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**Michigan Apple Committee Winter 2003 Grower Survey:  
Research Programs**

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## Purpose and Scope of the Survey

The Michigan Apple Committee (MAC) is a commodity organization comprised of approximately 1000 apple growers in Michigan. The objective of this study was to evaluate members' perceptions about the effectiveness of past MAC programs and opinions about future directions for MAC in order to provide one source of input for Board decisions. In addition, this study provides growers with some information about the broad programmatic areas that are covered by MAC guidelines. In Winter 2003 a mail survey was sent to the entire MAC mailing list (1,123 growers); 282 surveys were returned (25 percent). The majority of responses to the survey came from growers in the Southwest and Ridge regions of the state (Figure 1).

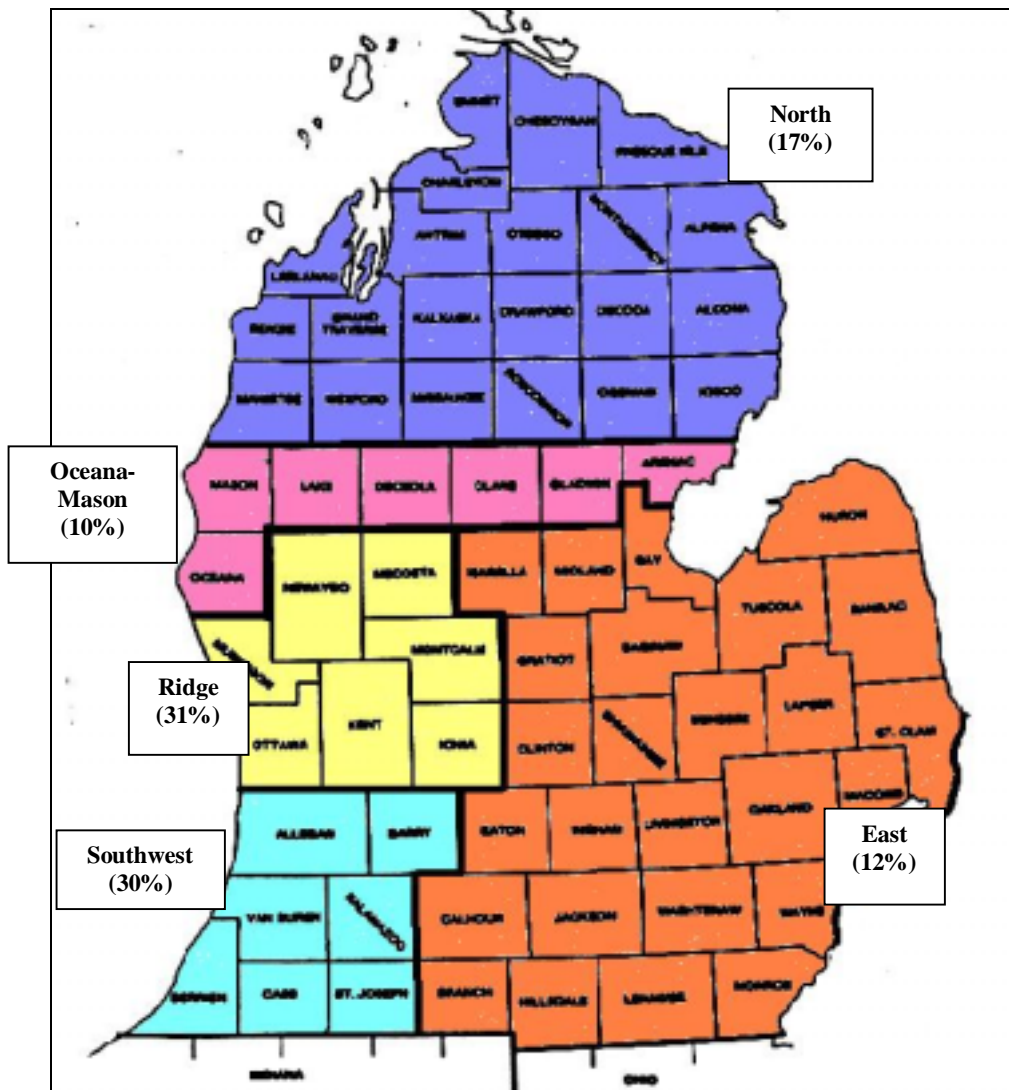


Figure 1. Grower response rates by region

Information was collected on the age of Michigan apple growers, the scale of their operation, whether they plan to increase or decrease production in the future, and which apple market (fresh or processed) they primarily target. A profile of growers who responded was developed based on answers to these questions. The average apple

acreage among growers who responded was 86 acres, however, in the Ridge region the average size was 146 acres, which was significantly different from averages in the North, East, and Southwest regions. Fifty-seven percent of respondents to the survey were between the ages of 40 and 60 years old, 13 percent were under 40 years old, and 30 percent were over 60. There were no statistically significant differences in the acres of apples grown between the age classifications meaning that farmers of all ages had similar sized operations. Only 17 percent of respondents