

**Project Title:** Field Monitoring of the Cucurbit Yellow Stunting Disorder Virus (CYSDV) and Trapping of Virus Vectors, *Bemisia tabaci* (Genn.) in Maricopa County

**Project Leader:** Erin Taylor, Area Assistant Agent, Field Crops

**Project Team:** New hire (Research Specialist, Maricopa County, monitoring and sampling), Dr. Judith Brown (Virologist, sample analysis), Dr. Kurt Nolte (Extension Agent, Yuma County, mapping of virus and vectors), Kevin Rice (Area Assistant Agent, Pinal County, sampling and monitoring)

**Location:** Maricopa County (Erin Taylor and Research Technician), Pinal County (Kevin Rice), Yuma County (Dr. Kurt Nolte)

Monitoring for CYSDV began 22 April 2008 in Maricopa County in watermelon fields. Two fields were located on the Salt River Pima-Maricopa Indian Community in the east valley. Four fields were located in the far west valley near Cotton Lane from Camelback Road to Greenway Road. Whitefly populations were monitored in these fields using double-sided, yellow sticky traps mounted to 24" wooden stakes. Four traps were placed in each field and were replaced each week. Whitefly adults were counted on each trap and the numbers recorded.

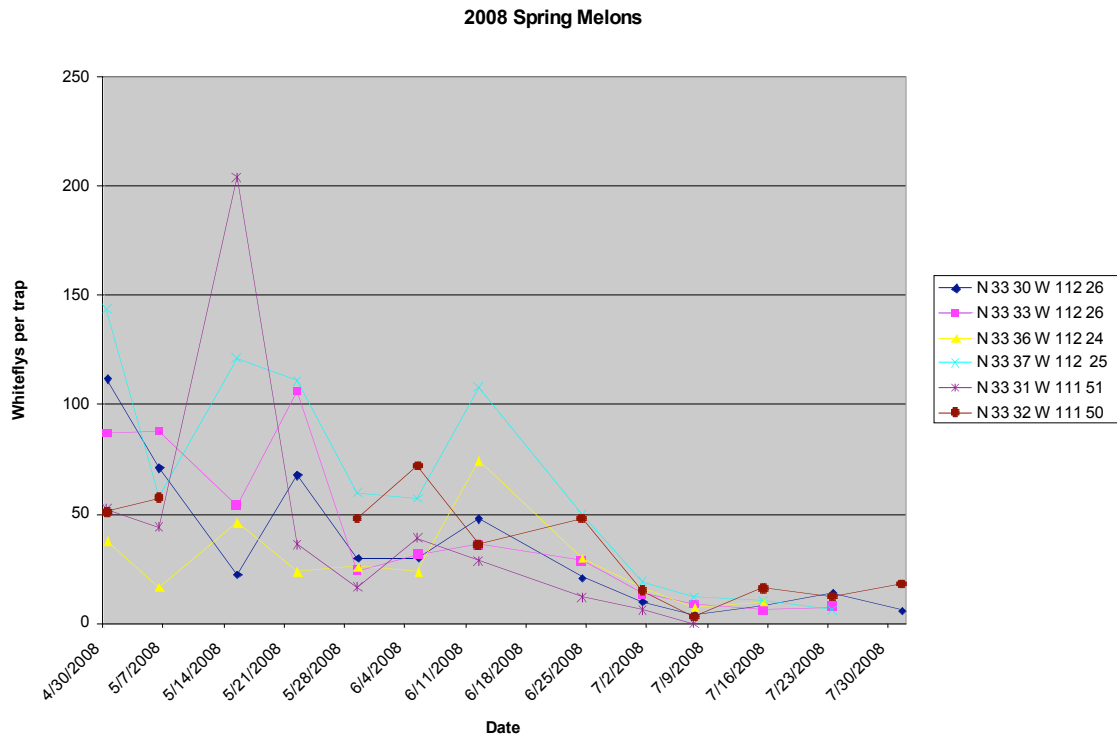


Figure 1. Whitefly populations in spring melons.

Watermelon plants were observed each week for symptoms of CYSDV. First suspicious symptoms, particularly leaf yellowing was observed on 12 June 2008. Tissue samples

that included older, symptomatic leaves and younger, asymptomatic leaves as well as connecting stem tissue were collected, placed in a cooler with an ice pack and shipped to the Brown lab in Tucson for CYSDV testing. All melons were plowed down by 31 July 2008, concluding the monitoring for those fields. Weedy species from these fields were also sent for analysis, including groundcherry (*Physalis wrightii*) and velvetleaf (*Abutilon theophrastii*). Of the plants sent to Tucson for analysis, both melons and weeds, two plants tested positive, one melon sampled 17 July 2008 and the velvetleaf, sampled 14 July 2008.

Another farm was identified in the west valley growing zucchini squash, Gallia melons, Armenian cucumbers and okra. All cucurbits at this farm exhibited symptoms of CYSDV, including both yellowing of older leaves and stunting. Tissue samples were taken from symptomatic plants and sent to Tucson for analysis. Armenian cucumbers and Gallia melons both tested positive. It was noted that an increase in white fly population began in mid-July. This population was seen on the okra, however no okra tested positive for the virus.

