# Pilot Survey Results to Prioritize Research Needs in the Watermelon Industry

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It is useful for researchers of any commodity to occasionally survey their clientele to monitor for any new developments and make sure their research is focused on major problems. A discussion at the Watermelon Research and Development Working Group meeting in Asheville, NC (2006) led to the development of a survey to solicit responses from a cross section of the watermelon industry. The survey was a list of closed-ended questions with ordered response categories so that respondents would be limited to problems that we felt could be addressed by research. Write-in space is provided in case someone felt that a major issue was left out. The original survey was sent out to watermelon breeders in the private industry, and to growers attending the Texas Watermelon Association Annual Meeting in January, 2007. The purpose of this initial survey was to sample a small subset of the industry, evaluate the results and decide if the survey was useful or whether it could be modified to create a useful survey for a nationwide evaluation.

The results were compiled by inverting the rankings by each respondent to where a ranking of 1 was assigned a value of 5, and ranking of 2 was assigned a value of 4 and so on so that the individual rankings could be added to provide an overall ranking. The results from the seed companies and growers were calculated separately, and because there were more growers responding than seed company representatives, the values from each group were weighted to provide equal representation from each group for the overall ranking.

The results from the seed company respondents separated into three groups (Table 1). The top priority was clearly gummy stem blight, since this one priority had more than twice as many points as any other topic. The second tier of priorities included molecular markers, powdery mildew, fruit quality (including hollow-heart and hard seed coats), and grafting/rootstocks. The third tier included watermelon fruit blotch, Fusarium wilt, post-harvest fruit quality (including fresh cut), triploid production, rootknot nematodes, squash vein yellowing virus, phytonutrients, Anthracnose, vine decline and whiteflies.

The grower respondents were a little more diverse with their responses compared to the seed company respondents. Grafting/ rootstocks was the top priority in need of research investment according to this group of respondents. Fusarium wilt was also a top priority for this group, followed by gummy stem blight, whiteflies, triploid production, and watermelon fruit blotch. Twelve other research topics received a small number of votes by this group which are listed in Table 1.

The weighted averages revealed that gummy stem blight was the number one problem in need of research by the total group of respondents, while grafting/rootstocks was a close second. The next 5 topics included Fusarium wilt, powdery mildew, fruit quality, molecular markers, and watermelon fruit blotch.

While this survey was limited to 5 major seed companies with watermelon breeding programs and only included growers attending the Texas Watermelon Association meeting in 2007, it still provides meaningful insight as to where public researchers should be committing a portion of their research to address needs of the watermelon industry in the U.S.

The original survey has been modified slightly by adding a heading to classify respondents and a few of the categories have been combined, resulting in the current version (Appendix 1). We propose to send this survey to all grower groups, public research and extension programs working on watermelon, as well as private companies working on watermelon. Suggestions on modifying the survey are welcome, and should be sent to Steve King at srking@tamu.edu. Current plans are to finalize the survey and send it out in the fall of 2007.

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Table 1. Results of the research needs survey.

| Topic | Total Points[1] | | | Ranking | | |
|---|---|---|---|---|---|---|
| | Seed Co. | Grower | Weighted Ave.[2] | Seed Co. | Grower | Weighted Ave.[2] |
| Gummy stem blight | 21 | 18 | 93 | 1 | 3 | 1 |
| Grafting/rootstocks | 7 | 36 | 75 | 5 | 1 | 2 |
| Fusarium wilt | 2 | 23 | 40 | 10 | 2 | 3 |
| Powdery mildew | 9 | 7 | 39 | 3 | 8 | 4 |
| Fruit quality[3] | 8 | 5 | 33 | 4 | 10 | 5 |
| Molecular markers | 10 | 0 | 32 | 2 | 18 | 6 |
| Watermelon fruit blotch | 4 | 10 | 27 | 6 | 6 | 7 |
| White flies | 0 | 16 | 23 | 13 | 4 | 8 |
| Triploid production | 2 | 11 | 22 | 10 | 5 | 9 |
| Post harvest fruit quality[4] | 4 | 4 | 19 | 6 | 12 | 10 |
| Rootknot nematodes | 3 | 3 | 14 | 8 | 14 | 11 |
| Phytonutrients | 1 | 7 | 13 | 12 | 8 | 12 |
| Squash vein yellowing virus | 3 | 2 | 13 | 8 | 15 | 12 |
| Anthracnose | 0 | 8 | 12 | 13 | 7 | 14 |
| White fly gemini virus | 0 | 5 | 7 | 13 | 10 | 15 |
| Watermelon vine decline | 1 | 2 | 6 | 12 | 15 | 16 |
| Leaf miners | 0 | 4 | 6 | 13 | 12 | 16 |
| Seed transmission of diseases | 0 | 3 | 4 | 13 | 14 | 18 |
| Downy mildew | 0 | 1 | 1 | 13 | 17 | 19 |
| Phytopthera capsii | 0 | 0 | 0 | 13 | 18 | 20 |
| Spider mites | 0 | 0 | 0 | 13 | 18 | 20 |

[1]Total points were calculated by inverting the 1 to 5 rating from each respondent and adding the points (e.g. a 1 rating received 5 points and a 5 rating received 1 point).
[2]Weighted averages were calculated by giving each group 50% of the total.
[3]Includes hollow-heart, hard seed coats in seedless rind necrosis and other factors that can be affected pre-harvest.
[4]Includes fresh cut, shelf-life, shipability and other factors that are affected post-harvest

Appendix 1. Copy of the proposed survey

**Watermelon Research Needs Survey**

Please Check:

_____Grower
_____Shipper
_____Retailer
_____Processor
_____Public Researcher
_____Industry Researcher

If Grower, Please Check (Optional):

Number of Acres Farmed:
_____Less than 100 acres
_____100 to 500 acres
_____More than 500 acres

Areas where you operate (check all that apply):

_____Southeast (FL, GA, SC, etc…)
_____Southwest (TX, NM, etc…)
_____Midwest (OK, MO, AR, IN, etc…)
_____West (CA, AZ, NM, etc…)
_____Mexico
_____Other:_____

Please Rank the top 5 topics that you think should be addressed by research (1 to 5 with 1 = top priority and 5 being lower priority):

| **Diseases:** | **Insects**: |
|---|---|
| _____Fusarium wilt | _____Whiteflies |
| _____Why are seedless more susceptible to Fusarium? | _____Spider mites |
| _____Watermelon vine decline (IL vine decline) | _____Leaf miners |
| _____Squash vein yellowing virus (FL vine decline) | _____Other insect _____ |
| _____White fly gemini virus | |
| _____Gummy stem blight | **Breeding/Cultural:** |
| _____Powdery mildew | _____Grafting/rootstocks |
| _____Downy mildew | _____Phytonutrients (health benefits) |
| _____Watermelon fruit blotch | _____Easier triploid production |
| _____Transmission of WFB by rootstocks | _____Different methods of seedless production |
| _____Anthracnose | _____Pre-harvest fruit quality (hollow heart, hard seed coats, etc…) |
| _____Seed transmission of diseases | _____Post-harvest fruit quality (shelf-life, fresh cut, etc…) |
| _____Phytothera capsii | _____Molecular markers |
| _____Rootknot nematodes | _____Molecular map |
| _____Fusarium wilt differentials | |
| | **Rank Other Problems Not Listed:** |
| _____Other Disease:_____ | |
| | |

Any other comments related to research needs (use back of form if necessary):