said they plan to plant more apples in coming years, 38 percent expect their acreage to decrease, and 44 percent said they expect it to remain the same. Of the 282 growers who responded to the survey, 47 (17 percent) indicated that they were no longer growing apples. These former growers were not included in the subsequent analysis.

Sixty-one percent of respondents said they primarily target the fresh market, 32 percent primarily target the processing market, and 7 percent said they target both markets equally. Regionally, 93 percent of growers in the East said they primarily target the fresh market and 89 percent of growers in the Oceana-Mason region target the processing market. Statewide, for growers who target the fresh market, average apple acreage was 105.7 acres while growers who target the processing market had, on average, 58.3 acres of apples.

### **Statistical Terminology**

The following statistical terminology is used in the report to aid in understanding of the survey results.

#### ***Mean or Average***

The mean is the average of the response scores. Numerically, it equals the sum of the responses to a question divided by the number of the responses.

#### ***Standard Deviation***

The standard deviation is a measure of variability that statisticians use to characterize dispersion among the responses in a given population. The standard deviation provides an indication of how similar, or dissimilar, a group is in their responses.

#### ***Statistical Significance***

It is customary to describe a survey finding as statistically significant only when the obtained difference would occur by chance no more than 5 times out of 100. A finding, for example the observed difference between the means of two samples, is described as statistically significant, when it can be demonstrated that the probability of obtaining such a difference by chance only, is less than 5 percent.

