



PPQ 2022 Annual Report

Optimizing Pest Management: Cotton Pests

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Introduction

The Cotton Pests Program of the U.S. Department of Agriculture’s Plant Protection and Quarantine (PPQ) program works with growers, the cotton industry, States, and Mexico to eradicate the boll weevil (BW) and pink bollworm (PBW) from all cotton-producing areas of the United States and northern Mexico. Collectively, the BW and PBW are the most destructive pests of cotton, worldwide. The Cotton Pests Program also maintains preparedness capabilities to address other cotton pests that could enter the United States. PPQ provides national coordination, operational oversight, and technology development (such as sterile moth production for PBW eradication), while program partners have provided more than two-thirds of the funding for the BW eradication effort and most of the operational funds for PBW eradication. PPQ also provides technical advice on trapping and treatment protocols to its partners in Mexico for their eradication efforts.

Boll Weevil

The boll weevil (BW) has cost cotton growers more than \$15 billion since it entered the United States in the late 19th century (National Cotton Council of America, 2021). PPQ began the initial BW eradication program along the Virginia-North Carolina border in the early 1980s. The BW eradication effort involves mapping cotton fields, using pheromone traps to evaluate weevil presence, and applying pesticides. Once BW is eradicated from an area, cotton growers rely less on insecticides, thus reducing their production costs. Over the course of the eradication efforts, the program has increased these growers' global competitiveness, primarily through reduced production costs and increasing yields.

To date, PPQ and cooperators have eradicated BW from 99 percent of the 11.2 million acres of U.S. cotton (Acreage Report, National Agricultural Statistics Service, 2021). The Lower Rio Grande Valley (LRGV) is the last zone within the United States where the pest persists. BW populations in the neighboring Mexican cotton-producing State of Tamaulipas impact eradication efforts in the LRGV. Therefore, PPQ and its cooperators in Mexico's National Service for Agrifood Health, Safety and Quality (SENASICA) and the Texas Boll Weevil Eradication Foundation (TX-BWEF) are working to eradicate BW from the Mexican state of Tamaulipas.

PPQ continued virtual monthly meetings with SENASICA to maintain open communication about BW eradication successes and challenges throughout the 2022 growing season. PPQ also engaged its international counterparts in Mexico City to expand its engagement with SENASICA. PPQ will continue engaging SENASICA at multiple levels to ensure growers adhere to eradication and quality control protocols, as well as ensure growers adhere to defoliation, harvest, and stalk-destruction deadlines set by the BW eradication program.

In addition to monthly meetings with SENASICA in FY 2022, cooperators from the United States and Mexico gathered for their annual meeting to review progress and amend the BW Eradication Operational Plan for the 2022 growing season. Amendments were adopted to enhance quality controls for technician training, BW monitoring, data integrity, and communication. These mutually agreed upon amendments will ensure accurate and timely treatment of areas where BW captures are present. These amendments refined the practices adopted in FY 2021 which emphasized early-season treatments followed by aggressive localized aerial treatments triggered by detection of a single weevil.

In FY 2022, PPQ continued its support for the BW Eradication Program in Tamaulipas, Mexico, through its agreement with the North American Plant Protection Organization (NAPPO) which funds ultra-low volume malathion and aerial treatment expenses. Cooperators from TX-BWEP provided technical training and assistance to SENASICA and growers in Tamaulipas to implement the rigorous quality control program protocols. This includes providing technical assistance through the smart device application that enables employees and TX-BWEP managers to monitor trap deployment, trap servicing, and treatment activities in real time.

Environmental conditions in the LRGV and Northern Tamaulipas present PPQ and its cooperators with challenges that interfere with BW monitoring and treatments. Unseasonal freezing in FY 2021 delayed cotton planting by two weeks in the LRGV and Tamaulipas areas. By contrast, extended heat and drought conditions in FY 2022 caused growers to destroy some of their cotton crop and shorten the growing season. BW captures in Tamaulipas remained low throughout the FY 2022 growing season but captures in LRGV spiked in late August through mid-September.

Captures in Tamaulipas decreased by 96 percent, totaling 404 by October 2022, compared with 11,993 BW captures by the same time in 2021. Cooperators in Tamaulipas treated 447,026 acres in 2022 compared with 558,212 treated acres in 2021. Captures in LRGV increased by 34 percent, totaling 4,033 by October 2022, compared with 3,029 BW captures by the same time in 2021. Approximately 93 percent of BW captures in the LRGV originated from a single 62-acre field from August 29 through September 16 when the field was harvested and plowed down. The field represented only 0.00054 percent of the 182,213 acres of planted cotton in the LRGV. Cooperators needed to treat only 447,047 acres in the LRGV, compared with 753,505 that needed treatment at the same time the prior year.

PPQ will continue partnering with the U.S. cotton industry to reduce the BW population in the LRGV and to conduct BW surveillance efforts for all U.S. cotton production areas in FY 2023. PPQ will also continue to partner with SENASICA's Tamaulipas BW Eradication Program to provide technical assistance and funding for their parallel program to the LRGV program. PPQ is committed to monitoring BW to ensure the detection of any reintroductions quickly, and to work toward successful eradication of BW in the United States in the coming years.

Pink Bollworm

In the United States, although the volume of acreage planted with cotton varies from year to year, the PBW commonly caused cotton losses of 20 percent or more in affected areas. Since the PBW control program began in 1967, PPQ and cooperative program partners have eradicated the PBW from Southern California, Arizona, large areas of New Mexico, and the El Paso/Trans Pecos region of Texas. On September 26, 2018, PPQ issued a Federal Order releasing Arizona, California, New Mexico, and Texas from the PBW quarantine. On October 19, 2018, PPQ, in conjunction with industry partners, officially

announced the successful eradication of PBW from all commercial cotton-producing areas in the continental United States.

In FY 2018, Florida added a PBW quarantine for an area in the Everglades where a wild PBW population has persisted for the last 80 years and appears to only be active in wild cotton. As a result, PPQ, along with the Florida Department of Agriculture and Consumer Services and the Florida cotton industry began surveying the perimeter of the commercial cotton area in the northern part of the State and the adjacent okra fields in the city of Homestead, to ensure that PBW has not spread. In FY 2022, PPQ continued to survey these areas in Florida to ensure that isolated PBW populations in southern Florida do not move into the commercial cotton production areas north of the Everglades. These surveys will continue in FY 2023.