stdv.= 4.4). Those planting later (n=2) indicated a range between five and ten days later with an average of about eight days (M=7.5, Stdv.=3.5).

It was found that SBA is the most influential source for changes in planting date (34.4%, n=76) as shown in Figure 14. This is followed by "Other" sources of influence that include "Mother Nature", "My own decision" and "As soon as the ground is ready". Agriculturalist/MI Sugar (14%, n=31) was the third most influential source of information for changes in planting date.

**Figure 14: Most influential information source for changes in planting date (N=221)**




*Plant population*

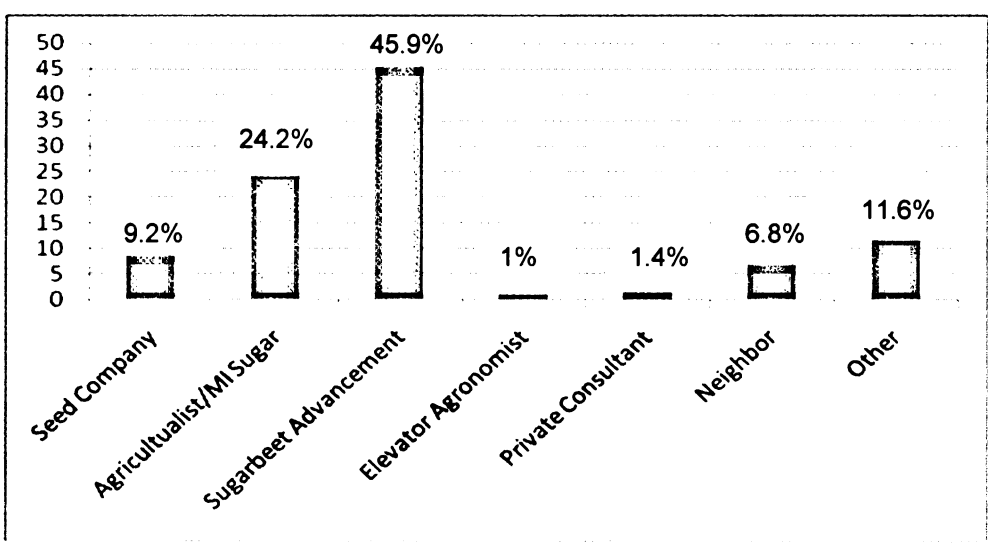
Optimal row width and plant population affect weed control and sugar beet yield quality (Armstrong et.al, 2006). Higher (optimum) population of beets not only increases tons per acre but also improves the quality of beets and the sugar content per acre (Suvedi, 2001). Sugarbeet Advancement has been working with farmers in effort to improve stand establishment and population particularly through high population trials in sugar beet yield and quality. By 2000, 40 percent of growers had increased plant populations because of Sugarbeet Advancement efforts (Suvedi, 2001). In this study, to determine SBA impacts, farmers were asked what their seed spacing was in 1997 and 2006.

In 1997 seed spacing ranged between two and eight inches with an average of 5.06 inches (M=5.06, Stdv.=91). Plant population has increased since. In 2006,

respondents indicated seed spacing had decreased to about four inches (M=4.30, Stdv.=.4) and ranged between three and one-quarter to six inches.

As shown in Figure 15, the most influential source of information regarding changes in plant population is SBA (45.9%, n=95). This was followed by Agriculturalist/MI Sugar (24.2%, n=50). "Other" response (11.6%, n=24) included "My own experience", "Change in row width" and "Seed not as good".

**Figure 15: Plant population information sources (N=207)**




*Cercospora Leafspot Control*

Sugar beets may act as host plants to Cercospora Leafspot, a devastating fungus, resulting in withered leaves and/or black spots. In most cases, infected plants eventually die (Harveson, 2003). However, growers may improve Leafspot control through the use of properly timed fungicides. A Leafspot prediction model, BeetCast, was developed by

the MI Sugar Company and SBA to aid growers with fungicide timing (MAES, 2006). In the 2001 study it was found that an average of $83 per acre net return from improved yields was due in part to good leaf spot control (Suvedi, 2001). In this study respondents were asked if they used BeetCast to improve Leafspot control.

More than half of the respondents (62.4%, n=176) indicated "Yes" they do use BeetCast as shown in Figure 16. Of those, the majority (90.3%, n=158) answered that this helped control Leafspot (Figure 17). Almost nine out of ten farmers also indicated that BeetCast helped them time their fungicide applications (87.4%, n=167) (Figure 18).

**Figure 16: Use BeetCast to time fungicide applications (N=282)**

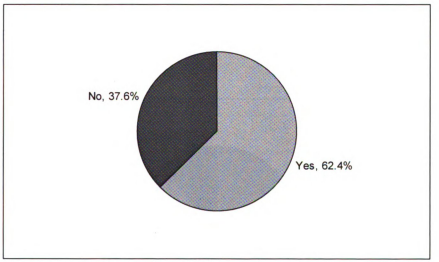


**Figure 17: Leafspot control improved by BeetCast (N=175)**

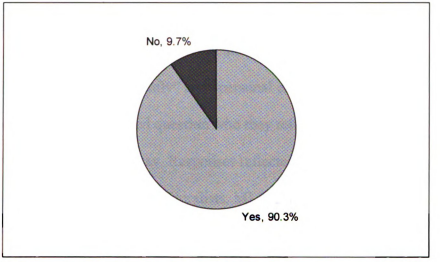
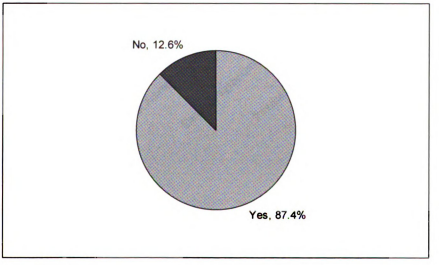
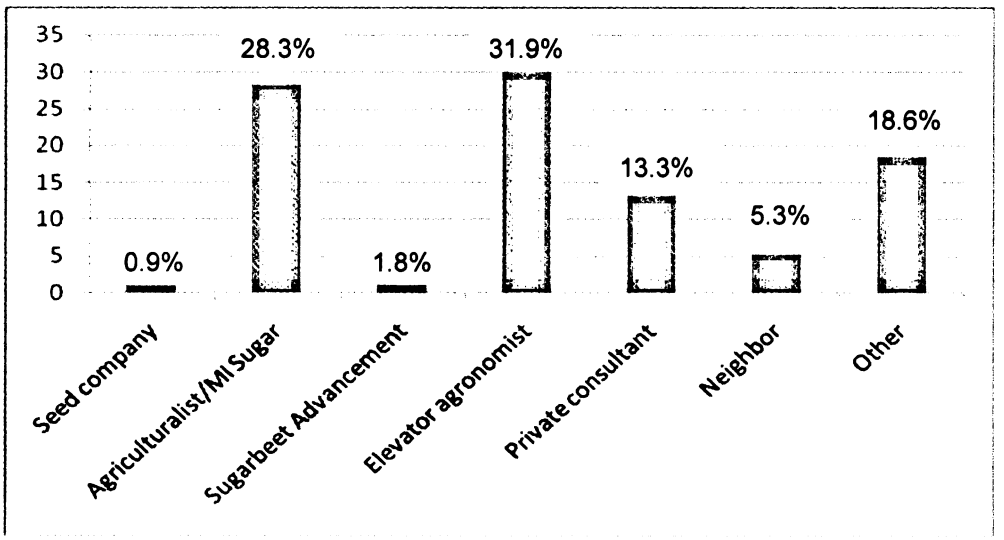



**Figure 18: Improved timing of fungicide applications by BeetCast (N=191)**



Those respondents who didn't use BeetCast were asked whose recommendations they followed. These findings are shown in Figure 19. Responses indicated slightly less than one-third (31.9%, n=36) using an Elevator agronomist and almost another one-third (28.3%, n=32) relying on an Agriculturalist/MI Sugar. "Other" (18.6%, n=21) included "fungicide labels", "family" and "personal experience". In follow-up, respondents were asked in an open-ended question who they relied on for the majority of their information regarding Leafspot spray. Responses reflected those of timing recommendations including BeetCast, agriculturalists, MI Sugar and personal/family experience.

**Figure 19: Other information sources for fungicide application timing (N=113)**




*Weed Control*

Until sugar beet stands are established, they are very susceptible to competition

from weeds (Morishita, 2003). Weed control is essential to profitable sugar beet growing (May, 2000). Weed control has changed from traditional split rates to microrate applications in the last ten years (SBA, 2006). MSU's Crop and Soil Sciences Department and the MSC have conducted research enabling this while SBA has educated growers on these practices. This survey attempted to better understand the extent to which farmers have switched to microrates.

First, respondents were asked if they used traditional split rates ten years ago. Findings in Figure 20 indicate that about two out of three respondents (69.7%, n=186) used traditional split rates in 1997. Figure 21 demonstrates split rate use in 2006 (43.3%, n=124). However, survey analysis indicates that in 2006 about two-thirds (68.8%, n=194) of respondents switched to microrate applications (Figure 22). Those who used microrate applications in 2006 reported spraying a range from four and 100 percent of their acreage with microrates, averaging about 95 percent (Stdv.= 16.1 ).

