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UTAH PESTS

Utah Vegetable Industry Integrated Pest Management Survey

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According to the National Agriculture Statistics Service, approximately 700 Utah operations harvested 6,560 acres in fresh market vegetables in 2007 totaling $16 million. In 2011, the Utah State University Extension IPM Program surveyed the vegetable industry in the state to determine pest management practices, in particular, IPM implementation (integrated pest management). The survey was delivered and administered by the Utah office of the National Agriculture Statistics Service to 252 growers. We received a 40% response rate, representing 3,132 vegetable acres. The survey results will serve as a guide for improving the Extension vegetable IPM program through research and outreach activities, and as a resource for leveraging funds to execute this work.

General Farm/Farmer Information

Of the operations that replied to this survey, most are located in Box Elder, Davis, and Utah counties. They ranged in size from less than 1 acre (2%), up to 10 acres (25%), 11-50 acres (23%), 51-200 acres (20%), and more than 200 acres (23%). The primary crops grown in 2010 were sweet corn, squash, melons, and bulb crops (onion, garlic, etc.).

Most farms are rural (57%), but 64% reported that land development around their farms has increased in the last 5 years. The age of the primary operator on the farm is mostly greater than 60 years (48%), followed by 51-60 years (25%). Only 12% are less than 40 years old. Most farmers have more than 15 years' experience (75%), with just 5% having less than 5 years' experience. Vegetable farm operations in Utah appear to be mostly a second job, with 48% of respondents reporting that they receive just a quarter of their annual income from the farm. Only 11% of farmers are full time.

The major challenges to producing vegetables in Utah that growers reported include weed management, weather conditions, insect problems, irrigation, and operation management challenges such as labor costs, supply, and marketing. Plant diseases and soil nutrition problems were also included as challenges near the bottom of the list.

Marketing Information

Most growers reported that they do not need to market or advertise their produce, as word of mouth is the most common way that people become customers. Customer loyalty is the second most common, while at a distant third, growers place newspaper or print ads. Very few reported using the internet for marketing, such as a farm website or social media (Facebook or Twitter, for example). This type of advertising could go a long way and be useful when trying to increase sales or establish a younger client base that will remain loyal in the long term.

In terms of how produce is sold, farm stand or a pick-your-own operation is the most popular format, followed a distant second and third by farmers markets and wholesale. The least amount of sales was through a CSA (community sponsored agriculture), restaurants, and local processing plants. CSA's are a growing trend in Utah, triple the amount from five years ago, and the National Resources Conservation Service reports that there are about 30 of these operations in the state (only 6 were included in this survey). The growth potential in small farms (less than 15 acres) and CSAs in Utah is high due to the high demand for local food and need for additional income.

Production Type and Use of IPM Practices

Most growers (75%) who responded to the survey classified themselves as managing their farm with conventional means, characterized by mechanization and the use of synthetic inputs such as chemical fertilizers and pesticides, with an emphasis on maximizing productivity and profitability. The remaining growers considered themselves organic (18%) or practitioners of integrated pest management (IPM, 17%). Organic growers emphasize ecological processes, biodiversity, and unique production cycles, and only use non-synthetic pesticides or fertilizers that are labeled for organic use. Growers that use IPM stress long-term prevention of pests and their damage by integrating a variety of management practices (biocontrol, habitat manipulation, resistant varieties, etc.) and use selective, biological, or low-toxicity pesticides when monitoring and pest thresholds require.

The thought in conducting the survey was that farmers who sell their produce face to face, and farms that operate in an urban environment, would be practicing IPM. The data showed, however, that how produce is sold and farm urbanization have no effect on whether a grower uses IPM, nor does farmer age or income. Farm size does have a relationship (where large farms mostly operate using conventional means while smaller farms consider themselves organic), as does farmer experience (where those with most experience use IPM, and those with least experience are organic).

This survey also addressed specific IPM practices for all growers and all production types (conventional, IPM, or organic). Growers were asked whether they performed any of the thirteen IPM practices listed in 2010, and the following are the most highly used: monitoring (69%), identify benecials when monitoring (35%), rotate pesticides (37%), rotate crops (79%), plant resistant varieties (37%), and use thresholds (32%). Respondents reported that they would be more likely to adopt these practices if costs were reduced (56%), and with greater market demand and more education (both 33%).

