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 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 12.2 million acres of U.S. cotton (Acreage Report, National Agricultural Statistics Service, 2020). The Lower Rio Grande Valley (LRGV) is the last zone within the United States where the pest persists. The LRGV is impacted by the neighboring Mexican cotton producing State of Tamaulipas. In FY 2021, PPQ continued to work with partners in overcoming program challenges, which include delayed planting due to freezing temperatures, volatile weather systems, and volunteer cotton capable of harboring undetected BW. To assist the Tamaulipas BW Eradication Program, the Agency, along with the United States and Mexican cotton industries, continued working together to eradicate BW from Tamaulipas by funding ultra-low volume malathion and aerial treatment expenses. The Texas Boll Weevil Eradication Foundation (TX-BWEF) also continued providing technical assistance to Tamaulipas through use of their smart device application for monitoring trapping and treatment activities. Tamaulipas employees running this application on their smart phones allows TX-BWEF managers to monitor trap deployment, trap servicing, and treatment activities in real time.
In previous years, PPQ established a meeting schedule, between the month of October through April, with Mexico’s National Service for Agrifood Health, Safety and Quality (SENASICA) to discuss the boll weevil program in Tamaulipas. In FY 2020, organizational changes in SENASICA, restrictions on international travel for Mexican government officials, and the COVID-19 pandemic affected this schedule. In response, PPQ began hosting monthly virtual meetings with SENASICA to continue discussing the program and its efforts. In FY 2021, the continuation of these virtual meetings has fostered dialog among participants that addressed and resolved problems as they occurred during the 2021 growing season. As a result, in FY 2021, SENASICA increased its involvement with grower groups in Mexico to ensure deadlines, which play a significant role towards BW eradication, for harvest and plow down.

In FY 2021, unseasonal freezing in February delayed cotton planting by two weeks in the LRGV and Tamaulipas areas. Cooperators in both the United States and Mexico executed a revised operational plan that placed greater emphasis on early-season treatments and maintained aggressive localized aerial treatments triggered by detection of a single weevil. Although the freezing, coupled with the early-season applications, killed emergent BW, heavy rains in June and July obstructed access to traps and delayed aerial treatments. This allowed for some reproductive BW pockets to establish themselves. In addition, growers in Tamaulipas planted 32 percent more cotton in 2021, compared with 2020, requiring significant increases in BW monitoring and treatment. BW captures in both LRGV and Tamaulipas spiked throughout August and September, with Tamaulipas capturing near or above 1,000 BWs for seven consecutive weeks. Overall, BW captures decreased by 91 percent in LRGV totaling 3,029, compared with 34,787 at the same time in 2020. By October 2021, cooperators treated 753,505 acres in the LRGV, compared with 1,255,294 treated at the same time the prior year. In Tamaulipas, BW captures decreased by 61 percent to 10,060, compared with 26,017 at the same time the prior year. By
October 2021, cooperators treated 558,212 acres in Tamaulipas, compared with 444,324 treated by 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 2022. 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 any of 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 2021, 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 2022.