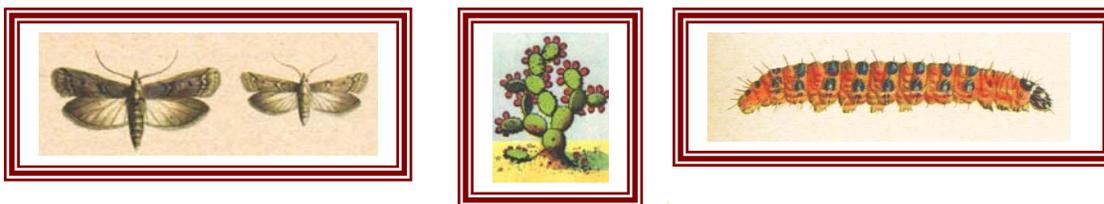


Cactoblastis cactorum Activities Report for August 2006



For past reports and more information, see the PPQ Cactus Moth website at:
http://www.aphis.usda.gov/ppq/ep/emerging_pests/cactoblastis/index.html

Joel Floyd, USDA-APHIS-PPQ-EDP, Riverdale, MD

MEXICAN DETECTION. On August 11 a detection of *C. cactorum*, was reported on the island of Isla Mujeres, Quintana Roo by the Plant Health Directorate (DGSV) of the Secretaría de Agricultura, Ganadería, Desarrollo, Rural, Pesca y Alimentación (SAGARPA) as part of an ongoing national monitoring program for the detection of this pest. The infestation was found August 1 on stands of *Opuntia* spp. covering approximately 1 kilometer by 300 meters on the south part of the island. Residential and tourist areas on the northern part of the island are being surveyed. In addition, the 14 fixed survey sites on the mainland coast of Quintana Roo continue to show no infestation. Commercial *Opuntia* production areas on the mainland of Quintana Roo have shown no infestations. Surveys in the island of Cozumel have had no detections and further surveys will be conducted in nearby islands. SAGARPA-DSGV is working with the Mexican environmental protection agency (Secretaría del Medio Ambiente y Recursos Naturales - SEMARNAT), and nongovernmental organizations, to explore survey options in other islands, many of which are national parks.

Isla Mujeres (7-8 kilometers in length) was surveyed last year with no detections reported. The area was heavily impacted by hurricanes that originated in the Caribbean in late 2005, which SAGARPA-DSGV theorizes may been a factor in the moth's dispersal to the Mexican island. Cuba is approximately 200 kilometers from Isla Mujeres and *C. cactorum* is present in Cuba. After the initial larval find, egg sticks larvae and pupae were found infesting *Opuntia stricta* and *O. dilleni*. SAGARPA has dispatched a team to Isla Mujeres to conduct delimiting surveys and begin host removal and destruction.

As part of the USDA-SAGARPA Cooperative Cactus Moth Program, SAGARPA-DSGV has requested assistance from USDA to provide technical advice in clean-up activities, training in identification of adults, trap deployment and service. Plans are underway to send USDA-ARS scientists Stephen Hight and Jim Carpenter to Isla Mujeres, to provide assistance and explore options for applying the sterile insect technique. In addition, SAGARPA-DSGV is planning on sending an entomologist to the US to receive training on adult identification methods for screening trap catches from experimental lure-baited traps.

There is no reason to believe commercial exports of *Opuntia* fruit (tunas) and pads (cladodes, nopales) to the US are at risk for introducing this pest since the main areas for export production are near Mexico City, an area that is monitored regularly and some distance from Quintana Roo.

SURVEY. Richard Brown identified moths from traps sent from Galveston, TX (8 traps, APHIS), Padre Island National Seashore (5, NPS), Grand Bay NERR (8, MS DMR), MS Jackson Co. (4, APHIS), Puerto Rico (2, APHIS), Charleston, SC (16, APHIS), Tucson, AZ (12, Arizona Department of Agriculture). Traps from Puerto Rico and South Carolina were positive for cactus moth from previously known areas of *C. cactorum* distribution.

REGULATION. The two regulatory work-plans in the APHIS Regulatory Analysis and Development staff has completed their review and the draft dockets are ready for the legal review by the Office of General Council. A summary of the existing regulations and the changes under consideration can be found on the PPQ Cactus moth pest alert website.

