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UTAH PESTS

2017 FRUIT INDUSTRY IPM SURVEY SUMMARY

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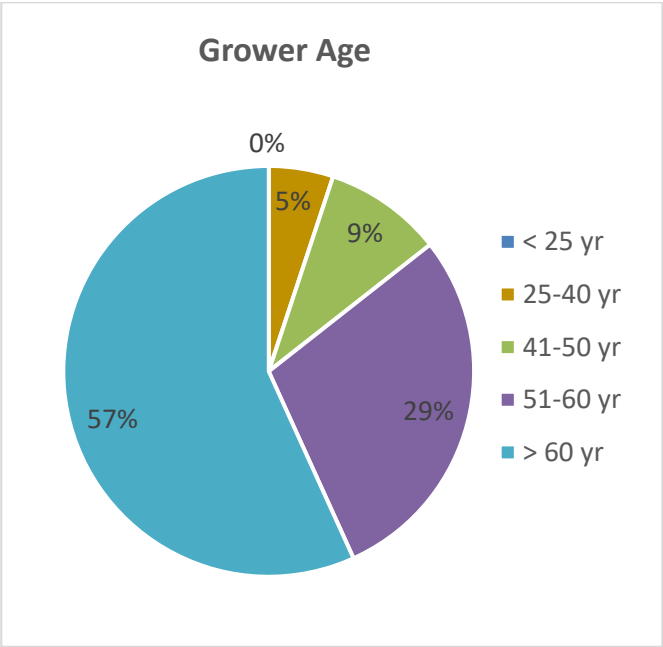
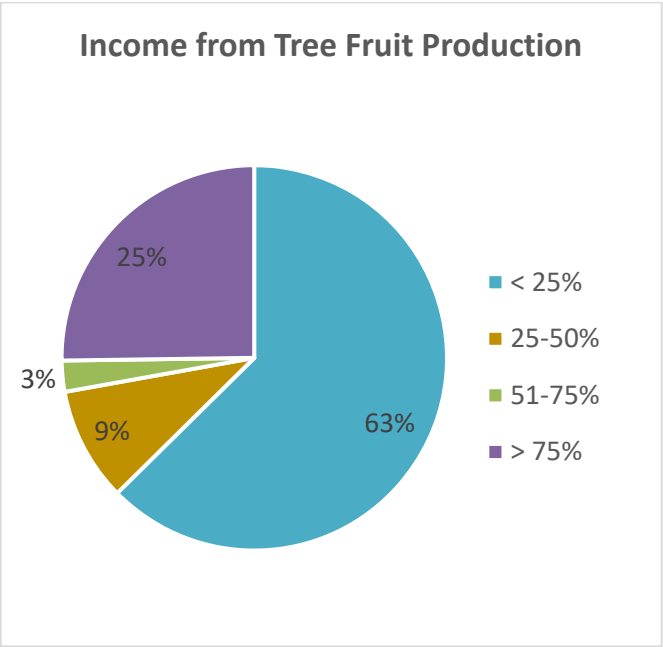
Tree fruit growers in Utah were surveyed in winter 2017 to determine pest management practices, in particular, IPM implementation. The survey was designed by USU Extension faculty and carried out by the Utah National Agriculture Statistics Service in winter 2017. It included 6 sections: general fruit and marketing, pests and pest management, crop production, educational IPM considerations, and demographics. There were 263 operations contacted, with responses from 159 (60%). Of those, 38 did not farm tree fruits anymore, leaving a sample size of 121 (46%).

