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Published by: Great Plains Agricultural Council: Leafy Spurge Symposium.

Development of *Aphthona flava* larvae on a leafy spurge cell suspension culture diet

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Laboratory mass rearing of biological control insects using artificial diets could replace the need for foreign importation by providing large numbers of insects for field releases. Success in diet formulation for specialist feeders has been limited and there are presently no artificial diets available for the biological control agents of leafy spurge. We now report the successful maintenance of *Aphthona flava* larvae through all larval instars (three) on a diet consisting solely of leafy spurge suspension culture cells.

Six-day-old leafy spurge suspension culture cells were vacuum filtered and lyophilized under sterile conditions. Lyophilized cells were placed on agar plates containing treatment concentrations of antimicrobial compounds. Unamended cells supported the growth and development of the larvae for an average of 18 days. Individual larvae were found to survive up to 72 days, while 35% of the larvae molted into the second instar and 5% survived through all larval instars.

Current efforts are aimed at manipulation of the cell culture-based diet to obtain higher percentages of third instar larvae and ultimately to induce pupation. The refinement of the technique developed in this study could provide a reliable method for the mass production of *Aphthona* species for the biological control of leafy spurge and for similar mass production of other specialist feeder insects. Cell culture-based diets could be especially important for rearing biological control agents for use in situations where chemical weed control is impractical, expensive and/or ecologically unsound.