

## **Biocontrol capacity of ARS research group in Central Asia and surrounding areas**

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The Kazakhstan biocontrol research group was organized as an ARS cooperator in 1994. Now, the station consists of five entomologists, two botanists, one soil scientist, one Geographic Information System (GIS) specialist and several technicians and equipped by field and laboratory equipment. The capacity of biocontrol research is based on the native distribution of many Central Asian plants that are weeds in western USA and Canada: 36 weed species are native to Central Asia such as perennial pepperweed (*Lepidium latifolium*), Russian thistle (*Salsola* spp.), Russian knapweed (*Acroptilon repens*), yellow starthistle (*Centaurea solstitialis*), medusahead (*Taeniatherum caput - medusae*) and other weeds, as well as for several serious introduced insect pests. The Almaty, Kazakhstan station is well situated to conduct explorations for control agents for many weeds. The close proximity of these weeds to the Almaty station allows for inexpensive, season-long studies of field ecology, behaviour, host-range observations in the field, and no-cage formal testing which cannot be done in the USA and which provide the most realistic evaluation of these critical factors. Good relations between Kazakhstan and Russia and other Central Asian countries and a common language (Russian) and cultural similarities allows open travel and free scientific exchanges with these countries unavailable to most western scientists.

## **USDA-ARS Australian Biological Control Laboratory**

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The staff of the United States Department of Agriculture (USDA), Agricultural Research Service (ARS), Australian Biological Control Laboratory (ABCL) actively search the natural areas of Australia and Southeast Asia for insects and other organisms that feed on pest insects and plant species that are invasive in the USA. Based in Brisbane, Queensland, the ABCL is operated by the USDA-ARS Office of International Research Programs (OIRP) through a cooperative agreement with the Commonwealth Scientific and Industrial Research Organization (CSIRO). Many invasive weeds in the USA such as the broad-leaved paperbark tree, *Melaleuca quinquenervia*; Old World climbing fern, *Lygodium microphyllum*; hydrilla, *Hydrilla verticillata*; and Australian pine, *Casuarina* spp. are native to Australia. However, the native range of many of the weed species continues northward into tropical and subtropical Southeast Asia. With excellent collaborators in this region, ABCL has the capability to find the most promising biological control agents. Research conducted at ABCL includes determination of the native distribution of a weed species, exploration for natural enemies, molecular typing of herbivores, ecology of the agents and their weed hosts, field host-range surveys and ultimately preliminary host-range screening of candidate agents. In collaboration with US-based ARS scientists, agents are selected for further quarantine studies and possible release in the USA.