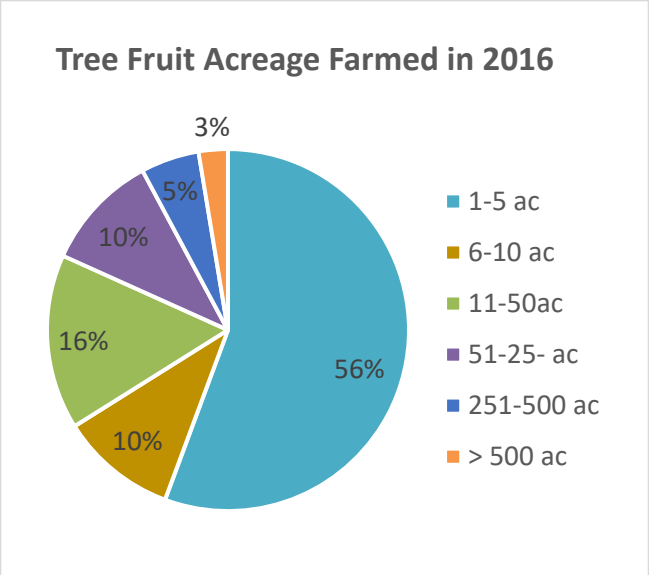
FARM AND GROWER INFORMATION

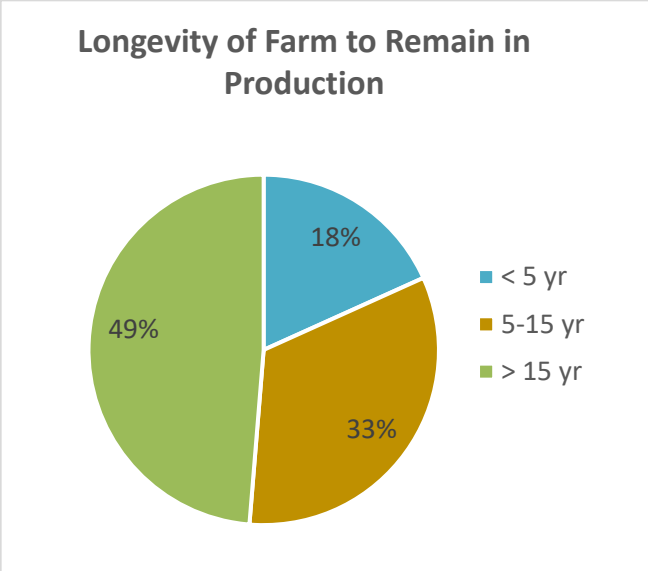
Most fruit farmers in Utah are over 61 years of age (57%), with only 13% of respondents younger than 50. Most (69%) have been growing fruit for over 20 years, with just 5% of respondents who have been growing fruit less than 5 years. Income from the farm does not sustain most growers, where 63% of respondents acquire 25% or less of their income from fruit production. About a quarter of Utah's fruit farmers are full-time growers.





The growers that took this survey represent 5,455 acres of fruit in Utah, with the majority growing tart cherry (3,267 acres), followed by peach and apple. The majority (56%) of survey respondents own small fruit farms, with just 33% of farms with at least 50 acres. Many growers (64%) reported that more than 25% of the land around their farm is urbanized, with almost 40% reporting that 75% or more of the surrounding land is urbanized. For some (24%), the amount of urbanization has remained the same in the last ten years, while most growers (46%) have seen a significant increase in development around their farms.

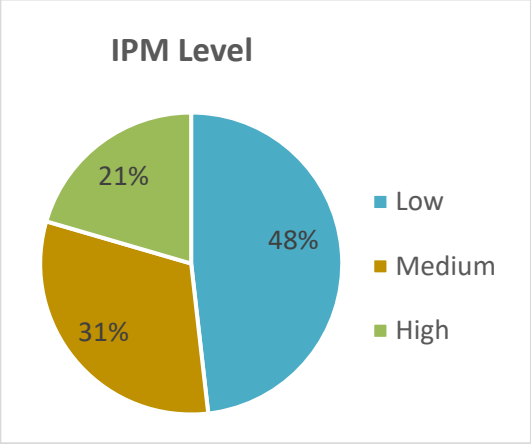




Most of the fruit grown in Utah (90-97%, depending on fruit type) is sold fresh, either direct-to-consumer (65-74%) or wholesale (8-24%). Tart cherries is the exception, which are mostly processed by drying (76%) and sold wholesale (74%).

PESTS AND PEST MANAGEMENT

Almost 80% of producers taking the survey are conventional growers, with less than 2% certified organic, and almost 20% of producers growing organically, but non-certified. Most growers (71%) reported using IPM in some capacity. Of those, most (48%) consider themselves low IPM users, and 21% consider themselves high IPM users.



Definition of IPM Levels used in the 2017 Survey

Low: regular pest monitoring; use of thresholds or degree days; use pesticides only when necessary; rotate pesticide classes; calibrate sprayer; and follow pesticide regulations

Medium: *Low* as described above, plus at least 2 more practices: pheromone traps; mating disruption; nutrient testing; irrigation monitoring; identify beneficials; habitat for beneficials; record-keeping

High: *Low* as described above, plus at least 4 additional practices from the list above under *Medium*

Growers reported their most challenging insect, disease and abiotic problems. Losses from frost was the most common response, followed by codling moth. Other responses are shown below.

Most Commonly Reported Pests and Problems over the Last Five Years

Category	Most Common Problem	Second Most Common Problem
Insects – Pome Fruit	codling moth	woolly apple aphid and other aphids
Insects – Stone Fruit	peach twig borer	western cherry fruit fly
Diseases – Pome Fruit	fire blight	powdery mildew
Diseases – Stone Fruit	coryneum blight	cherry powdery mildew
Nutrient Deficiencies	iron	nitrogen
Weather-Related	frost	hail

PESTICIDE USE

One of the goals of IPM is overall pesticide reduction or to reduce use of chemicals that are more toxic to humans or the environment. Growers were asked if their pesticide use increased, decreased, or remained unchanged for each crop they grew in 2016. The average percent across all crops showed that slightly more growers decreased their pesticide use (23%) than increased (21%), which equates to an overall 6.5% decrease in pesticide use. The crops that saw the greatest decrease or had no change were the sweet and tart cherries. Many growers reported an increase in pesticide use in peaches and apples (22%), most likely due to the increase in pest pressure from urban areas and within mating disruption.