**Figure 20: Use of split rates to control weeds in 1997 (N=267)**

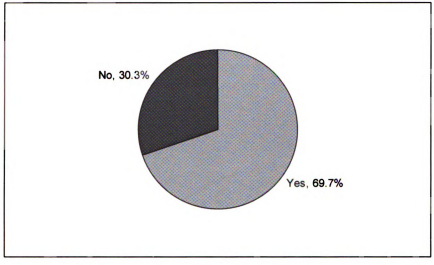



**Figure 21: Use of split rates to control weeds in 2006 (N=286)**

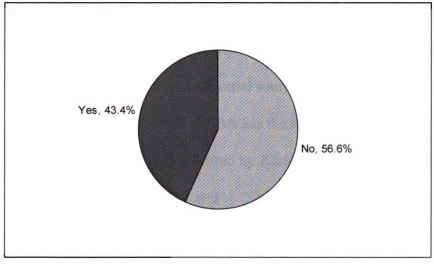
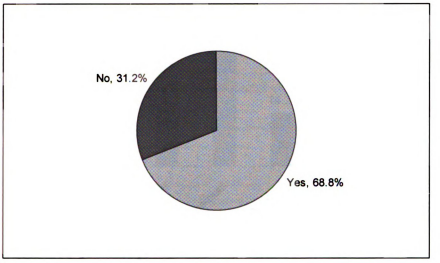
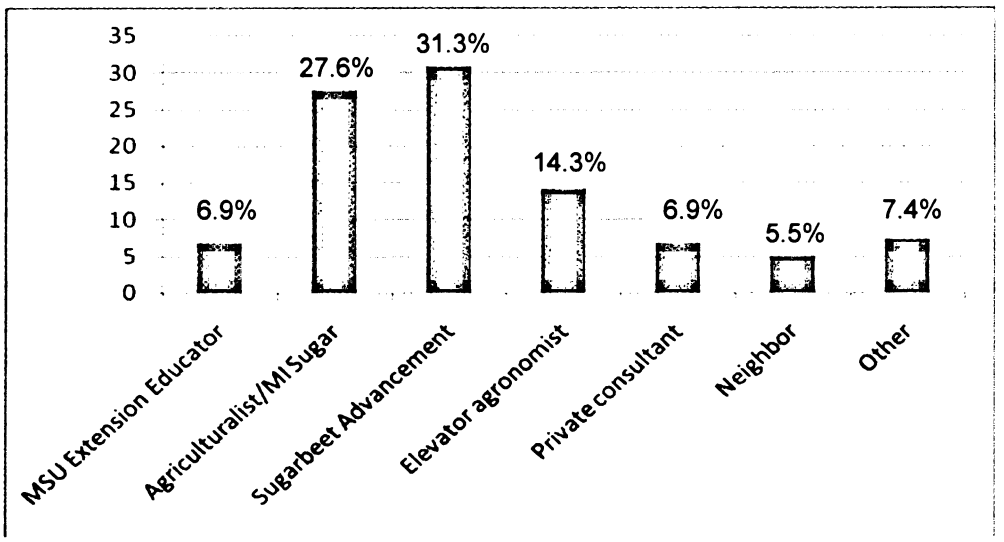


**Figure 22: Use of microrate applications in 2006 (N=282)**




Research was conducted in 1998 on a new micro-rate weed control program for beets. By 2000, 34 percent of the growers and 41 percent of the total beet acreage had implemented a micro-rate program based on our educational efforts (Suvedi, 2001). In this study, farmers were asked if their weed control information has changed in the last ten years, who was the most influential source of information or education for this change? Respondents indicated SBA has the most influential source of weed control information (31.1%, n=68) followed by Agriculturalist/MI Sugar (27.6%, n=60) and Elevator Agronomist (14.3%, n=31). "Other" includes "Beet magazine articles", "Combination of all" and "Our weed history". These findings are displayed below in Figure 23.

**Figure 23: Most influential source of information or education for changes in weed control information during the last ten years (N=217)**




*Rhizoctonia Crown Rot Control*

Rhizoctonia Crown Rot is a deadly sugar beet fungus. A sudden and permanent wilt to the leaves and a dark, dry rosette indicate plant exposure (Harveson, 2003). Sugarbeet Advancement has dedicated many resources to researching Rhizoctonia Crown Rot fungicide control. In this evaluative study, respondents were asked if Rhizoctonia Crown Rot lowered their profit ten years ago and today, and today are they better able to control/manage it. These questions were followed up by asking if respondents applied fungicide for Rhizoctonia. Finally, if they had a applied a new method of Rhizoctonia Crown Rot control within the last ten years, it was asked who was the most influential source of information or education for this change.

Rhizoctonia Crown Rot is reported to have lowered profits ten years ago by survey respondents (76.9%, n=210) as shown in Figure 24. Survey analysis shows over three-quarters of respondents (88.4%, n=237) report being better able to control/manage Rhizoctonia Crown Rot today (Figure 10b). This is in part due to applied fungicides as reported by almost three-quarters (70.9%, n=190) of respondents (Figure 26) who indicated that they have applied fungicide for Rhizoctonia on an average of about 68 percent of their acreage ($M$=67.87%, Stdv.=31.7). Fungicide application ranged from five to 100 percent of sugar beet acreage.

**Figure 24: Lower profit due to Rhizoctonia Crown Rot ten years ago (N=273)**

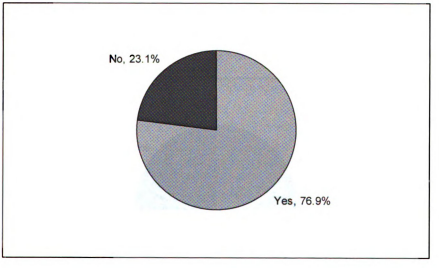


**Figure 25: Better control/management of Rhizoctonia Crown Rot today (N=268)**

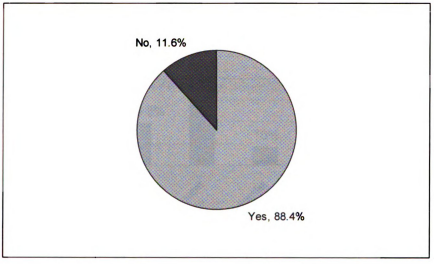



**Figure 26: Application of fungicide for Rhizoctonia Crown Rot (N=268)**

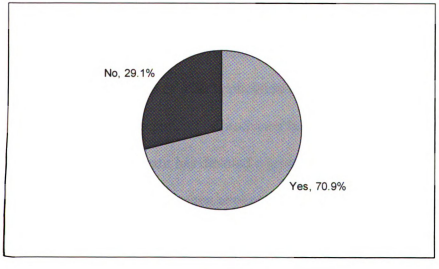
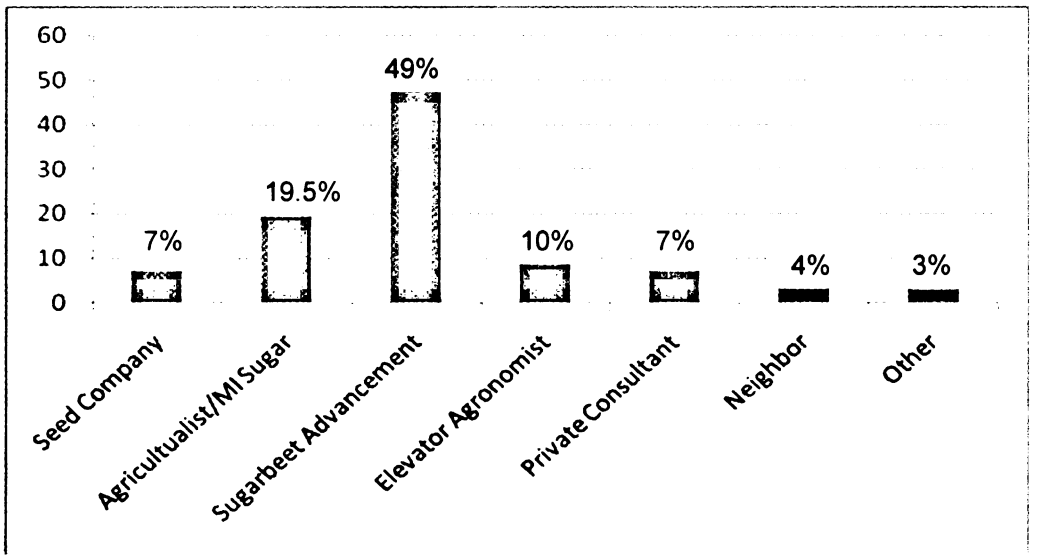


**Figure 27: Most influential source of information or education for new methods of Rhizoctonia Crown Rot control applied within the last ten years (N=200)**