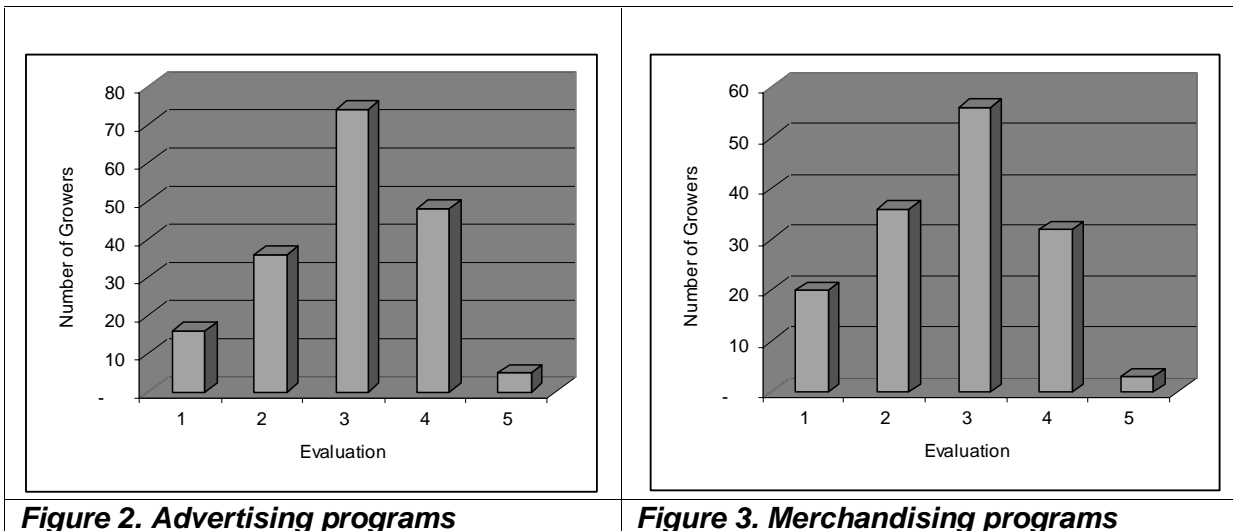
#### ***Mean Comparison***

Mean comparison is useful in order to establish if the mean of two groups differ systematically. A variety of statistical tests can be used to compare means depending on the underlying characteristics of the two groups being compared. Such tests include the Tukey, t-test or paired sample tests that were used in this report. These statistical tests indicate if the difference that one can observe between two means is due only to the randomness of chance variations or if they are statistically significant. Some of the causes, for which it is not possible to find a statistical significance difference between two means are: large heterogeneity within the groups or a low number of responses.

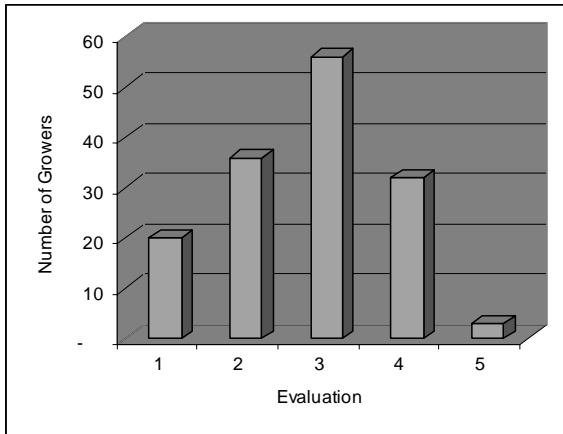
## Evaluation of Past Michigan Apple Committee Programs

Growers were asked to rank the effectiveness of past Michigan Apple Committee programs.<sup>1</sup> Growers ranked each of the programs on a scale of 1 (poor) to 5 (excellent) where a score of 3 indicated an average ranking. An additional option was provided for growers to indicate they were not sure of the past effectiveness in a program area. The ranking by those respondents who provided a numerical score averaged 3.03 across all of the MAC program areas. The number of respondents who indicated they were not sure about past effectiveness was varied. For example, just 63 percent of the respondents evaluated the Export Program. The program area that more growers felt comfortable assessing was the Public Relations Program, addressed by 80 percent of the total respondents.

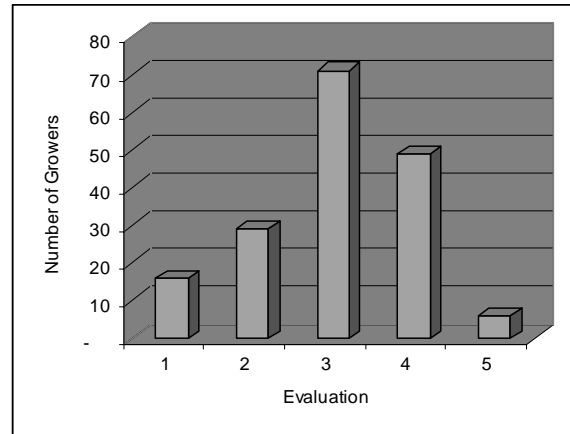
According to the survey results the program that received the highest score was Research with an average grade of 3.37. The program area receiving the lowest score was Exports with an average grade of 2.74 on the same scale. The Advertising Program, the program that respondents believed should receive the largest portion of future budgets, was graded relatively low, on average 2.94. It should be noted that the mean scores in each of the six program areas are not statistically different from each other. That indicates a lack of consensus among respondents at the moment of program assessment (Figure 2 –Figure 7). Perception of members about any single program area varied widely but, on average, all program areas were ranked at or around a score of 3.