In terms of specific pesticide classes, the most common insecticide groups that are used four times or more per season are oils (16% of growers reporting use), organophosphates (15%), and spinosad (14%). The most-often used fungicide groups are broad-spectrum products (12%), copper (12%), and strobilurins (11%).

IPM PRACTICES

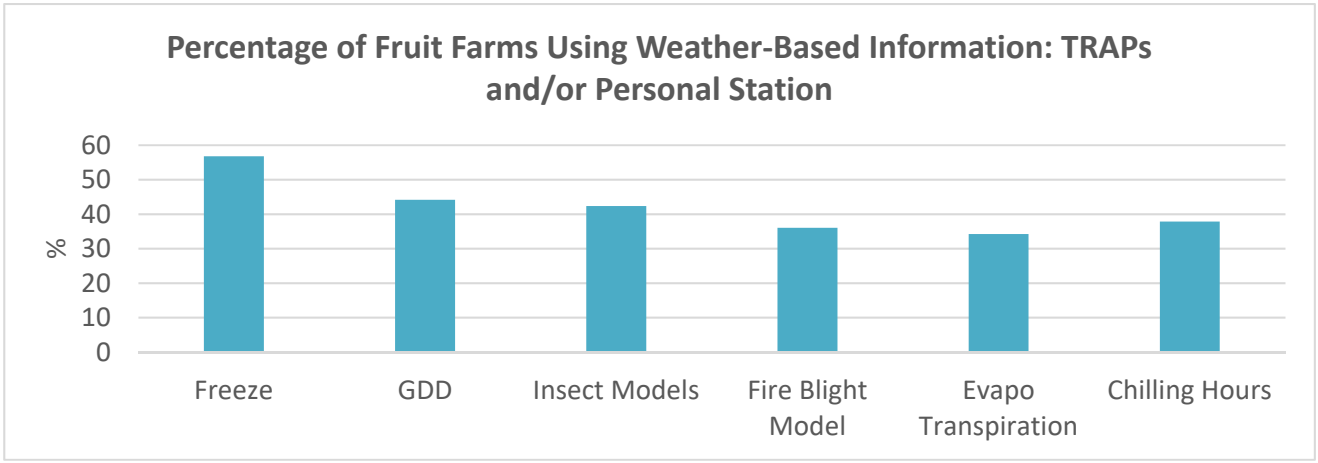
Growers were given a list of IPM practices and asked about their level of use for each practice in the last 5 years. Most growers selected several IPM practices, where 44% reported using 1 to 6 practices, 38% used 7 to 12 practices, and 4% used 13 or more practices. The most common practices that were used at a high frequency were pest monitoring, sanitation (prune diseased wood and remove apple bins), pesticide rotation, and use of thresholds. The most common practices used at a moderate frequency included hot-spot treatments, resistant varieties, and identifying beneficial insects. Growers were also asked specifically about their level of pest monitoring, and growers reported that most of them (54%) monitor for pests at least every other week, with 37% reporting that they monitor only periodically.

Most-Used IPM Practices and Respondents that Use the Practice at least Moderately

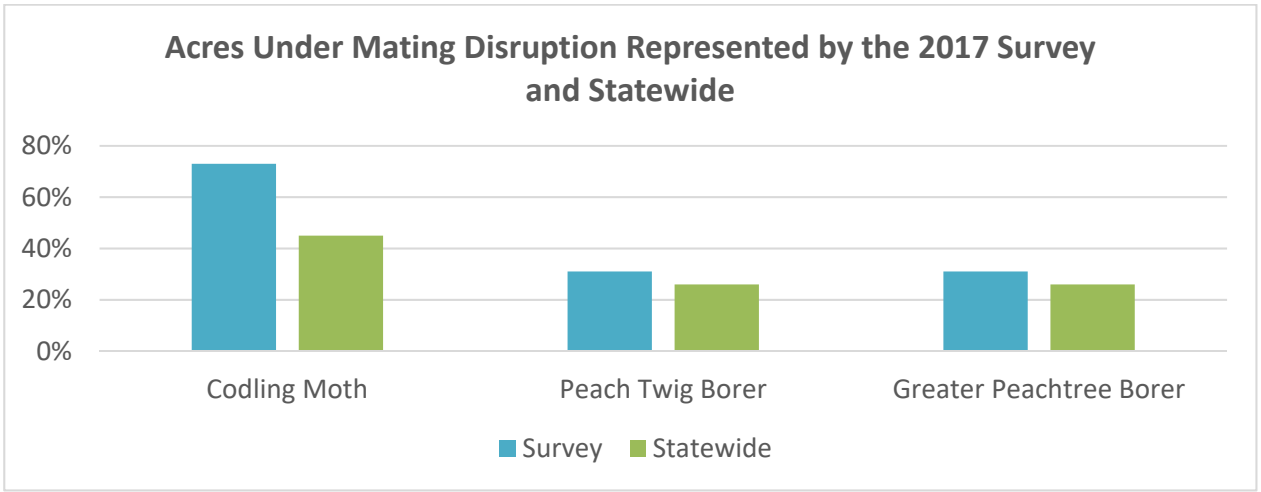
Visual pest monitoring	83%	Identify beneficials	67%
Sanitation	87%	Thresholds	75%
Pesticide rotation	83%	Calibrate sprayer	78%
Hot spot treatments	79%	Remove apple bins	77%
Resistant varieties	62%		

