Tetramesa romana (Hymenoptera: Eurytomidae), a Parthenogenic Stem-Galling Wasp Released for Giant Reed, *Arundo donax*

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Abstract

Plant development and growth are controlled by a series of independent processes that are determined by physiological and genetic mechanisms. Gall-inducing organisms can interrupt these processes and modify normal plant growth, often via plant species-specific interactions, and thus should be considered seriously for biological control. In the case of the arundo wasp, *Tetramesa romana* Walker (Hymenoptera: Eurytomidae), larval development on giant reed (*Arundo donax* L.) induces gall formation, interrupting meristematic activity and stimulating lateral budding. Since egg laying females prefer to oviposit on phenotypically labile tissues, gall formation has a negative influence on stem elongation, which in turn can limit the competitive ability of aggressive giant reed. Apparent host range of the arundo wasp was tested in quarantine by recording the occurrence of ovipositor probing events of the female, which occurred on 15 of 35 different test plants. However, its actual host range, indicated by successful larval development, was restricted to two species in the *Arundo* genus. With its host specificity, relatively the short generation time (an average of 33 days) and prolific parthenogenic reproductive output (an average 21 offspring per female), *T. romana* has promise as a control agent for giant reed and was released in the spring of 2009 in the Lower Rio Grande Basin of Texas and Mexico. The USDA-ARS has developed an adaptive, mass-rearing protocol for multiple arundo wasp genotypes based on responses to ambient light, temperature, and host-plant conditions. A series of sequential greenhouse studies reveal superior performance by Spanish genotypes of the wasp over French genotypes, in terms of greater reproductive output and compatibility with abiotic conditions. A mass release program for *T. romana* has been initiated using fixed-wing aircraft, and post-release field evaluations, including field studies of population establishment based on genotype and climate matching, are ongoing.