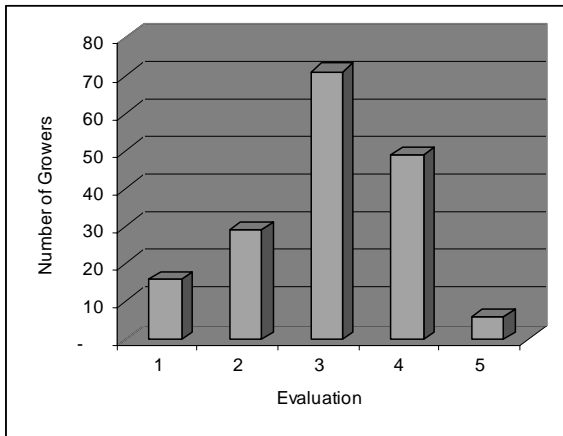
<sup>1</sup> Program areas were defined in the survey as Advertising (for consumers and trade buyers such as grocery, food service, manufacturing), Merchandising (promotion and incentive programs for trade buyers), Exports (development of international marketing opportunities), Public Relations (working with news media to generate positive stories for Michigan apples), Industry Information Services (grower, shipper & processor communications and information) and Research (supported by the Michigan Apple Research Committee).



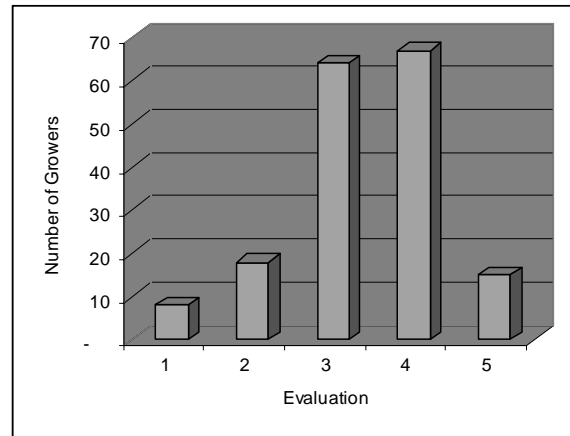
**Figure 4. Export programs**



**Figure 5. Public Relations programs**



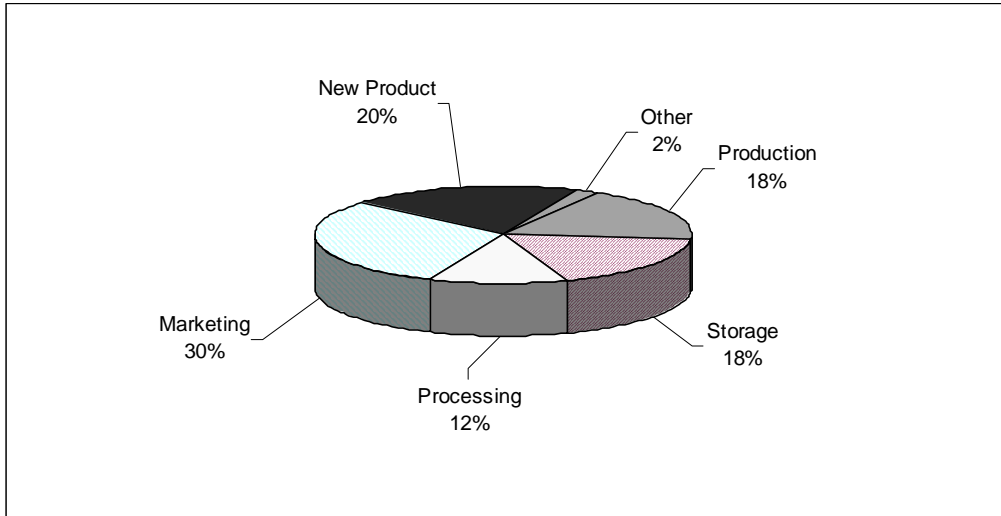
**Figure 6. Industry Information Services programs**