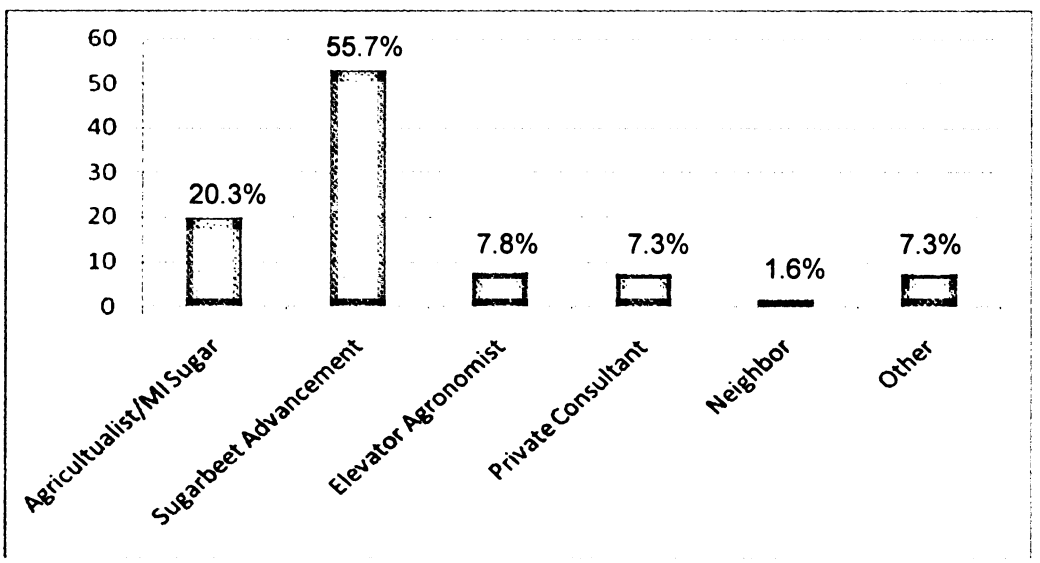

*Nitrogen Rates*

"Nitrogen is the most yield limiting nutrient, but nitrogen management is critical to obtain optimum sugar beet yields" (Mortvedt et.al, 1996). Overuse of nitrogen fertilizer can reduce the sugar content and quality of sugar beets. Sugarbeet Advancement efforts have helped reduce over application of nitrogen fertilizer. In 2001, it was reported that approximately 19 percent of producers have modified nitrogen applications (Suvedi, 2001). The SBA program has devoted a great deal of resources, research and education to reducing the amount of nitrogen applied in Michigan fields.

In this study, Michigan sugar beet growers were asked how much nitrogen they applied to their beets ten years ago and in 2006. It was found that ten years ago, average application rates were about 134 pounds per acre (M=133.6, Stdv.32.3). In 2006, an average of 113 pounds of nitrogen per acre (M=112.9, Stdv.31.8) was the reported application. This shown an average reduction of 21 pounds per acre during a period of ten years.

In follow up, it was asked if there had been a change in the amount of nitrogen applied, who was the most influential source of information or education for this change. Reasons cited for change are mainly due to information or education from SBA (55.7%, n=107) as shown in Figure 29. This is followed by Agriculturalist/MI Sugar (20.3%, n=39) and Elevator Agronomist (7.8%, n=15). "Other" reasons for this change include "Change in previous crop", "Cost" and "Experience".

**Figure 28: Most influential source of information for change in amount of Nitrogen applied (N=192)**



*Conservation Tillage*

Sugarbeet Advancement has been involved in educating growers about the benefits of higher residue conservation systems (chisel plow) in relation to conventional systems (mold board plow). Sugarbeet Advancement research and education aims to help reduce the amount and intensity of secondary tillage due to conventional system use (MAES, 2006). By 2000, 34 percent of producers had changed or modified tillage practices (Suvedi, 2001). To determine SBA impacts, this study asked what type of tillage system farmers use, either conventional or higher residue conservation systems. Following this, it was asked what type of tillage was used ten years ago. Survey analysis indicates that currently more farmers use a chisel plow, i.e., higher residue conservation system (86.1%, n=217) than conventional (mold board plow) systems as shown in Table 7. However, these results overlap as many farmers use both systems on their fields.

**Table 7: Conservation tillage**

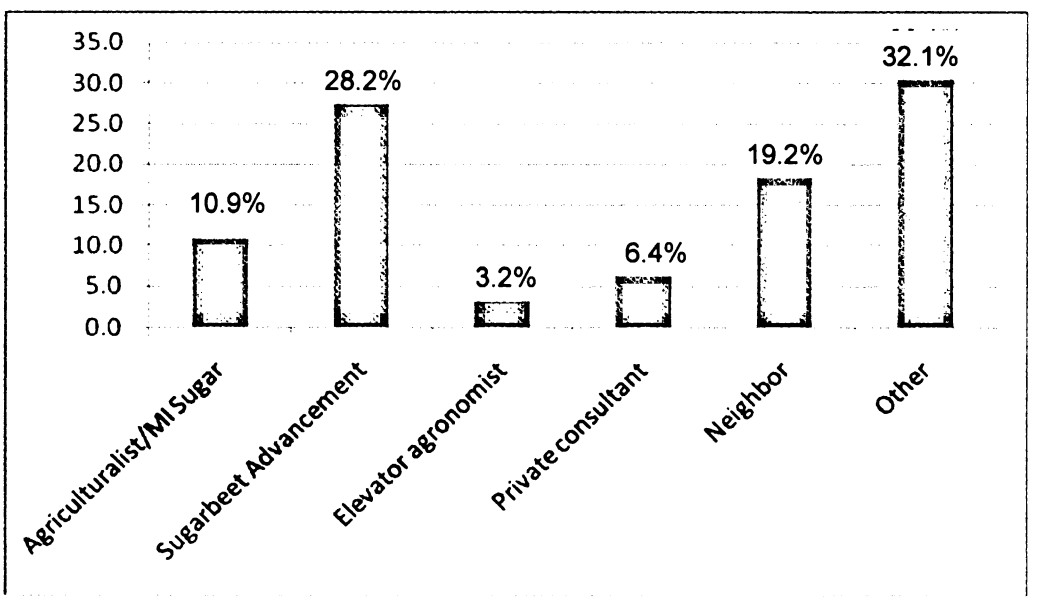
| | Frequency | Percent |
|---|---|---|
| Use of conventional tillage system (mold board plow) (N=259) | 190 | 73.4 |
| Use of higher residue conservation system (chisel plow) (N=252) | 217 | 86.1 |
| Use of the same type of plow system ten years ago (N=279) | 164 | 58.8 |

Of those who use higher residue conservation systems, respondents plowed on average about 66 percent (*M*=66.1%, Stdv.30.9) of their fields this way. Those using higher residue plowing used this type of tillage on about 73 percent (73.4%, Stdv.28.4) of

their acreage. Over half of the respondents (58.8%, n=164) indicated that they are currently using the same type of plow system as they did ten years ago.

Finally, respondents were asked if there has been a change in the type of tillage system they apply, who was the most influential source of information or education for this change. As show in Figure 30, if there was a change in the type of tillage system applied "Other" sources of information (32.1%, n=50) were most influential. These consisted of responses such as "Economics", "Timing and weather conditions" and "personal experience". This was followed by SBA (28.2%, n=44) and neighbors (19.2%, n=30).

**Figure 29: Most influential source of information or education for change in tillage system (N=156)**



*Reduced Cultivation*

In addition to conservation tillage practices that leave residue on the surface of field crops appear to have the greatest potential for minimizing erosion problems and less cultivation (Fornstrom and Miller, 1998). Sugarbeet Advancement research attempts to demonstrate the need for less cultivation to increase such residue and is working to help farmers reduce traditional three to five cultivations to zero to two (MAES, 2006).

To measure SBA impacts, this study asked growers if they cultivate and on average, have they reduced the number of cultivations in the last ten years. It was found that the majority of participants cultivate (92.2%, n= 271) as shown in Figure 31. The number of cultivations in 2006 ranged between one and four and averaged about two. Respondents indicated the number of cultivations to have decreased over the last ten years (79.2%, n=225) (Figure 32). Reductions ranged from one-half to five times and averaged about two times.

**Figure 30: Cultivating farmers (N=294)**

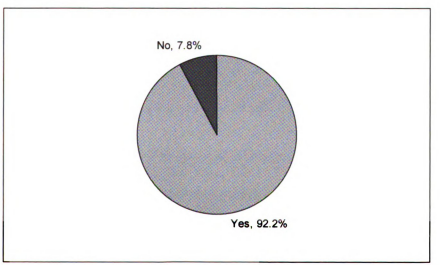
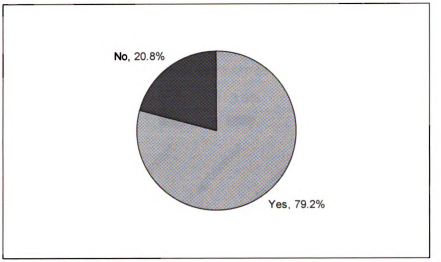
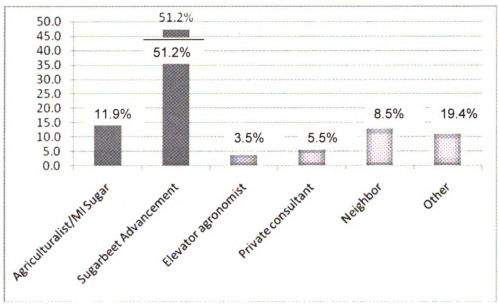


**Figure 31: Farmers who reduced the number of cultivations in the last ten years (N=284)**




Following this question, it was asked if famers had made a change in their cultivation system, who was the most influential source of information or education for this change. As shown in Figure 33, changes in cultivation systems are mainly due to SBA influences (51.2%, n=103). This is followed by "Other" responses (19.4%, n=39) including "Fuel prices", "Personal experience" and "Time" as well as Agriculturalist/MI Sugar (11.9%, n=24).