Sampling of weed and landscape plants in the west valley began 07 August 2008. A variety of woody and herbaceous plants were collected to include older and younger leaves as well as some root tissue, when possible. Follows is a list of plant species sampled and sent to Tucson for analysis:

Plant	Crop (C), Weed (W) or Landscape (L)	CYSDV status positive (+), negative (-) or results pending (P)
Saltcedar, <i>Tamarix sp.</i>	L, W	-
Palmer amaranth, <i>Amaranthus palmeri</i>	W	-
Puncturevine, <i>Tribulus terrestris</i>	W	-
White amaranth, <i>Amaranthus alba</i>	W	-
Red Spiderling, <i>Boerhaavia coccinea</i>	W	+
Annual sunflower, <i>Helianthus annuus</i>	W	-
Goosefoot, <i>Chenopodium sp.</i>	W	+
Common mallow, <i>Malva parviflora</i>	W	+
Globemallow, <i>Sphaeralcea ambigua</i>	W	-
Floating waterprimrose, <i>Ludwigia peploides</i>	W	P
Purslane, <i>Portulaca oleracea</i>	W,C	-
White mulberry, <i>Morus</i>	L	+

<i>alba</i>		
European olive, <i>Olea europaea</i>	L	+
Red hibiscus, <i>Hibiscus rosa-sinensis</i>	L	+
Oleander, <i>Nerium oleander</i>	L	-
Edible fig, <i>Ficus carica</i>	L, C	P
Hollyhock, <i>Althaea rosea</i>	L	P
Cultivated devil's claw, <i>Proboscidea sp.</i>	L	P
Watermelon	C	+
Galia melons	C	+
Armenian cucumbers	C	+
“Heirloom” squash	C	P
Zucchini squash	C	+
Okra	C	-

Table 1. Plant species sampled, use as crop, landscape plant or weed and CYSDV results. Not all results have been returned from the Brown lab at the time of this writing.

All positive samples were found within four locations. Most of the samples that tested positive for CYSDV came from a single farm and included crop plants (melons, squash and cucumbers), weeds (malva and goosefoot) and landscape plants (olive, mulberry and hibiscus).

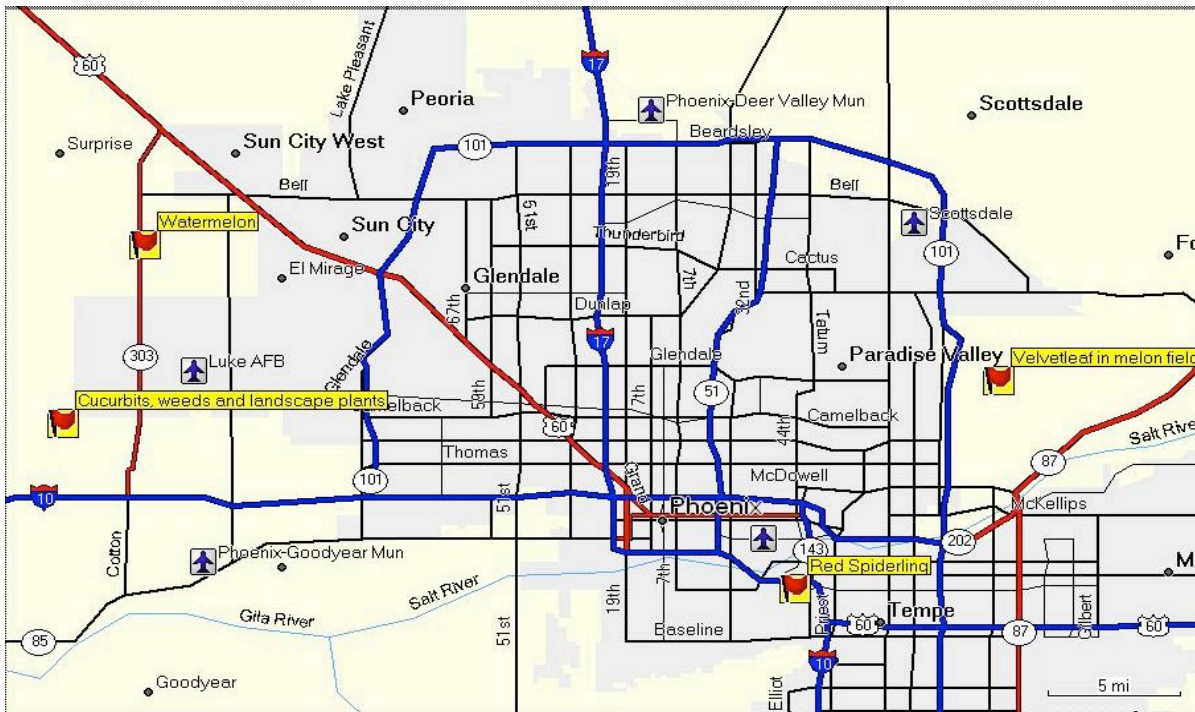


Figure 2. Locations of positive plant samples for CYSDV. Red flags indicate positive fields.

Master gardener training sessions were held on three separate occasions, providing information on how to properly collect and submit suspicious plant samples for analysis. Master gardener diagnostic meetings were attended bimonthly to intercept homeowner submissions that were candidates for CYSDV testing. A total of three samples were taken from homeowners that showed symptoms of the virus, all three samples came back negative for the virus.

Melon growers and pest control advisors in Maricopa County were notified of positive results and encouraged to contact Extension if any symptoms appeared in their fields. Information related to CYSDV was shared with these professionals on 16 July 2008 at a melon losses meeting in Maricopa County.

A meeting for the agricultural industry is planned for March 2009 to share new information regarding CYSDV. A bulletin for agriculture clientele in Central Arizona is in the planning stages and will be distributed before the 2009 growing season.

Dr. Judith Brown's lab provided all the diagnostic testing for the samples. Lab technician Sarah Brown provided an open line of communication for samples and results. Dr. Kurt Nolte provided information on creating a map. The GPS/GIS map is in a working stage and was created for agent Taylor and research specialist Young for mapping and monitoring of fields. Agent Rice provided some information for Pinal county, however Rice vacated his position during the summer of 2008 and no further information was collected from agent Rice.