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MANAGING THE SPREAD OF INVASIVE WEEDS

ARS is a global leader in limiting the spread of invasive species, with more than 12 laboratories in the United States and overseas facilitating the discovery and safety testing of new biological control agents. Globally, invasive weeds are the single largest and most damaging group of invasive species, costing an estimated $137 billion per year. On western Federal lands alone, the spread of invasive weeds is estimated at 2,300 acres per day. The following FY 2019 accomplishments illustrate ARS successes in limiting and recovering from the spread of invasive species.

New biological control agent for Brazilian pepper tree. Brazilian pepper tree originated in South America and then became one of the most widespread and destructive invasive species in the Florida Everglades. In July 2019, ARS scientists in Fort Lauderdale, Florida, released the first biological control agent for Brazilian pepper tree in the continental United States. It is a leaf-feeding thrips that reduces the growth and reproduction of this noxious weed. Research has shown that thrips fed under greenhouse conditions can reduce Brazilian pepper seedling growth by 80 percent. Since 2005, researchers at the Foundation for the Study of Invasive Species (FuEDEI) have collaborated on the project by conducting exploratory surveys and host range studies of the thrips in South America.

Reducing an invasive weed in the cattle fever tick quarantine zone. The giant reed is an invasive weed in the cattle fever tick Permanent Quarantine Zone, where it clogs portions of the Rio Grande River, reduces border visibility, and provides ideal habitat for southern cattle fever ticks. Two biological control agents of the giant reed, the arundo wasp and the arundo scale, were released in 2009 and 2010, respectively. Nine years after the release of the scale, ARS scientists in Kerrville, Texas, documented 55 percent less aboveground biomass of giant reed stands in areas where both the arundo wasp and scale were used as a biocontrol agent compared with areas where the wasp alone was used.

Kudzu invasion and impact will expand northward with climate change. Kudzu, an invasive group of vines, currently infests nearly 8 million acres in the United States, much of that in commercially owned forests. Treatment costs often exceed the economic value of the timber harvest. Kudzu is a carrier of Asian soybean rust, a fungus that can damage soybeans. ARS scientists in Beltsville, Maryland, and university partners found that kudzu has a greater potential to migrate northward as temperatures rise, and that it has not yet reached its biological northward limit.

New transplanting and seeding methods help restore native rangelands. Degradation of rangelands from wildfires has led to millions of acres of native rangelands being dominated by cheatgrass. This invasive and exotic annual grass has caused significant loss of critical browsing plants, such as antelope bitterbrush, for wildlife and livestock. In a study investigating effective methods of antelope bitterbrush reestablishment after an extensive wildfire, ARS scientists in Reno, Nevada, found that transplanting resulted in an initial establishment of more than 100 new antelope bitterbrush per acre while seeding had initial establishment of more than 15,000 antelope bitterbrush seedlings per acre.