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## 2013 DPR Alliance Grant Funded Project Summary:

### **Field Edge Plantings for Pesticide Reduction and Enhanced Biodiversity on Farmlands**

**Amount Awarded: \$123,015**

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**Summary:** This project aims to reduce pesticide use on farms and provide habitat for wildlife with a focus on endangered species conservation.

Maintaining farm fields without diverse edges can result in excessive herbicide use, water quality impairment, and a loss of biodiversity, including wildlife and beneficial insects (natural enemies and pollinators) that help with pest control and pollination services in adjacent crops.

This project focuses on education and outreach to growers and landowners to provide information on field edge management practices that minimize herbicide use, increase beneficial insect activity, and enhance biodiversity. Specifically the project will focus on replacing clean or semi-managed weedy field edges with hedgerows of native California perennial vegetation to help suppress noxious weeds, plant diseases, and insect pests that thrive in residual weeds in herbicide treated field edges.

Pre- and post- surveys will be conducted with growers and landowners to assess adoption of hedgerows as an integrated pest management (IPM) practice on farms to measure the success of the project.

Growers currently spray field edges with herbicides three to four times per year, using materials that may pose risks to human health, water quality, wildlife, and the environment. Replacing these continually sprayed field edges with hedgerows of native California perennial plants (shrubs, trees, perennial grasses, and forbs) will help reduce the need for herbicides to control noxious weeds that thrive on field margins. Hedgerows provide habitat and foraging areas for honey bees and other pollinators. Data also document that hedgerows of native California flowering plants attract beneficial insects that then move into adjacent crops where they prey on pests, reducing the need for insecticide sprays in some years (Morandin *et al.* in review). Hedgerows also appear to filter sediments and pesticide pollutants in irrigation and storm water runoff from farm fields.

Landowners and growers would receive multiple benefits from field edge plantings of hedgerows. These include: 1) herbicide reduction; 2) water quality protection through minimizing herbicide use on field edges where drains are often present; 3) increase in natural enemies that help control pests in adjacent crops resulting in pesticide use reduction in adjacent crops in some years (Morandin *et al.* in review); 4) enhanced biodiversity, especially for birds (White *et al.* 2012); and 5) noxious weed control where crop pests and diseases thrive, such as tomato spotted wilt virus that occurs in prickly lettuce, Malva, and sowthistle (Gilbertson *et al.* 2011; Morandin *et al.* 2012). This project may benefit public health, worker safety, and the environment and will result in economic savings to growers through reduced pesticide use and enhanced pollination services.