**Figure 7. Research programs**

## Research Programs

Growers were asked their opinion of how the Michigan Apple Research Committee budget should be allocated in the future among five broad research areas: 1) production, orchard, and growing, 2) storage, handling, and apple maturity, 3) processing, 4) marketing, and 5) new product development. This question was completed by a large percentage (79%) of the growers who responded to the survey. Figure 8 depicts the respondents' average allocation among these categories.



**Figure 8. Average budget shares allocated to research areas by respondents**

Results indicate producers believe that the type of research where MAC should allocate most resources is marketing (Table 1). On average, they indicated that MAC should allocate 30 percent of the research budget to marketing research topics. In addition, respondents consider that, on average, 36 percent of the budget should be distributed between research in production (18%), and storage and handling (18%). Research in processing received, on average, less support with respondents allocating 12 percent of the total budget to this category. On average, respondents believe 20 percent of research funds should be allocated to new product development. In all cases the standard deviations were relatively large, indicating a wide diversity of opinion among growers regarding this topic.

**Table 1. Respondent preferences for future research allocations**

Type of Research	Allocation of the Budget for Research		
	Number of Responses	Mean <sup>1</sup> (% of Budget)	Std. Deviation
Production, Orchard, and Growing	185	18 <sup>a</sup>	18.3
Storage, Handling, and Apple Maturity	185	18 <sup>a</sup>	15.8
Processing	185	12 <sup>b</sup>	11.5
Marketing	185	30 <sup>c</sup>	24.9
New Product Development	185	20 <sup>a</sup>	18.5
Other	185	2	9.4
Total		100	

<sup>1</sup> Means marked with the same letter are statistically different based on results of a T-test (Sig. 0.05)

There were also systematic differences in opinion among growers who had rated past research programs as low, medium, or high (Table 2). Producers who graded the performance of past Research Programs as high (ranked 4 or 5) have a different perspective about how to allocate future resources. They believe that the budget allocation for research in production and in marketing should be more balanced, 23 and 24 percent respectively. This differs from the opinion of the growers that graded past program with 3, 2 or 1. Respondents who had graded past research programs as low (ranked 1 or 2) believed that, on average, only 9 percent of the research funding should be allocated towards production, orchard, and growing while 35 percent should be allocated towards marketing research. Responses from those growers who had graded past programs as medium (ranked 3) were similar with 15 percent allocated towards production, orchard, and growing and 35 percent towards marketing.

**Table 2. Allocation for research by assessment of the research program**

Type of Research	Overall Assessment of the Research Program (Mean % of Budget)			
	Graded the program low (1 or 2)	Graded the program medium (3)	Graded the program high (4 or 5)	Total
Production, Orchard, and Growing <sup>1</sup>	9 <sup>a</sup>	15 <sup>a</sup>	23 <sup>b</sup>	18
Storage, Handling, and Apple Maturity	13	16	20	18
Processing	8	13	12	12
Marketing <sup>1</sup>	35 <sup>a</sup>	35 <sup>a</sup>	24 <sup>b</sup>	30
New Product Development	25	21	17	20
Other	5	0	1	2
TOTAL	100	100	100	100

<sup>1</sup> Different letters indicate that a statistical significance difference was found between these means. This difference was established through a Tukey mean comparison test. (Sig. 0.05)

Table 3 details the opinions that producers gave for other types of research that they would like MARC to support. It is a good example of the heterogeneity in opinion about the allocation of resources to research.