OUTREACH. An article by Laurie Kessler appeared in two southern California publications, The Southwest Voice and the Northwest Voice, which can be seen at: http://www.swvoice.com/home/viewarticle.php?cat_id=180&post=20158
The ARS magazine, Agriculture research published an article on the cactus moth work of Jim Carpenter and Stephen Hight:
<http://www.ars.usda.gov/is/AR/archive/sep06/moth0906.htm>

PPQ FIELD ACTIVITY. Maurice Duffel continued his TDY from the Citrus Canker program along with other program workers, Robin Dunivin and Donald Smith to work with Stephen Hight in Ft. Morgan and Bon Secour making checking traps, replacing lure, and making sterile releases. They had help from Rachael Eustis of the US Fish & Wildlife Service. Larval damage was not as evident during August but Maurice and his crew removed a total of 423 egg-sticks helping to reduce the overall population significantly. Toward the end of the month, damage began appearing and they removed and destroyed over 60 lbs. of infested host material. Maurice continues to get the office equipped with computer and telephone hook-up and purchasing furniture. Craig Hinton, of the CPHST Gulfport Lab has continued to help Stephen Hight with trapping and host removal at Dauphin Island and Little Dauphin Island, Alabama.

TECHNICAL LIAISON. Stephanie Bloem set up, facilitated, and translated conference calls with SAGARPA representatives and ARS regarding the Mexican *Cactoblastis* detection. She also collected and compiled all reports for August program activities. Report was translated to Spanish for distribution to collaborators at SAGARPA/SENASICA.

Stephen Hight, USDA-ARS-CMAVE Tallahassee, FL
Jim Carpenter, USDA-ARS-CPMRU, Tifton, GA

SIT VALIDATION. The SIT verification and implementation program continued at Dauphin Island, Little Dauphin Island, and Fort Morgan (Alabama). Flight activity of *C. cactorum* at Pensacola Beach (Florida) continues to be monitored. Traps were serviced at all four sites at least once per week during August. The summer flight period ended in mid-late August at all sites. Total and average monthly trap catch of wild *C. cactorum* for each site is presented in Table 1. Releases of sterile *C. cactorum* were made only at Dauphin Island during August (Table 2). The moth population at Ft. Morgan remained strong, despite sanitation efforts conducted by APHIS. Releases of sterile moths are planned for all three sites during the fall flight period, which is expected to begin in late September. Weekly recapture information at Ft. Morgan is presented in Table 3 and Figs. 1 and 2.

Table 1. Wild *C. cactorum* (Cc) caught in traps during August 2006 (1 – 31 August).

Location	Dauphin Is., AL	Little Dauphin Is., AL	Ft. Morgan, AL	Pensacola Beach, FL
# Traps	53	5	16	70
# Wild Cc	1	0	83	228

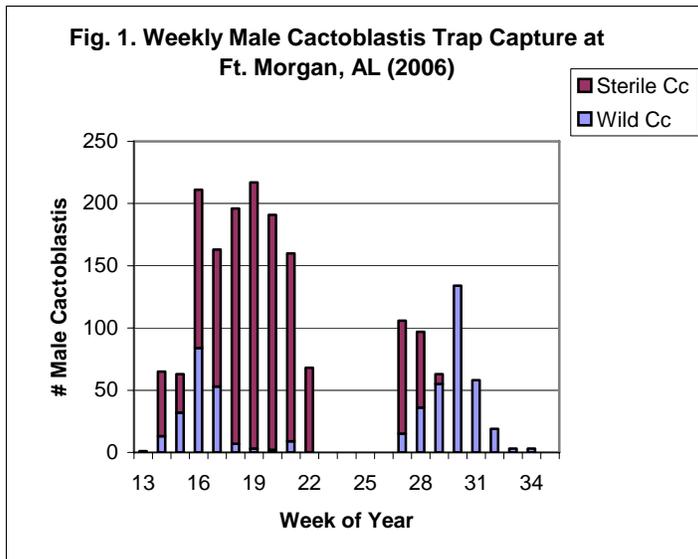
Table 2. August release totals of sterile *Cactoblastis cactorum* made at one Alabama site.

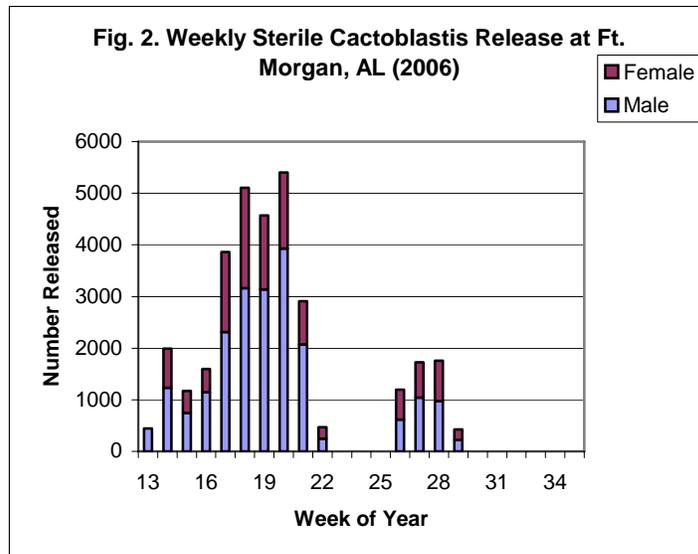
LOCATION	NUMBER OF STERILE Cc RELEASED		
	♂	♀	TOTAL
Ft. Morgan, AL	0	0	0
Little Dauphin Island, AL	0	0	0
Dauphin Island, AL	705	465	1170