In terms of determining the need for or timing of treatments for insects and diseases, using IPM is very important. Growers reported using a variety of tactics, including threshold levels (22%), insect or disease models (19%), consultant (25%), or USU Extension specialists (30%). Many growers (57%) get their information from the USU IPM Tree Fruit Advisory. There are some improvements to be made, where grower report using their own experience (72%) or time of year (39%).

Weather-based tools can also be used to help determine treatment timing, as well as determine watering needs or frost protection. Most growers, however (53-67%), reported that they do not use weather-based plant management information. About one-third of growers use either the Utah Climate Center TRAPs website (Temperature Resource and Alerts for Pests) or a personal weather station for such predictive tools as growing degree days and insect models (32%) and for prediction of fire blight risk (27%).



Two effective and low-toxicity tools used in IPM are mating disruption for many pests and GF-120 for western cherry fruit fly. Growers reported that 631 acres are under mating disruption for codling moth, which makes up 73% of the total pome fruit acreage reported in this survey. Statewide, this represents 43% of the total pome fruit acreage (1,436). For peach, 337 acres are under mating disruption for peach twig borer, representing 33% of the total peach/nectarine/apricot acreage reported, and 342 acres under GPTB, representing 33% of acres reported (both representing 23% of all acreage in Utah). GF-120 is an effective, organic option for western cherry fruit fly using a combination of insecticide plus bait. Growers reported using it on 34% of their acreage, and this represents 18% of all acreage in Utah (3,496 acres).



To maintain crop health, soil or nutrient analysis is an important tool to indicate the need for applications. Most growers, however, responded that they do not submit samples for testing. For those who do test, apple growers are the most likely to test soil samples each year (18%) or every 2 to 5 years (32%) and tart cherry growers are least likely to submit soil or foliage for testing.

IPM ADOPTION SCORE

It is generally known that the use of IPM is part of a continuum. In our survey, we defined one end as low IPM use and the other end as high IPM use. The definitions of these levels is provided at the bottom of page 2. Although we asked growers to indicate how they view themselves on that IPM continuum (page 2), we were also interested in how that compared to an assigned IPM score based on their question responses. Therefore, we assigned points for each pertinent question in the survey as either 0, 5 (low use), 10 (medium use), or 15 (high use). We understand that assigning these scores is subjective, however, the USU team of tree fruit IPM experts understands the potential IPM use addressed by each question. Categories with assigned scores included use of IPM practices and at what level, use of mating disruption, scouting frequency, pesticide use, soil and foliar nutrient testing, irrigation practices, and opinions of IPM.