We found that 65% of operations used between 4 and 7 practices in 2010, and 23% used more than 8 practices. As expected, growers that classified themselves as IPM used the most practices, while the

conventional and organic growers used the fewest. In addition, middle and full time farmers use more IPM practices than part time growers, larger farms use more than smaller farms, and younger farmers use more practices than older farmers. Experience in farming, farm urbanization, and how the farm produce is sold did not have an effect on the number of IPM practices used in 2010.

Pests and Pest Management

As far as pesticide use, the majority of growers (64%) reported that their pesticide use has remained unchanged over the last 5 years. As for insecticides, organophosphates (Diazinon, Dimethoate, Imidan, Malathion, Orthene) were most commonly used in 2010, followed by pyrethroids (Asana, Danitol, Mustang, Warrior), and then oils. The most common fungicides used were broad spectrum (Bravo, Mancozeb, Terraclor, Thiram), followed by coppers and strobilurins (Cabrio, Flint, Pristine, Quadris, Reason). For weeds, pre-emergents (Atrazine, Dacthal, Dual, Curbit, Chateau) were most commonly used, followed by contact (glyphosate).

One of the goals of the USU IPM program is to reduce the use of organophosphates for insect control in favor of using more selective products that are safer on beneficial insects, water quality, and human health. We looked at whether farm size, income, farmer age, experience, urbanization, marketing strategy, or production type influenced the use of organophosphates, and found that none of these factors had an effect.

Pest monitoring is an important practice that helps growers stay on top of pest problems and avoid unnecessary sprays. A majority of respondents (81%) said that they monitored weekly for pests in 2010 and of those, 84% agree that it helps to reduce pesticide use. The larger and smaller farms monitor most regularly, while mid-sized farms (11-50 acres) monitor the least, and young farmers monitor more than older farmers. Farm income, farmer experience, farm urbanization, and how produce is sold all have no relationship as to whether monitoring occurs on the farm. Pest monitoring results was the primary reason growers used when determining whether to treat or not (66%) in 2010. Some growers (26%) used a calendar date to guide pesticide sprays, while a small minority (20%) used pesticide label recommendations.

Perceptions of Integrated Pest Management

When asked about their perceptions of IPM, most agreed that IPM improves worker safety (60%), reduces negative environmental impacts (61%), and improves the quality of produce (50%). A fewer percentage agreed that IPM improves relations with neighbors (35%), will increase profits (24%), or thought that it takes more effort (26%). Some (20%) were not interested in using IPM, while others (35%) do not use IPM due to lack of knowledge.

We compared a few of these IPM perceptions with farm and farmer characteristics to see if there were any relationships. When looking at lack of knowledge as an impediment to the use of IPM, we found that as expected, mostly it was conventional growers that were in agreement. In addition, younger growers and farmers growing 51-200 acres also reported that lack of knowledge prevents them from using IPM. Regarding the perception of IPM cost and whether using IPM creates a niche market, neither farm income, farm size, farmer age, nor farmer experience plays a role in how a grower feels about either perception. Most conventional growers were unsure of IPM costs, but felt that IPM creates a niche market. IPM

growers, on the other hand, felt that using IPM does cost less but has not created a niche market for them. As for interest in using IPM, farm income and farmer age and experience has no relationship, while most larger farms (more than 50 acres) have an interest in using IPM.

Crop Management

Proper soil management is very important to growing a healthy crop and optimizing inputs. Although soil tests can give a clear indication of nutrient deficiencies, only 35% of growers have their soil tested at least every other year, and 36% do not test their soil. Grower reported that they determine plant nutrient needs primarily by previous experience (45%), soil test recommendations (35%), or by guessing (19%). Fifty-two percent of them used an alternate nutrient source in 2010, most commonly animal manure, followed by composts and green manure.

Approximately 20% of the farms included in this survey use high tunnels or greenhouses in their operation. Most (85%) have up to three structures and use them to grow tomatoes, cucumbers, lettuce, and to start seeds.

Outreach and Research Needs

The primary hurdle for new growers is finding relevant educational resources on pest management and other farm practices. To get a better understanding of what growers want to learn more about and research needs, the survey asked a series of questions on their preference for receiving management information. USU Extension specialists were their primary source of verbal information, and a vegetable production guide was ranked first as a source of written information (53%). USU Extension fact sheets (46%), a website (34%), and workshops (29%) were also ranked as important. In workshops or training, growers reported that they would like to learn more about pest identification, irrigation, and IPM in general.

Growers were asked to write out specific requests for USU specialists to address with research or outreach, and the top topics were fertilization (14 requests), evaluation of new chemicals (8 requests), general pest control (7 requests), irrigation (5 requests), and organic methods (4 requests).