**Figure 32: Most influential source of information or education for change in cultivation system (N=201)**



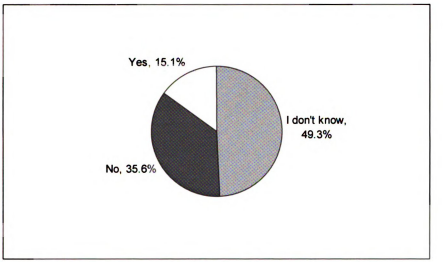

*Oil Seed Radish as a Nematode Trap Crop*

Nematodes are a major parasite for sugar beets (Gray et.al, 2007). Entire fields may be infested or localized areas may result in circular or oval areas where stands are poor (Gray et.al, 2007). "Continued use of nematicides threatens the sustained production of sugar beets because of their high cost and environmental risks" (Krall et.al, 1996). Therefore, SBA has promoted the use of oil seed radish as a nematode trap crop and attempted to demonstrate yield advantages of nematode tolerant varieties.

In this study it was asked if 1) farmers had sugar beet cyst nematodes in their fields; 2) do they use oil seed radish as a nematode trap crop; 3) have they observed yield advantages of nematode tolerant varieties and; 4) did they use oil seed radish as a nematode trap crop ten years ago? Almost half of respondents (49.3%, n=144) did not

know if they have sugar beet cyst nematodes (Figure 34). It was found that about 15 percent of respondents (15.1%, n=44) have sugar beet cyst nematodes. It follows that about one-third (35.6%, n=104) reported that they do not have cyst nematodes.

**Figure 33: Farmers indicating sugar beet cyst nematode in fields (N=292)**




Today, the majority (92.6%, n=250) of farmers stated that they do not use oil seed radish as a nematode trap crop (Figure 35). Almost all respondents (99.2%, n=250) did not use oil seed radish as a nematode trap crop ten years ago (Figure 36). Respondents (73.3%, n=165) also indicated that they have not observed yield advantages of nematode tolerant varieties (Figure 37).

**Figure 34: Use of oil seed radish as a nematode trap crop (N=270)**

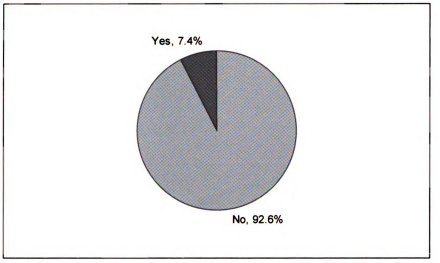



**Figure 35: Use of oil seed radish as a nematode trap crop ten years ago (N=252)**

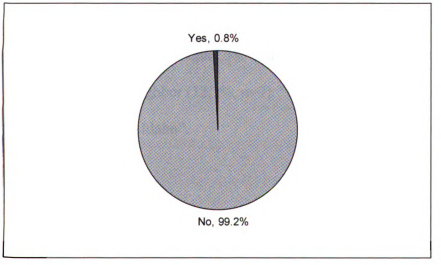
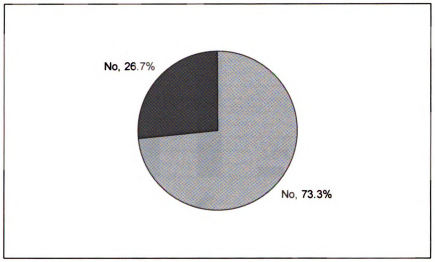
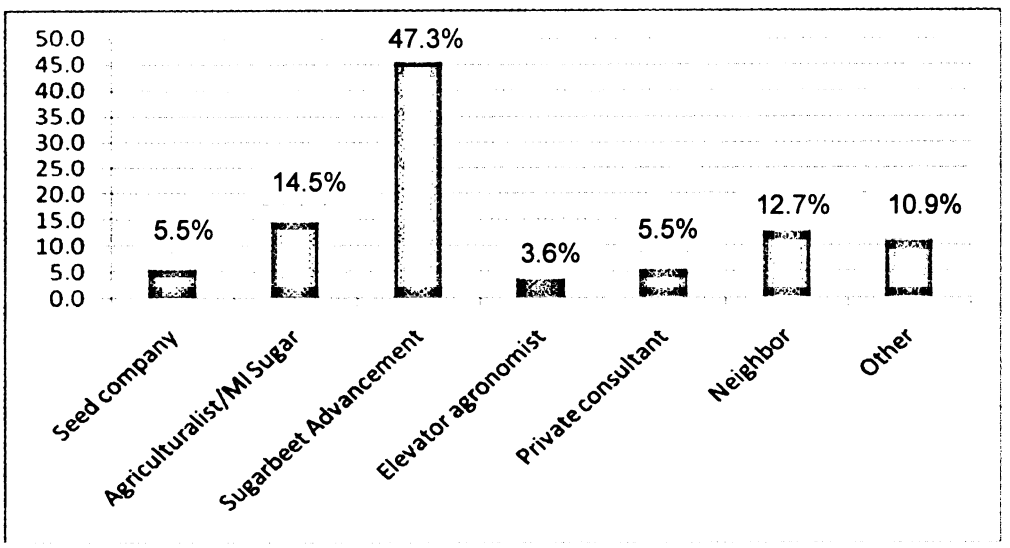


**Figure 36: Observed yield advantages of nematode tolerant varieties (N=225)**




Lastly, regarding oil seed radish as a nematode trap crop, respondents were asked if there had been a change in the use of oil seed radish on their farm, who was the most influential source of information or education for this change. For those who made changes in the use of oil seed radish, SBA is the most influential source of change (47.3%, n=26) as shown in Figure 38. This was followed by Agriculturalist/MI Sugar (14.5%, n= 8) and Neighbor (12.7%, n=7). "Other" responses include "MSU", "Me" and "Agriculturalist from Idaho".

**Figure 39: Most influential source of information or education for changes in the use of oil seed radish (N=55)**




*Planter Seed Tubes*

With use, planter seed tubes can show signs of wear, resulting in a roughening of the inner tube area. This rough surface may cause seeds to take different paths through the tube resulting in inaccurate seed spacing within the beet row (Smith, 2004). Sugarbeet Advancement research and education has studied the removal of seed tube inserts and correlating positive impacts on plant/seed spacing. Improved spacing makes topping of beets easier and results in higher quality beets and less within-row plant competition (Suvedi, 2001). This evaluative study attempted to understand how many farmers still use seed tube inserts and what type.

First, farmers were asked what type of seed tube they use for planting. Second,

they were asked whether they remove seed tube inserts. In follow up, respondents were asked if they removed seed tube inserts ten years ago. Survey analysis shows that curved seed tubes for sugar beet planting are preferred by slightly more than half of the respondents (53.6%, n=141) as opposed to straight seed tubes (46.6%, n=123) as shown in Figure 39. Also, slightly more than half (56.3%, n=142) do not remove seed tube inserts (Figure 40). Ten years ago, this number was higher with over three-quarters of respondents (78.9%, n=191) reporting that they did not remove seed tube inserts (Figure 41).

**Figure 38: Use of straight or curved seed tubes (N=264)**

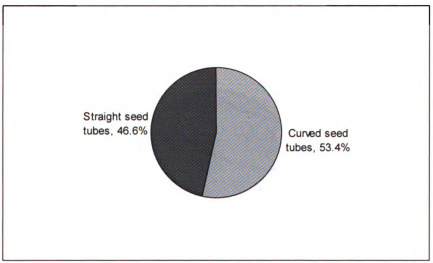


**Figure 39: Removal of seed tube inserts (N=252)**

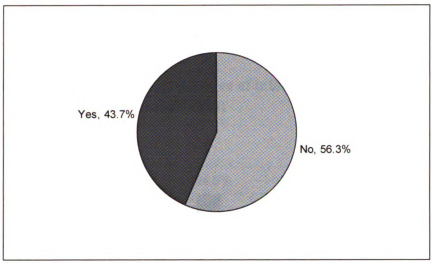
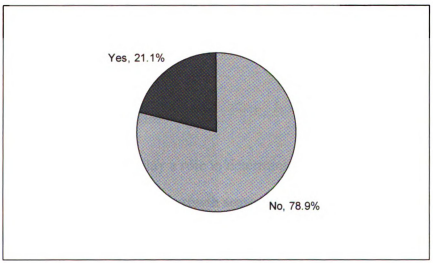


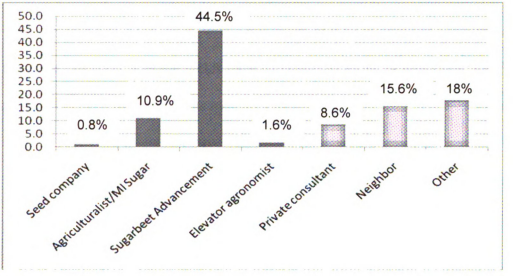

**Figure 40: Removal of seed tube inserts ten years ago (N=242)**




Following these questions, researchers asked who the most influential source of information or education for changes in planter seed tube practice has been. It was

indicated that SBA (44.5%, n=57) was the most influential source as shown in Figure 42. This is followed by "Other" responses (18.0%, n=23) identifying "Different planters", "Personal experience" and "Equipment dealers" and "Neighbor" (15.6%, n=20).