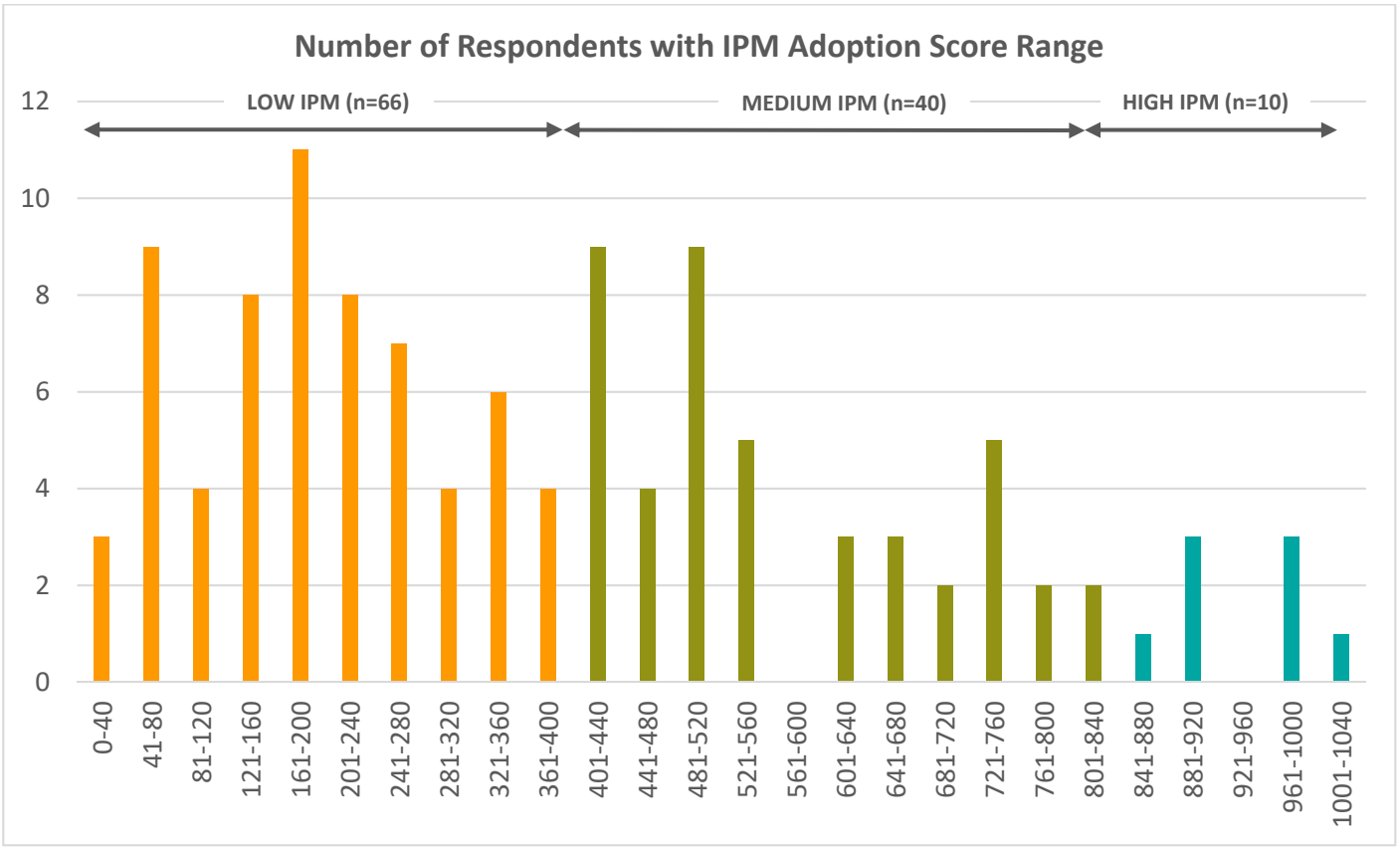
We then assigned the IPM scores for each question based on the individual respondent's answer, and calculated an overall score for each by adding the points. Growers were then assigned to the low, medium, or high IPM adoption category based on their point total (as shown on the table at right). The total number of possible points in the 2017 survey was 1,250, and the ranges shown at right each represent one/third of the total.

Range and Total Possible IPM Scores

1 - 417	Low
418 - 834	Medium
835 - 1250	High

A total of 116 growers received IPM scores. The distribution of respondents is shown on the next page. The scores represent a much-skewed bell-shaped curve toward the lower end of the adoption scale with regard to overall point accumulation and assignment into low, medium, or high adoption groups.

When comparing the growers' self-label of IPM adoption and their assigned IPM score, the pattern is the same, where the majority of growers are in the low adoption category, but there are differences (shown on next page). In the self-label question, 20% of producers considered themselves high IPM users, whereas using the IPM Score, only 9% of producers fell into this category. Those that labeled themselves as low or medium IPM users were somewhat aligned with their IPM score, with slightly more falling into the Score's low category than self-label.