Table 3. Weekly male *Cactoblastis cactorum* (Cc) trap capture, number of male and female sterile moths released, and percent sterile males released that were recaptured at Ft. Morgan, AL, February-Aug. 2006.

MONTH	WEEK OF YEAR	Cc CAPTURED		STERILE Cc RELEASED		% STERILE ♂ Cc RECAPTURED
		WILD ♂ Cc	STERILE ♂ Cc	♂	♀	
February	8	0	--	--	--	--
March	12	0	--	--	--	--
March	13	1	0	443	0	--
April	14	13	52	1236	758	3.1
April	15	32	31	747	422	4.2
April	16	84	127	1144	456	11.1
April	17	52	110	2312	1547	1.5
May	18	7	189	3163	1942	6.0
May	19	3	214	3139	1433	6.8
May	20	2	189	3925	1475	4.8
May	21	9	151	2073	836	7.3

June	22	0	68	245	226	27.8
June	23	0	0	0	0	0
June	24	0	0	0	0	0
June	25	0	0	0	0	0
June	26	0	0	616	578	0
July	27	15	91	1044	680	5.5
July	28	36	61	975	782	6.3
July	29	55	8	220	206	3.6
July	30	134	0	0	0	0
August	31	58	0	0	0	0
August	32	19	0	0	0	0
August	33	3	0	0	0	0
August	34	3	0	0	0	0
August	35	0	0	0	0	0





COLONY MAINTENANCE, BUILD-UP AND MASS-REARING. Cladode Rearing. 93,700 eggs were collected and 146,530 larvae were set up during August for rearing *C. cactorum* on cladodes. Approximately 39,400 pupae were collected, 200 which were shipped to USDA, ARS, SHRS for pheromone research and 2,400 which were shipped to cooperators in Zurich for flight ability studies during August. Moth emergence for August was approximately 29,550.

Artificial Diet Rearing. Trials were initiated to investigate some of the suggestions and ideas generated during the *C. cactorum* rearing workshop held in Tifton, GA, 18-19 July 2006. The major focus of these trials was to evaluate using a lower pH to obtain better activity from the anti-microbial agents in the diets. Additional diet trials will be initiated during September.

S. Dorn, M. Sarvary, ETH Zurich, Switzerland

Pupal shipments sent from Tifton, GA on Thursday typically arrive in Zurich on Monday and moths are set up immediately in growth chambers. HOBO data loggers indicate that the pupae travel within a 14-28°C temperature range. Handling methods were adopted from the Carpenter lab and by using this method the eclosion rate is above 70% and the percentage of moths emerging with crumpled wings is below 5%. Moths emerging >10 days after the shipment arrives seem to be weaker and die within a short period of time. As such, shipments are now discarded on the 10th day. The flight mill and actograph have now been placed in separate growth chambers and computerized light systems have been installed. This will allow both flight chambers to be on the same photoperiod and the flight mill and actograph tests to be conducted simultaneously. Initial efforts have focused on adapting flight mill and actograph methodologies to the cactus moth, which is larger than the moths previously examined in this laboratory. Moths are typically tethered by gluing the flight mill arm to the ventral side of the thorax. This did not work with the cactus moth because of their weight and the strength of their flight. The moths

are currently being tethered with good success by gluing a paper strip to the dorsal side of the abdomen and attaching the paper strip to the flight mill arm with a small insect pin. Also, the glass vials used for *Cydia* in the actograph were too small for the cactus moth. After measuring the width of the IR beam at the receiver and testing a variety of vial sizes, it was determined that a vial 40 mm tall and 45 mm in diameter would allow the moths room to “fly” and the movement to be captured by the light beam.

R. Heath, N. Epsky, USDA-ARS-SHRS Laboratory, Miami, Florida

Accomplishments and activities. There were no shipments of moths from Tifton for research activities in August. Therefore, we took this opportunity to shut down the GC-MS for cleanup and repairs. A shipment of pupae arrived from Tifton the last week of August for September research activities.