**Figure 41: Most influential source of information or education for change in the use of seed tubes (N=128)**




*Sugar Beet Yields*

Many factors play a role in determining sugar beet yield. "Crops are integrators of stresses present during the growth season (Gat et.al, 2000). If stresses occur, yield may suffer. In 2001, when asked "How much would you estimate your 2000 beet yield has increased due to the Advancement efforts?" about one-fifth (17 percent) of the respondents indicated their sugar beet yields had increased. This evaluative study attempted to further examine this by measuring changes in beet yield over the last ten

years. It was asked, what was your average beet yield ten years ago and in 2006? This was followed by a question asking farmers to estimate their average beet yield in the last three years.

In 1997, Michigan sugar beet farmers report having an average beet yield of about 19 tons/acre (Stdv. = 2.4) as shown in Table 8. This ranged from 14 and 28 tons. In 2001 it was reported (Suvedi, 2001) that among those who indicated an increase, the average yield increase was 2 tons/acre, with a minimum of 0.5 ton/acre and a maximum of 6 tons/acre. In 2006, average yields have increased to about 24 tons (M=23.8, Stdv.=4.0), ranging between nine and 35 as indicated by the respondents. When asked to estimate average beet yield in the last three years answers ranged from 15 to 32 tons with an average of 22 tons ($M$ =21.9 tons, Stdv.=2.7) (Table 8).

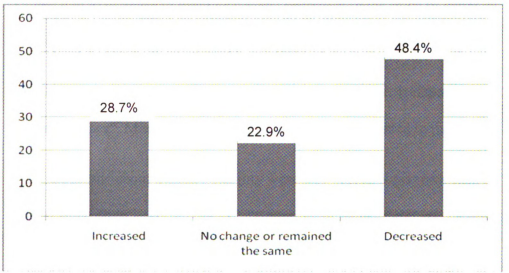
**Table 8: Sugar beet production yield**

| | Mean | Stdv. |
|---|---|---|
| What was your average beet yield in 1997? (N=268) | 18.8 | 2.4 |
| What was your average beet yield in 2006? (N=287) | 23.8 | 4.0 |
| Please estimate your average beet yield in the last three years. (N=267) | 21.9 | 2.7 |

In 2001, when asked, "How much do you estimate the saving in beet production cost due to Advancement efforts in 2000?" only 10 percent of the respondents indicated savings in beet production costs due to SBA programming. Since, though yield has increased, only about one in three respondents indicated an increase in profit (28.7%,

n=80) and two out of ten (22.9%, n=64) indicated there was no change as shown in Figure 43. Almost half of respondents (48.4%, n=135) report that their sugar beet profits have decreased. These decreases were explained through open ended responses citing increase in input prices, including fertilizer and pesticides, and decreases in the price of beets.

**Figure 42: Sugar beet profit change in the last ten years (N=279)**




*Grower concerns*

The 2001 survey asked respondents to provide feedback on areas they were most concerned about. Diseases ranked first as the main cause of reduced plant vigor and yield reduction. For this reason, most respondents indicated that the program should

concentrate its efforts in insect and disease control. Likewise, sugar beet growers are interested in testing seed of varieties that have good standability, high sugar and high tonnage. (Suvedi, 2001)

In 2006, when asked what sugar beet growers felt were their major concerns, they simalarily listed four main categories: profit, disease control, industry stability and MSC stability. For example, "Getting paid", "Getting price up" and "Income not keeping up with increased cost" were echoed in different forms throughout the survey. Similar opinions were also detailed as explanation for increases in yield while profitability declined due to increase in input prices and decreases in the price of sugar.

New diseases, Rhizoctonia Crown Rot and disease management were key themes as well. These were voiced as "Beet plant health, nematode, leafspot" and "Control weeds, diseases". More research and education were requested in these areas.

Concerns about industry stability were also voiced statements such as "Keep foreign sugar from lowering prices", "Government regulations" and "Keep the beet industry alive!" Particularly, growers were concerned about "getting paid". This was recorded in multiple ways from "Getting return on money spent" and "Getting a good return per acre for our beets".

There were also MI Sugar Company concerns closely related to industry stability fears. These included "Keeping Co-op successful", "Viability of MI Sugar". Co-op management concern was also voiced in ways such as "Proper management of Co-op to keep price per ton up".

*Suggestions for Improvement*

In 2001, producers' were asked how the Sugarbeet Advancement Program could improve its role in helping Michigan beet growers. The first area for improvement concerned costs --respondents felt that programming should be more involved in reducing the cost of production. The second issue dealt with information updates. Respondents wanted weekly updates during the growing season, early information at planting time, and advice in advance of possible diseases or specific problems. Likewise, several respondents expressed concerns about field trials. Finally, the respondents suggested continuing the field trials in areas of emergence, varieties, rotation and tillage, and getting information out to the producers. (Suvedi, 2001)

In 2006, suggestions for improvement concerned profit, MSC management and SBA performance. Specific comments included: "2007 will be a draft with beets – labor and money intensive. Corn is a smarter choice", and "Company overspending – what is the company going to do if farmers decide to get out of beets". It was suggested that SBA determine "the best beet variety for early harvest compared to late harvest" and "check seed varieties more accurately".

There were positive comments recorded as well when soliciting for suggestions for improvement such as, "I believe SBA has a very positive impact on my operation". When asked how SBA could improve its programming, responses can generally be summarized in 1) field testing, such as testing Round-up Ready beets or improved trials; 2) continuing research such as "Continue to help growers stay ahead" and "Keep up

research"; 3) areas for improvement such as "Keep us more up to date on the sales of sugar" and "more research information" and; 4) praise such as "Keep up the good work" and "In my opinion SBA does a tremendous job by covering all areas in beet production".

While soliciting for grower concerns, some suggestions for improvement were recorded in farmer comments. These ranged from general to specific comments. For example, "Have a good stand" and "Keeping a check and balance system of information growers" to "We need to work more at matching our production to our processing capabilities". Positive feedback recorded includes "Keep up the good job", "Good survey" and "I believe SBA has had a very positive impact on my operation".

# CHAPTER VI. SUMMARY, CONCLUSION AND RECOMMENDATIONS

## *Summary*

The average sugar beet farmer is about 50 years old and cultivates about 1,300 acres on a family owned farm as a full time job. Typically, about 250 acres of this is devoted to sugar beet production in the common growing counties of Huron, Saginaw, Tuscola and Sanilac. About three-quarters of survey respondents plan to pass their farm on to family members when they retire.

Over three-quarters of respondents have access to a computer, the Internet and e-mail. About half the respondents indicated using the computer, Internet and e-mail on a two to three times per week basis or daily. It was also found that SBA was their preferred informational source similarly to 2001 when two-thirds of the respondents also indicated that SBA as the most credible source of information for production information. Both reports were also very positive with half the respondents indicating in 2001 that Extension services had improved as a result of SBA programming and in 2006 respondents indicated that SBA should take the lead in educational programming. Sugarbeet Advancement was rated overall as the most heavily relied on source for research information also.

Over two-thirds of participants participated in, attended or used SBA's farm meeting/workshops, the Bean and Beet Symposium, Sugar Beet Seed Week, "On Farm Research Demonstration" SBA publication, information from quarterly newsletters, Cercospora Leafspot bulletin and production tip cards (tips for maximizing sucrose

production). This is similar to 2001's evaluation where out of 1,600 surveys with a 36 percent response rate, about 90 percent indicated receiving quarterly newsletter and/or bulletins and On-farm Research and Demonstration publications and 80 percent of 2001's respondents attended sugar beet-related farm meetings/workshops (Suvedi, 2001)

At the same time, in 2006 two-thirds or more of respondents also responded that they had not attended harvester clinics, used the SBA website or had a local Extension Educator visit their farm. Programs were rated by over two-thirds of participants as either "Good", "Very Good" or "Excellent". The information provided by the SBA programs was deemed to have helped farmers make positive changes in their practices by about two-thirds of participants. Also, two-thirds of respondents determined that SBA information had helped increase their income due to changes in production practice.

From information on variety selection to planter seed tubes, SBA was rated as either the first or second most influential source of information. Over four-fifths of respondents use primed seed and plant about ten days earlier than they did ten years ago. Sugar beet seed spacing has decreased by almost an inch as well. Almost two-thirds of respondents use BeetCast to help them time their fungicide applications. Of these, nine out of ten reported that BeetCast helps them control leafspot. This is slightly up from 2001 results when practices related to leafspot control modifications suggested by SBA were adopted by more than two-thirds of respondents and more than half changed to the variety recommended by SBA (Suvedi, 2001).