Number of Respondents with IPM Adoption Score Range
LOW IPM (n=66)
MEDIUM IPM (n=40)
HIGH IPM (n=10)
12
10
8
6
4
2
0
0-40
41-80
81-120
121-160
161-200
201-240
241-280
281-320
321-360
361-400
401-440
441-480
481-520
521-560
561-600
601-640
641-680
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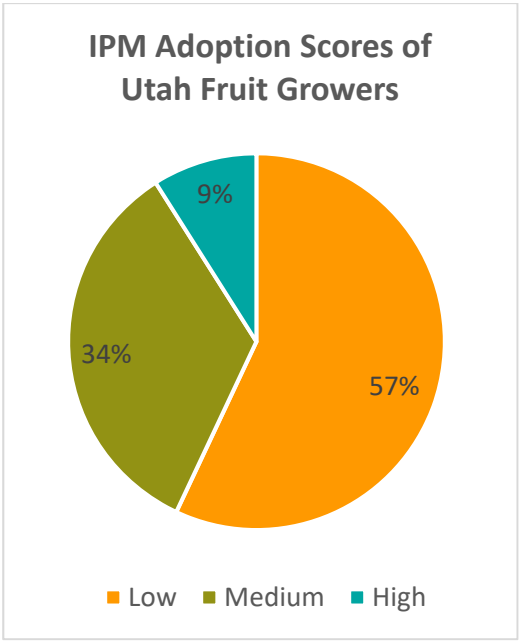
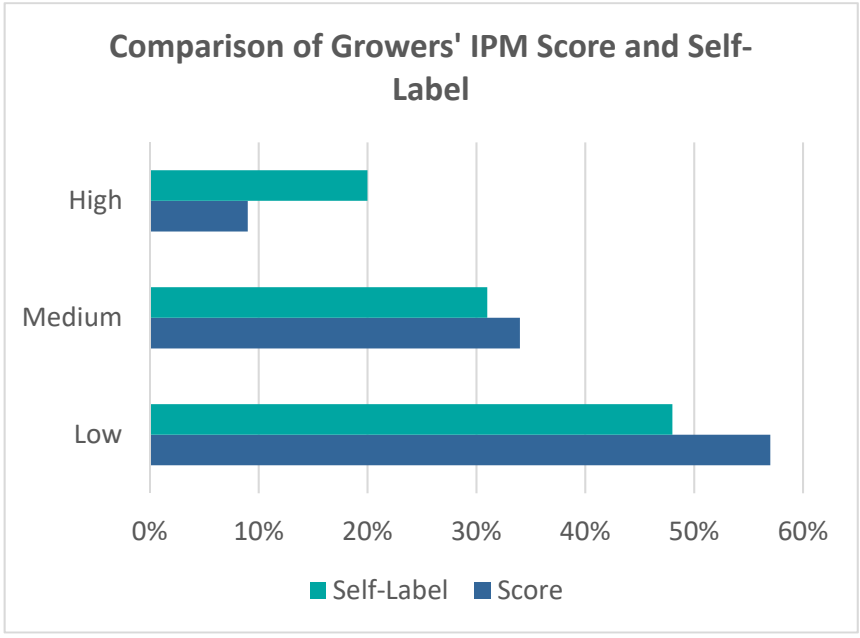
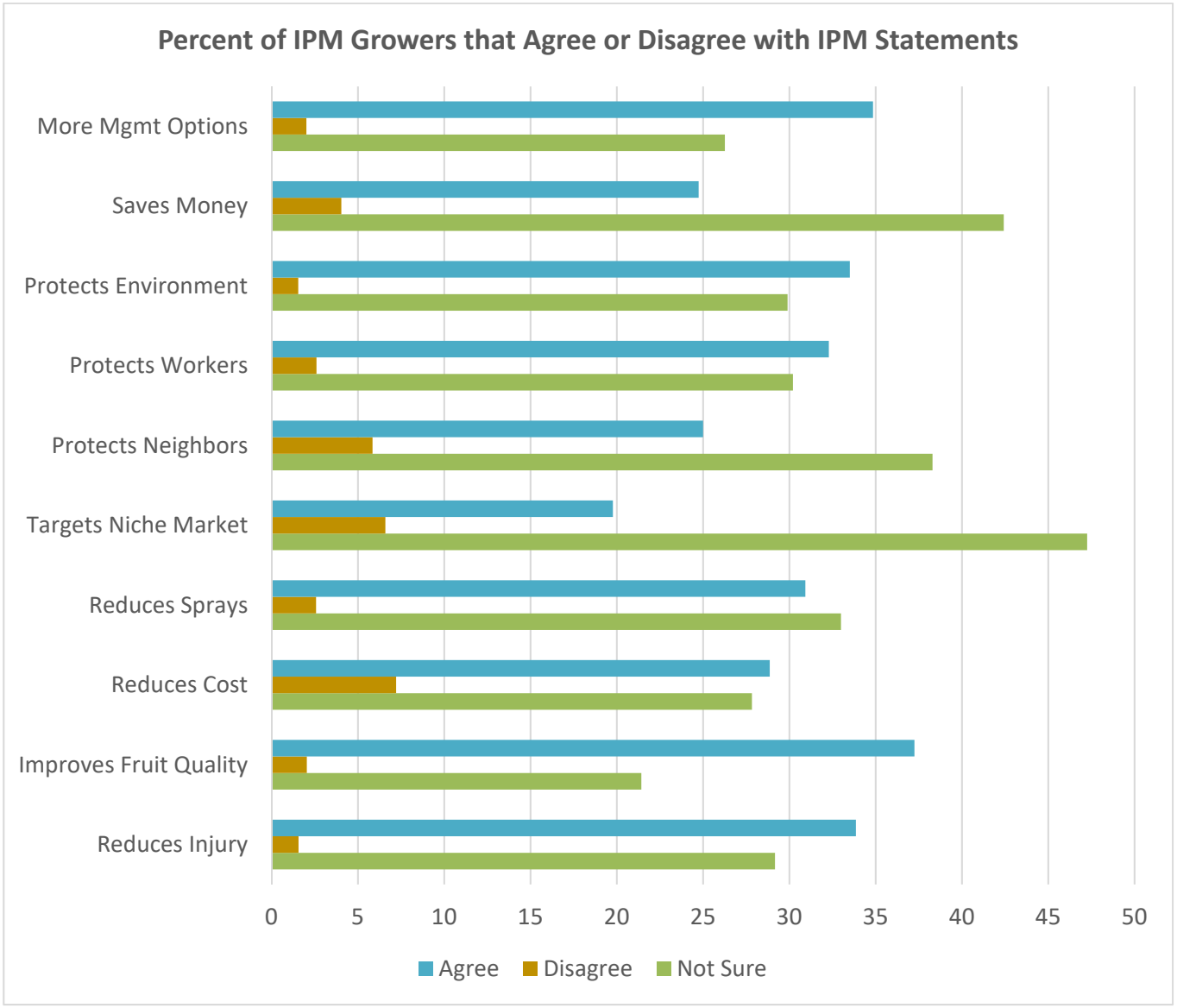
721-760
761-800
801-840
841-880
881-920
921-960
961-1000
1001-1040