**Table 3. Detail of the responses given to “other” in the allocation of future research budgets**

Type of Research	Number of Respondents	Mean (% of Budget)
Not Specified	7	8
Information about the importance of American Fruit	1	100
Study research the foreign: China, Russia, & South America	1	50
Government tariffs	1	50
What’s needed	1	25
Health benefits	1	20
Variety evaluation	1	10
P.R. of research projects	1	10
Farm markets	1	10

When analyzing the result of this question by demographic categories, it was not possible to establish differences that could be confirmed through a statistical test for distributions among geographical regions, age, or scale of production. Although some differences can be observed, respondents’ opinions about the allocation of resources within the Research Program is not systematically related to any of these variables (Tables 4 - 6).

**Table 4. Allocation of research resources by geographic region**

Type of Research	Geographic Region (Mean % of Budget)					
	South West	Ridge	Oceana-Mason	North	East	Total
Production, Orchard, & Growing	20	14	25	15	23	18
Storage, Handling, & Apple Maturity	16	21	14	17	15	18
Processing	11	11	12	11	12	12
Marketing	33	30	18	32	28	30
New Product Development	19	18	21	22	19	20
Other	1	3	1	3	0	2
TOTAL	100	100	100	100	100	100

**Table 5. Allocation of research resources by grower age**

Type of Research	Grower Age (Mean % of Budget)			
	Less than 40	40 to 60	Over 60	Total
Production, Orchard, and Growing	18	17	20	18
Storage, Handling, and Apple Maturity	17	17	19	18
Processing	9	13	10	12
Marketing	35	30	25	30
New Product Development	15	20	20	20
Other	0	2	2	2
TOTAL	100	100	100	100

**Table 6. Allocation of research resources by scale of production**

Type of Research	Scale of Production (Mean % of Budget)			
	Small (< 30 acres)	Medium (30 – 99 acres)	Large (> 99 acres)	Total
Production, Orchard, and Growing	19	18	16	18
Storage, Handling, and Apple Maturity	16	18	19	18
Processing	11	12	11	12
Marketing	33	27	28	30
New Product Development	18	21	19	20
Other	1	2	2	2
TOTAL	100	100	100	100

It was found that the growers that target the processed markets and those that target the fresh-markets do have statistically different opinions about allocation of future research budgets. Not surprisingly, fresh markets producers indicated that they would allocate on average, only 10 percent of the budget to this type of research and the processed-producers, logically would prefer to see more resources (14 percent) in this field of research (Table 7).

**Table 7. Allocation for research by target market**

Type of Research	Target Market (Mean % of budget)		
	Fresh Market	Processed Market	Total
Production, Orchard, and Growing	19	17	18
Storage, Handling, and Apple Maturity	19	15	18
Processing	10 <sup>a</sup>	14 <sup>b</sup>	12
Marketing	30	28	30
New Product Development	18	22	20
Other	2	2	2
TOTAL	100	100	100

<sup>1</sup> Means marked with the different letters are statistically different based on results of a T-test (Sig. 0.05)

## Summary

Both the Michigan Apple Committee and Michigan Apple Research Committee have undergone some unique challenges since 2000. This survey was designed to elicit the opinions of Michigan apple growers about the effectiveness of past MAC programs at the time of the survey and future directions for MAC programs.

Overall results of the survey indicate that Michigan apple growers are generally satisfied with the performance of the MAC, but perhaps equally importantly, that many members do not fully understand the function of the MAC. Response to questions about specific programming areas provides more details concerning grower beliefs. Although there were generally no differences in opinion about future MARC program allocations by grower age, scale of operation, or geographic region, statistically significant results were identified for respondent preferences among broad research categories, particularly based on growers' ranking of past MARC programs and by target market.

Changes continue in the Michigan, U.S., and world apple industries. This survey evaluated Michigan Apple Committee member beliefs at a critical point in time in order to provide one source of input, among many, for future industry decisions.