Over two-thirds of participants use microrate applications today. These Michigan

farmers are better able to manage Rhizoctonia Crown Rot today than they were ten years ago. It was found that nitrogen application rates have also decreased by about 20 pounds per acre in the last ten years. Two types of tillage systems are used on many farms. Some farmers use both mold board and chisel plow on sections of their acreage.

The majority of farmers also cultivate and report a reduction in the number of times by about two. Almost half of the respondents reported not knowing if they have sugar beet cyst nematodes in their fields and about ninety percent of farmers don't use oil seed radish as a nematode trap crop. Currently, both straight seed tubes and curved seed tubes are used almost equally by respondents while about half of respondents remove inserts.

Though yields have increased to about 24 tons from 2001, unfortunately, profit has decreased. This is due to increased input prices and decreases in the price of beets. Major grower concerns can be grouped into four categories of: 1) profit, 2) disease control, 3) industry stability and 4) MI Sugar Company stability.

*General Feedback*

General feedback was requested at the end of the survey. These ranged very broadly from specific requests and positive feedback to general industry wide comments. Comments were both positive and negative.

A few comments were about information avenues, for example "I like my

information to come by e-mail instead of snail mail because it is much quicker and current". Other comments included suggestions for improvement such as, "They should do a feasibility study to close the factory and cut our loses".

Positive feedback included "Overall, I've been pleased with what you've done. Keep doing it." and, "Keep up the good work". Industry wide feed back included "We need to promote sugar beet stock ownership", "Small farmers can't buy new equipment" and "It's important to the industry that MI Sugar agronomists and SBA give growers the same recommendations. It is equally important for SBA to maintain its independence from MI Sugar".

To summarize:

- Respondents came from various Michigan counties with the majority farming in Huron, Saginaw, Tuscola and Sanilac.
- The average sugar beet farmer cultivates about 1,300 acres of which about 250 acres of this is devoted to sugar beet production.
- Farmers averaged about 50 years old and worked on family-owned farms full-time.
- About three-quarters of survey respondents plan to pass their farm on to family members when they retire.
- Over three-quarters of respondents have access to a computer, the Internet and e-mail.
- The majority of growers indicated that SBA is their preferred source of information.

- Respondents indicated that SBA should take the lead in educational programming and rated SBA overall as the most heavily relied on source for research-based information.
- Over two-thirds of participants participated in, attended or used SBA's farm meeting/workshops, the Bean and Beet Symposium, Sugar Beet Seed Week, "On Farm Research Demonstration" SBA publication, information from quarterly newsletters, Cercospora Leafspot bulletin and production tip cards (tips for maximizing sucrose production).
- The information provided by the SBA programs was deemed to have helped farmers make positive changes in their practices by about two-thirds of participants.
- Also, two-thirds of respondents indicated that SBA information had helped increase their income due to changes in production practice.
- Overall yields have increased from 18 tons per acre in 1997 to about 24 tons in 2006.
- Major grower concerns can be grouped into four categories of: 1) profit, 2) disease control, 3) industry stability and 4) MI Sugar Company stability.
- Selected suggestions for Sugarbeet Advancement improvement include:
  - "A number to call to alter up coming field problems."
  - "Continue to identify 'best hybrid.'"
  - "Cooperate with Co-op research/production staff."
  - "Keep us more up to date on sales of sugar and price."

- "More research on nematodes."

- "Look into soil types, rotations, cover crops, row spacing, in general other ways."

***Conclusion***

Overall the survey analysis suggests the SBA program is doing well at meeting growers' research and educational needs. Since its establishment in 1997, SBA has had positive measurable impact and influences on changes in beet production practices. Sugarbeet Advancement is viewed as a very credible and either the most influential source of information or one of the top sources of information for growers.

Sugarbeet Advancement's most effective ways of communicating with growers include research tours, workshops, Bean and Beet Symposium, Seed Week, quarterly newsletters and bulletins. Sugarbeet Advancement may put more emphasis on disease oriented research and increase farm visits. In particular, most farmers were unaware if their acreage did or did not have sugar beet cyst nematodes. Nematode trap crops were also reported to have the least improvement and/or change out of production practices measured.

Overall, SBA was found to be the most credible source of information in eleven out of twelve production practices measured. Also, two out of three participants agree or strongly agree that the SBA program provided new information not readily available elsewhere that has helped farmers make changes in their farming practices. This in turn has increased their yield and positively effected their profits.

***Recommendations***

In the future, farmers request that SBA research concentrate on disease management, weed control and profitability. It is requested that SBA work with the Sugar Cooperative so as to not duplicate research. In providing future research and education to sugar beet farmers, it was found that e-mail correspondence will most likely reach less than half of respondents regularly. Therefore, production tip cards and educational workshops may be more appropriate means of communication. It seems these low-cost delivery methods are the most preferred.

Sugarbeet Advancement also has the opportunity to follow-up with further questions regarding sustainability and environmental awareness/interest for future programming. As open-ended questions provided feedback about preferred information avenues that were "unbiased" and that "don't have an interest in selling chemicals", and farmers are interested in the use of nematode trap craps and reducing nitrogen rates, a follow-up sustainable programming telephone interview was created. Please see Appendix D.

This interview was created to further understand farmer demographics, needs and concerns. It attempts to understand male and female head of household responses regarding: 1) future plans for growing sugar beets, 2) what farmers see as opportunities for sugar beets in the future such as farmer/organic markets, 3) what the farmers' sense of environmental issues are, such as greater sensitivity to runoff from livestock and pesticides, 4) Changes they've noticed in their community due to these concerns, 5) How their household is adapting to such issues, 6) What services could MSU Extension

provide that would be helpful to them and the community in these concern areas or others, 6) What they consider the most important aspects of their farm work? 7) Other sources of income, 8) What are the farming roles played by different people in their household, and 9) How do you feel about this division of labor.

# APPENDICES

***Appendix A. 2006 Producer Cover Letter***

***Appendix B. 2006 Producer Survey***

***Appendix C. 2001 Producer Survey***

***Appendix D. 2006 Telephone Interview***


*Partnership*

*of: Sugar Beet Growers*

*Michigan Sugar Company*

*Michigan State University*

Dear Sugar Beet Producer:

It is hard to believe it has been almost ten years since the *Sugarbeet Advancement* program was created in 1997 to identify and solve critical industry production problems. These production issues were threatening the mere survival of the industry. **Remember** average yields plummeted to an unprofitable 15 tons per acre in 1995-1996?

Their have been major efforts in conducting research and increasing educational opportunities for sugar beet producers from a variety of resources in the last several years. Michigan State University Extension is currently conducting a survey to determine where producers get their production information, perception of the *Sugarbeet Advancement* program and to measure the change in practices of the last ten years. The information received from this survey will be used to assist MSU Extension / *Sugarbeet Advancement* and the Michigan Sugar Company in better serving the Great Lakes sugar beet producers. Make no mistake on underestimating the importance of this survey. Every individual response increases the reliability of the survey.

*The following survey should take no more than ten minutes to complete.* Please be sure to answer each question as accurately as you can. Be candid, this is your opportunity to voice your opinion. Responses will be kept confidential. *Only one survey per farm should be filled out.* When the survey is completed, simply fold in half with address on the outside and staple or tape together. Postage is paid, so just drop it into the mail! **PLEASE COMPLETE THE SURVEY AS SOON AS POSSIBLE.** You indicate your voluntary agreement to partake in this research project by completing and returning this questionnaire. Please don't hesitate to contact the Peter Vasilenko, Director of the Michigan State University Human Research Protection Program at (517) 355-2180 should you have any concerns regarding completion of this survey. Also, feel free not to answer any question you don't feel comfortable responding to.

Thank you in advance for filling out the survey. Should you need to contact me for any sugar beet production concerns or other comments, my office number is 989-758-2500.