IPM Adoption Scores of Utah Fruit Growers
9%
34%
57%
Low
Medium
High

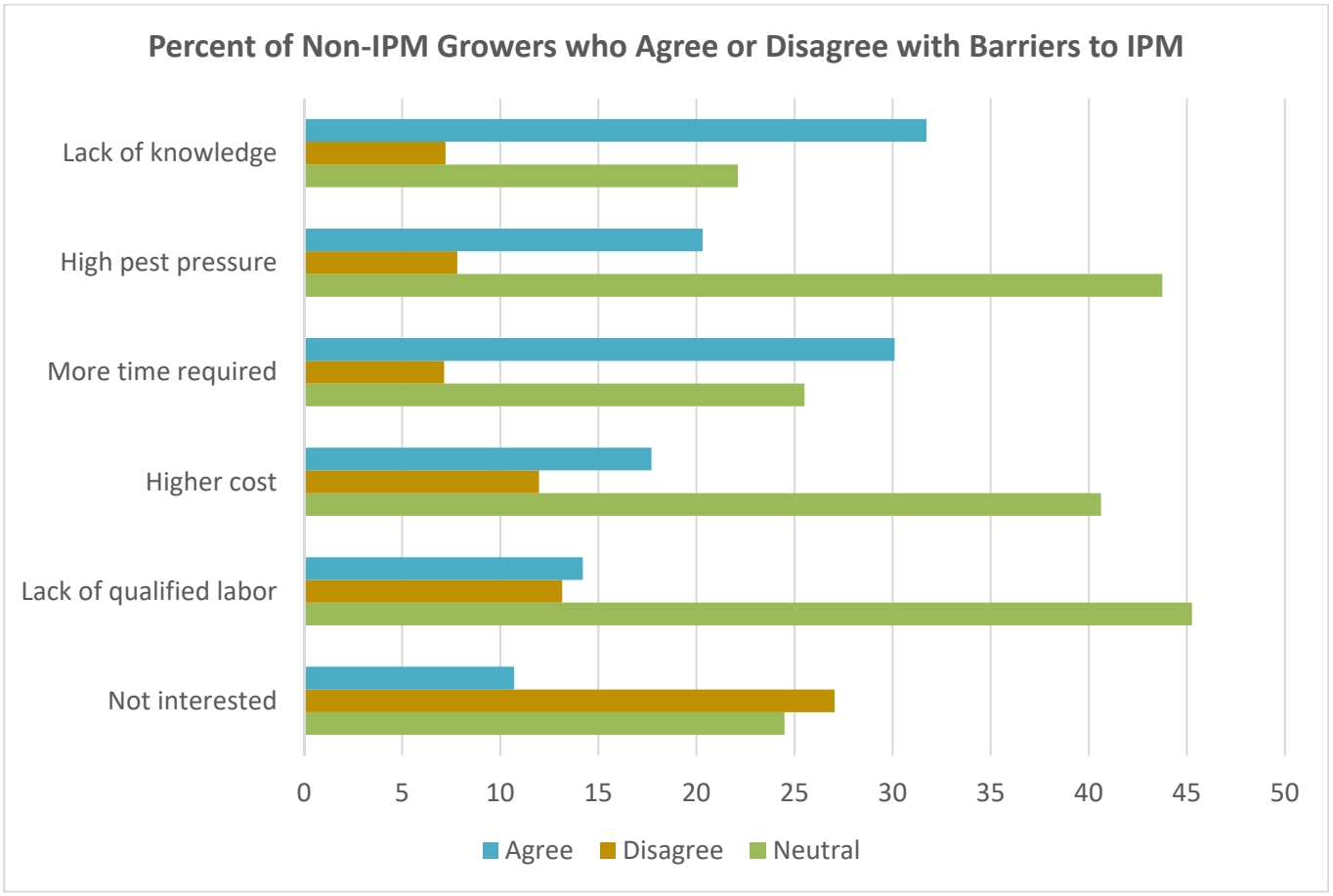

Comparison of Growers' IPM Score and Self-Label
High
Medium
Low
0%
10%
20%
30%
40%
50%
60%
Self-Label
Score