Sincerely,

# 2006 Evaluation of the Michigan Sugarbeet Advancement Program

*We are interested in learning your thoughts about sugar beet farming and practices. We need your opinions, suggestions and concerns to improve future programs and research. Please take ten minutes to share your views.*

**1. Are you a:** ___ Full-time farmer ____ Part-time farmer
i. What was your age as of last year? ____

**2. What is your total farm size including all crops:** _____ acres

**3. What county are you currently farming in?**
_____

**4. What type of farm do you operate?**
___Family owned ___Individually owned ___Corporately owned
___Other (please specify) _____

**5. Who do you prefer to get your information from (please check only one):**
___ Seed Company ___ Agriculturalist/MI Sugar
___ Sugarbeet Advancement ___ Elevator Agronomist
___ Private Consultant ___ Neighbor
___ Other (please specify) _____

**6. Variety Selection**
a. In selecting of beet varieties, who provides the *most* influential source of information?
___ Seed Company ___ Agriculturalist/MI Sugar
___ Sugarbeet Advancement
___ Elevator Agronomist ___ Private Consultant
___ Neighbor ___ Other (please specify) _____

**7. Primed Seed (pre-germinated)**
a. Do you use primed seed? Yes___ No___
i. If yes, what year did you start planting primed seed? _____
b. Who was the most influential information source?
___ Seed Company ___ Agriculturalist/MI Sugar
___ Sugarbeet Advancement ___ Elevator Agronomist
___ Private Consultant ___ Neighbor
___ Other (please specify) _____

**8. Planting Date**
a. On average, have your planting dates changed during the last 10 years? Yes___No___
i. On average, how many days earlier/ later are you planting than 10 years ago?
_____earlier _____later
b. If you have made a change in your planting date, who was the most influential source of information:
___ Seed Company ___ Agriculturalist/MI Sugar
___ Sugarbeet Advancement
___ Elevator Agronomist ___ Private Consultant
___ Neighbor ___ Other (please specify)

**9. Plant Population**

a. What was your 2006 average seed spacing? _____

b. What was your seed spacing ten years ago? _____

c. If your plant population has changed in the last 10 years, who was the most influential source of information or education for this change:

___ Seed Company ___ Agriculturalist/MI Sugar

___ Sugarbeet Advancement

___ Elevator Agronomist ___ Private Consultant

___ Neighbor ___ Other (please specify) _____

**10. Cercospora Leafspot Control**

a. Do you use BEETCAST to time your fungicide applications? (if no please continue to part b.) Yes___ No___

i. If yes, has this helped control the leafspot? Yes___ No___

ii. Do you feel BEETCAST has improved your timing of fungicide applications? Yes___ No___

b. If no, whose recommendations for timing do you use?

___ Seed Company ___ Agriculturalist/MI Sugar ___ Sugarbeet Advancement

___ Elevator Agronomist ___ Private Consultant ___ Neighbor ___ Other (please specify) _____

i. Who do you rely on for the majority of information about leafspot spray?

_____

**11. Weed Control**

a. Did you use traditional split rates in 2006? Yes___ No___

i. Did you use split rates to control weeds 10 years ago? Yes___ No___

b. Did you use microrate applications in 2006? Yes___ No___

i. If yes, on average what percent of your acres are sprayed with microrates?

_____%

c. If your weed control practice has changed in the last 10 years, who was the most influential source of information or education for this change?

___ MSU Extension Specialist ___ Agriculturalist/MI Sugar

___ Sugarbeet Advancement

___ Elevator Agronomist ___ Private Consultant

___ Neighbor ___ Other (please specify) _____

**12. Rhizoctonia Crown Rot Control**

a. Did Rhizoctonia Crown Rot lower your profit 10 year ago? Yes___ No___

i. Today, are you better able to control / manage Rhizoctonia? Yes___ No___

b. Have you applied any fungicide for Rhizoctonia control? Yes___ No___

i. If yes, on what percent of your acreage was it applied _____% of acres

c. If you applied a new method for Rhizoctonia Crown Rot control within the last 10 years, who was the most influential source of information or education for this change?

___ Seed Company ___ Agriculturalist/MI Sugar

___ Sugarbeet Advancement ___ Elevator Agronomist

___ Private Consultant ___ Neighbor

___ Other (please specify) _____

**13. Nitrogen Rates**

a. How much nitrogen do you currently apply to your beets? _____ / acre

i. Approximately how much nitrogen did you apply 10 years ago? _____ / acre

b. If there has been a change in the amount of nitrogen you apply please indicate who was the most influential source of information or education for this change?

___ Seed Company ___ Agriculturalist/MI Sugar
___ Sugarbeet Advancement
___ Elevator Agronomist ___ Private Consultant
___ Neighbor ___ Other (please specify) _____

**14. Conservation Tillage**

a. What type of tillage system do you use?

i. Conventional (mold board plow)
Yes___(% of acreage_____) No___

ii. Higher residue conservation system (chisel plow)
Yes___(% of acreage_____) No___

b. Did you use the same type of plow system 10 years ago? Yes___ No___

c. If there has been a change in the type of tillage system you use, who was the most influential source of information or education for this change?

___ Seed Company ___ Agriculturalist/MI Sugar
___ Sugarbeet Advancement
___ Elevator Agronomist ___ Private Consultant
___ Neighbor ___ Other (please specify) _____

**15. Reduced Cultivation**

a. Do you cultivate? Yes___ No___

i. On average, how many times do you cultivate? _____

b. On average, have you reduced the number of cultivations in the last 10 years? Yes___ No___

i. If yes, on average, I have reduced cultivations by _____.

c. If there has been a change in the cultivation system, who was the most influential source of information or education for this change?

___ Seed Company ___ Agriculturalist/MI Sugar ___ Sugarbeet Advancement
___ Elevator Agronomist ___ Private Consultant ___ Neighbor
___ Other (please specify) _____

**16. Oil Seed Radish as a Nematode Trap Crop**

a. Do your fields have sugar beet cyst nematode? Yes___ No___ I don't know ___

b. Do you use oil seed radish as a nematode trap crop? Yes___ No___

c. Have you observed yield advantages of nematode tolerant varieties? Yes___ No___

d. Did you use oil seed radish as a nematode trap crop 10 years ago? Yes___ No___

e. If there has been a change in the use of oil seed radish on your farm, who was the most influential source of information or education for this change?

___ Seed Company ___ Agriculturalist/MI Sugar
___ Sugarbeet Advancement

___ Elevator Agronomist ___ Private Consultant
___ Neighbor ___ Other (please specify) _____

**17. Planter Seed Tubes**

a. For sugarbeet planting do you use straight ___ or curved ___ seed tubes?

b. Do you remove seed tube inserts? Yes___ No___

c. Did you remove seed tube inserts 10 years ago?
Yes___ No___

d. If there has been a change in the use of seed tube inserts on your farm, who was the most influential source of information or education for this change?

___ Seed Company ___ Agriculturalist/MI Sugar
___ Sugarbeet Advancement
___ Elevator Agronomist ___ Private Consultant
___ Neighbor ___ Other (please specify) _____

**18. What are your major concerns of Michigan sugarbeet growers?**

a. _____

b. _____

c. _____

**19. Profitability of Sugar Beet Production**

a. What was your average beet yield?
i. 10 years ago? _____tons/acre ii. In 2006? _____ tons/acre
ii. Please estimate your average beet yield in the last three years.
_____

b. Overall, would you say your sugar beet profits have increased or decreased in the last 10 years?
Increased ____
No Change or Remained the Same ____
Decreased ____

c. If profits have decreased, please explain why:
_____

**20. Who do you feel should take the lead in providing educational programming for the sugar beet industry?**

___ Seed Company ___ Agriculturalist/MI Sugar
___ Sugarbeet Advancement
___ Elevator Agronomist ___ Private Consultant
___ Neighbor ___ Other (please specify) _____

**21. Overall, who do you rely most heavily on for the most current research information?**

___ Seed Company ___ Agriculturalist/MI Sugar
___ Sugarbeet Advancement
___ Elevator Agronomist ___ Private Consultant
___ Neighbor ___ Other (please specify) _____

**22. Have you been a participant in the following Sugarbeet Advancement activities or used information from the Sugarbeet Advancement Program in any of these ways?**

a. Attended sugar beet related farm meetings/workshops **Yes** _____
**No** _____
b. Participated in sugar beet field days/research tours **Yes** _____
**No** _____
c. Participated in Bean and Beet Symposium **Yes** _____
**No** _____
d. Participated in Sugarbeet Seed Week **Yes** _____
**No** _____
e. Used "On Farm Research and Demonstration: Sugarbeet Advancement" publication **Yes** _____
**No** _____
f. Used information from quarterly newsletters **Yes** _____
**No** _____
g. Used Cercospora Leafspot Bulletin information **Yes** _____
**No** _____
h. Used production tip cards (tips for maximizing sucrose production) **Yes** _____
**No** _____
i. Gained information through mass media (newspaper, radio or TV) **Yes** _____
**No** _____
j. Had contact with an MSU Extension specialist **Yes** _____
**No** _____
k. Had a local Extension agent(s) visit my farm **Yes** _____
**No** _____
l. Attended harvester clinics **Yes** _____
**No** _____
m. Used the Sugarbeet Advancement website **Yes** _____
**No** _____

**23. Please reflect on the various Sugar Beet Advancement programs listed above in which you have participated. How would you rate the quality of these educational/research programs using the five-point scale below?**

| | Poor | Fair | Good | Very Good | Excellent |
|---|---|---|---|---|---|
| a. *Educational programs* such as workshops/meetings | 1 | 2 | 3 | 4 | 5 |
| b. *Educational* Field/Research Tours | 1 | 2 | 3 | 4 | 5 |
| c. *Communications* such as newsletters, tips cards and bulletins | 1 | 2 | 3 | 4 | 5 |
| d. *Services* such as Extension contacts and farm visits | 1 | 2 | 3 | 4 | 5 |

**24. Please reflect on the various Sugarbeet Advancement programs listed in Q. 22 in which you have participated. Please indicate whether you agree or disagree with the statements below using the five-point scale.**

| | Strongly Agree | Agree | Neutral | Disagree | Strongly Disagree |
|---|---|---|---|---|---|
| a. Programs provided research-based information | 1 | 2 | 3 | 4 | 5 |

| | | | | | |
|---|---|---|---|---|---|
| b. Program provided information not readily available elsewhere | 1 | 2 | 3 | 4 | 5 |
| c. I gained new information/ practices about beets | 1 | 2 | 3 | 4 | 5 |
| d. It helped me make positive changes in my farming practices | | | | | |
| e. My average yield has increased because of this information | 1 | 2 | 3 | 4 | 5 |
| f. My farm income has increased due to changes I made in beet growing practices | 1 | 2 | 3 | 4 | 5 |

**25. Please suggest how the Sugarbeet Advancement Program could improve its role in helping Michigan beet growers. List specific suggestions:**

a. _____

b. _____

c. _____

**26. On how many total acres do you plan to grow in 2007?** _____

**27. How many total harvested acres did you have under sugarbeet production in 1996?** _____

**28. How many years have you been involved in growing beets?** _____ years

**29. Has your farm been passed down from family member to member?**

Yes___ No___

I. Do you intend to pass your farm on to other family members in the future?

Yes___ No___

ii. If no, what would you like to do with your farm when you retire?