IPM PERCEPTIONS

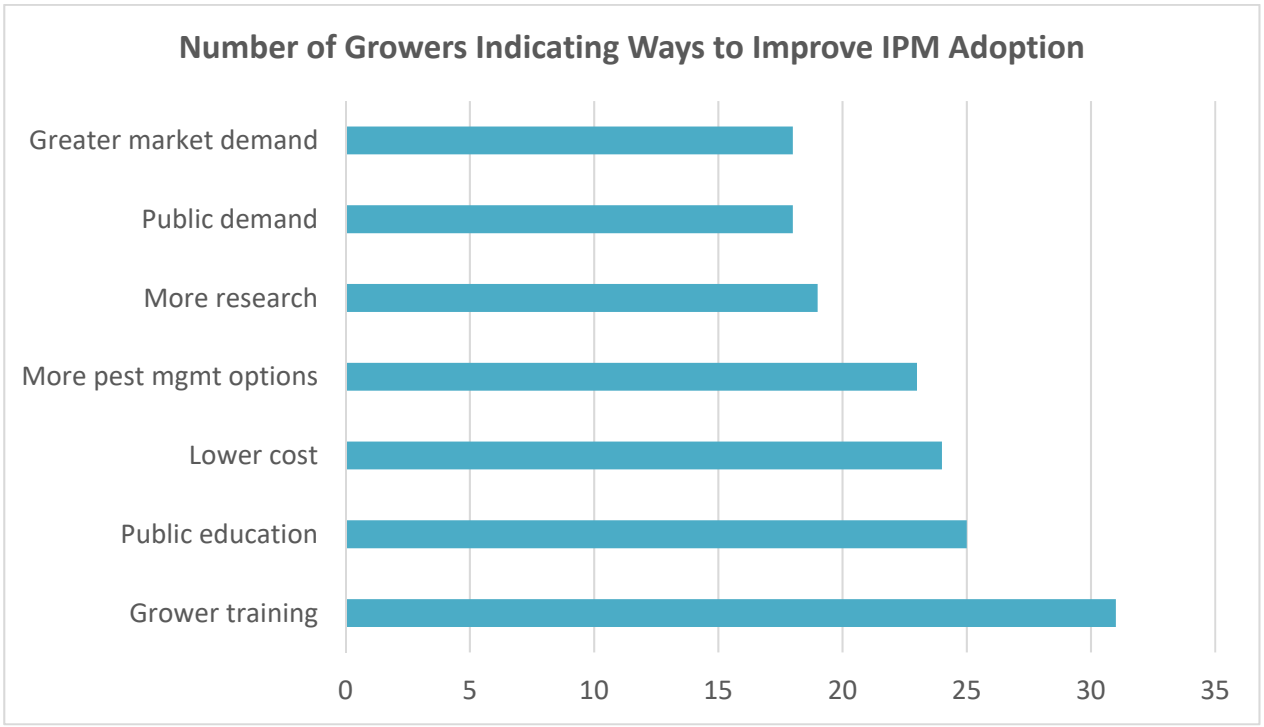
When growers who say they use IPM were asked if they agreed with statements about IPM, the majority of growers responded that they either agree or are undecided about each one. The statements that most growers disagreed with are that IPM helps to improve neighbor relations (6%), that IPM helps to create a niche market (7%), and that IPM reduces costs (7%).



Growers who do not use IPM were asked to state whether they agree with certain statements explaining why they may not be using IPM (shown on next page). About 11% of non-IPM growers are simply not interested in adopting IPM. Of the remaining, the most common barriers for them were lack of knowledge (32%), more time investment required (30%), current pest pressure (20%), and higher cost (20%).



Growers were asked about ideas to help improve adoption and the top responses were grower training, educating the public on the benefits of IPM, and cost reduction.



IPM INFORMATION OUTREACH AND EDUCATION

Growers were asked how they value sources and formats of IPM information. The most valuable sources of information were USU Extension, the growers' own experience, followed by other growers. The least valuable listed were trained employees or chemical stores.

Ranking of Value of IPM Information Sources (Number of Growers Reporting)

IPM Information Resource	Somewhat or Highly Valuable	Not valuable
Your own experience and knowledge	97	3
Other growers	87	7
USU Extension fact sheets	88	9
USU Extension specialists	85	8
USU Extension spray guide	79	11
IPM Pest Advisories	74	17
Fruit Conferences	70	22
Seasonal informal grower meetings	68	23
Other Extension workshops	66	22
Industry publications	62	25
General internet info	62	23
Agricultural chemical dealer	58	27
Text messages from Utah TRAPs	57	27
Private crop consultant	47	32
Trained employee	36	34
Radio programs	32	50

When asked about IPM topics that growers want to learn more about, growers were interested in a variety of topics, including IPM in general (67%), pest identification and management (56%), and using weather resources to manage fruit (48%).