Sell___ Rent____

Other_____

**30. Please indicate your education level:** ___high school diploma ___ GED

___some college ___associate's degree ___ technical/vocational training

___bachelor's degree ___ graduate degree

**31. Computer/Internet access**

a. Do you have access to a computer? Yes___ No___

b. Do you regularly use a computer?

___Never ___1 time per month ___2 times per month

___once per week ___2-3 times per week ___daily

c. Do you have access to the Internet? Yes___ No___

d. Do you regularly use the Internet?

___Never ___1 time per month ___2 times per month

___once per week ___2-3 times per week ___daily

e. Do you have an email account? Yes___ No___

f. Do you regularly access your email account?

___Never ___1 time per month ___2 times per month

___once per week ___2-3 times per week ___daily

**Is there anything else you would like to share with us? Ideas? Concerns? Suggestions?**

# Evaluation of
# Michigan Sugarbeet Advancement Program

We are interested in what you think about the impact of Sugarbeet Advancement Program to you and other beet growers in Michigan. Here is your chance to provide feedback. We need it to plan and improve future programs and events. Please take five minutes to share your views with us.

1. Have you heard of Michigan Sugarbeet Advancement Program? ___ YES ___ NO (Skip to Q. 8)

2. If you answered to "YES" to Question #1, have you been a participant in the following Sugarbeet Advancement activities or received information from Sugarbeet Advancement Program in any of these ways during the past three years? (Check each item that apply)

| | Yes | No |
|---|---|---|
| a) Attended sugarbeet related farm meetings/workshops | ___ | ___ |
| b) Participated in sugarbeet field days/demonstrations | ___ | ___ |
| c) Participated in Bean and Beet Symposium and research tours | ___ | ___ |
| d) Received "On Farm Research and Demonstration: Sugarbeet Advancement" publication | ___ | ___ |
| e) Received quarterly newsletters and/or bulletin | ___ | ___ |
| f) Gained information through mass media (newspaper, radio or television) | ___ | ___ |
| g) Had contact with an MSU Extension specialist | ___ | ___ |
| h) Had a local Extension agent(s) visit my farm | ___ | ___ |
| i) Phoned Beet and Beat production hot line | ___ | ___ |

3. Please reflect on various Sugarbeet Advancement Extension programs listed above in which youhave participated. How would you rate the quality of these educational programs offered?

| | | | |
|---|---|---|---|
| a) Program provided research-based information. | Agree | Undecided | Disagree |
| b) Program provided information not readily available elsewhere | Agree | Undecided | Disagree |
| c) I gained new information and skills on beet. | Agree | Undecided | Disagree |
| d) It helped me make positive changes in my farming practices | Agree | Undecided | Disagree |
| e) My farm income has increased due to changes I made in beet growing practices. | Agree | Undecided | Disagree |

4. What production practices have you changed/modified/ and or adopted because of
Sugarbeet Advancement information. Check all that apply:

___ (a) Variety recommendation ___ (b) Herbicide use
___ (c) Leaf spot control ___ (d) Tillage practices
___ (e) Pelleted seed ___ (f) Planter modification
___ (g) Date of planting ___ (h) Plant population

___ (i) Fertilization practices
___ (f) Others (please list)_____

5. Michigan Sugarbeet Advancement on-farm research and educational efforts began in 1997.
(a) How much would you estimate your 2000 beet yields have increased due to the Advancement efforts?
_____ tons/acre _____ No increase in yield _____ Can't Estimate
(b) How much would you estimate the savings in beet production cost due to the Advancement efforts? $_____ (estimated cost savings in yr. 2000).

6. Which one source would you consider the most credible and/or reliable for sugar beet production information?
___ Seed Company ___ Processing Company
___ Sugarbeet Advancement ___ Elevator Agronomist
___ Private Consultant ___ Neighbor
__ Other (please specify) _____

7. Have you noticed any change in the quality of Extension programs as a result of Michigan Sugarbeet Advancement Program?

| Definitely Deteriorated | Deteriorated | No change | Improved | Definitely Improved |
|---|---|---|---|---|
| ___ | ____ | ____ | ____ | ____ |

8. Please suggest how the Sugarbeet Advancement Program could improve its role in helping Michigan beet growers. List specific suggestions:
a. _____
b. _____

9. What do you consider the major production concerns that you would like Sugarbeet Advancement Program to concentrate research/demonstration efforts on?
a. _____
b. _____
c. _____

10. How many total acres did you have in production this year?
_____Contracted Acres _____ Harvested Acres

11. How many years have you been involved in growing beet? _____ Years

12. Do you consider yourself:
___ Full-time farmer ___ Part-time farmer

**Is there anything else you would like to share with us? Ideas? Concerns? Suggestions?**_____

## Telephone interview to accompany
## 2006 survey evaluation of the MSUE Sugarbeet Advancement program

**Introduction:**

Hello, I'm (insert name) from Michigan State University calling in follow-up to the January Sugarbeet Advancement survey. We're trying to further understand farming needs and concerns. To do this, we're trying to gather both male and female opinions about beet production. If it's possible may I speak to the female/male head of household?

*If no:*

Thank you. Good bye.

*If yes:*

Hello! My name is (insert name) and I'm a graduate student calling from Michigan State University to follow-up on the Sugarbeet Advancement survey you completed and returned to us in January. First, thank you very much for your participation. It was greatly appreciated.

Out of the approximately 1200 surveys we sent out we received 305 responses. To get a better understanding of your needs, we have developed a short interview. I hope you will help me by spending about 8-10 minutes answering my questions related to Michigan State University Extension services and your needs. Would you be able to take the interview now, or is there a better time I could call back?

*If no:* Thank you for your time. Good bye.

If rescheduled: Day _____ Time_____

*If yes:*

Thank you. Before we begin I have to read you a short statement required by MSU. By answering the questions I'm about to ask you, you're indicating your agreement to participate in this research project. If you have questions about this study, I will do my best to answer them or you may contact Dr. Murari Suvedi at (517) 432-0265. In case you have questions or concerns about your rights as a research participant, please feel free to contact Peter Vasilenko, Michigan State University's director of Human Research Protection Programs, by phone: (517) 355-2180. Also, please feel free not to answer any question you don't feel comfortable responding to.

Again, let me repeat, our aim is to evaluate the Sugarbeet Advancement program in order to improve it and better meet your needs.

Do you have any questions?

When you are ready I will begin the interview.

**Interview Questions**

1) Do you plan to continue to grow sugar beets? _____

In your opinion, what will be some opportunities for sugar beets in the future such as farmers markets, the organic market, etc.

_____

_____

_____

2) Today we're seeing greater sensitivity to runoff from livestock and pesticides, what is your sense of some of these issues with sugar beet farming?

_____

_____

_____

3) Have you noticed any changes in your community due to these (discussed above) issues? [Probes] For example, a greater awareness of phosphorus use or decreased health concerns from stress or pesticides?

_____

_____

_____

4) How is your household adapting to these new issues or concerns?

_____

_____

_____

5) What are some services that could be agriculturally related or not, that you feel MSU Extension could provide that would be helpful to you and others in your community?

_____

_____

6) What would you consider the most important aspect of your farm work?

_____

_____

7) Other than farming, does your household have other source of income? _____ If yes, please describe:_____

_____

8) What are the farming roles played by different people in your household? For example, is there one primary member of the family who does most of the physical work or another who does book keeping, etc.? If split, please describe.

_____

_____

_____

9) How do you feel about the division of labor that you just described?

_____

_____

What are some ways SBA could help make your role easier?

_____

_____

_____

Well that wraps up my questions. Are there any questions you have? Let me give you my number in case you have any concerns later or think of anything you'd like to add. You can reach me at (telephone) or my office phone number is (telephone). I greatly appreciate your time and thoughts. As I am processing interview responses I'll be sharing data back with SBA and a formal report will be made to both SBA and the University once I've received them all. Thank you. As I said, please feel free to contact me regarding this interview if there's anything else you'd like to share. Have a good day. Goodbye.

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