

PILOT PROJECTS TO SUPPORT MARKET-BASED TRADING SYSTEMS
DRAFT DOCUMENT FOR (1/29/2013):
THE CDFA ENVIRONMENTAL FARMING ACT SCIENCE ADVISORY PANEL

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INTRODUCTION

The California Department of Food and Agriculture (CDFA) is in the process of establishing pilot projects to obtain quantitative information to support market-based trading systems that will enhance the overall net environmental quality of working lands. CDFA recognizes the many voluntary efforts made by growers and ranches to enhance the environment and the lack of sufficient incentives to further encourage on-farm conservation management practices.

The importance of establishing incentives for growers is described in the California Food and Agriculture code. The Cannella Environmental Farming Act of 1995 states that “many farmers engage in practices that contribute to the well-being of ecosystems, air quality, and wildlife and their habitat” [California Food and Agriculture Code 561 (b)]. The 1995 act also describes requirements for creating a Science Panel and the establishment of a program to “provide incentives to farmers who practices promote the well-being of ecosystems, air quality, and wildlife and their habitat.”

The Environmental Farming Act Science Advisory Panel (Science Panel), organized in August 2011 by the Secretary of CDFA, is working towards developing a market-based trading system that will incentivize growers to implement management practices that contribute to the overall environmental quality of their working lands. However, the Science Panel recognizes there is a lack of basic information to move directly to the implementation stage of a market-based trading system. Therefore, several pilot projects, with three management practices in each, have been proposed.

The goals of the pilot projects are to gather basic information from implemented management practices over two to three years. The information will be used to design a market-based trading system and show proof-of-concept that trading systems can be effective. This document discusses the pilot projects, including potential sources of funding.

PILOT PROJECTS

Direct investment in large scale agricultural projects to improve the overall net environmental quality of a working landscape is costly and coupled to substantial risk. For instance, the placing of riparian buffers or wildlife habitats might introduce crop pests thereby discouraging growers from investing in such management practices. Pilot projects are designed to understand the practical feasibility, associated costs, and potential risk at a farm scale. Recent research work highlights the importance of pilot projects to understand the success of specific management practices on working landscapes. For example, Evans et al (2012) initiated seven pilot projects from 1995 to 2006 to demonstrate and evaluate alternative channel management strategies that might enhance water quality functions in North Carolina. The results show that nitrogen concentrations and transport were reduced by 20% to 70% with in-stream and constructed storm water wetlands. Pilot projects that have successful quantitative results can be used for larger “scaled-up” projects.

The department and science panel have highlighted three primary subject areas to be used in each pilot project . They are 1. Nitrogen management, 2. Native pollination services, and 3. Riparian habitats. More explanation on each subject area is provided below. Other subject areas will be visited once these two to three year pilot projects have been implemented in various locations beginning with the East San Joaquin region of the Central Valley, California.

1. Nitrogen Management

There have been recent scientific reports and numerous media reports that have highlighted surface and groundwater contamination by nitrates from nitrogen fertilizers used for food production (SBX2 1 report, 2012; Sobata et al., 2009; Warrick et al., 2005). These reports have suggested or identified that much of the contamination stems from agricultural use of synthetic and organic nitrogen fertilizers. Controlling nitrogen on irrigated agricultural lands is critical to limiting the amount of nitrate movement to groundwater systems which are often also used as drinking water sources in many communities (Hearing, 2012). A front end solution to reducing nitrates in groundwater is to have a nitrogen management plan. A nitrogen management plan helps growers balance and understand where their nitrogen is in their agricultural system (e.g., soil, water, or plant). The process helps growers apply nitrogen more effectively to optimize yields and reduce nitrates in water. These nitrogen management plans can also be effectively used to determine how much nitrogen can be potentially traded in a non-point source (e.g., irrigated farm) to point-source (e.g., wastewater treatment plant) nitrogen trading program. This fundamental information is required prior to establishment of any large scale nitrogen market-based trading program.

2. Native pollination services

California agriculture is dependent on pollination services. Many tree crops, such as almonds, require pollinators to establish sufficient, economically viable, yields. Recent declines in California bee populations are of concern (Michels, 2011). Bees are often trucked in from other states such as Florida to provide enough pollinators to ensure crop yields but have numerous issues associated with this process (Longstroth, 2012). Native pollinators and establishment of their habitats on agricultural fields have long-term sustainability benefits including reduced cost from importing bees from other states.

3. Riparian/wildlife habitats (including native plants)

Riparian/wildlife habitats including native grasses have been found to successfully reduce the movement on nitrogen and sediment in surface waters from the irrigation agricultural fields (Smiley et al., 2011; Lovell and Sullivan, 2006). Riparian grasses and intercropping might potentially reduce nitrogen movement beyond the crop root zone as well but more fundamental information is required. Riparian or wildlife habitat zones also offer numerous other benefits including habitats for beneficial insects, habitats for birds, biodiversity services, water cycling, and enhancement of on farm conservation measures (Henningsen and Best, 2005). Pilot projects on agricultural fields will highlight the many benefits of establishing riparian/wildlife habitat zones and also collect some basic quantitative information that can be used to support larger scale projects.

The implementation of these three management practices that provide ecosystem services on agricultural lands, together in combination at a pilot project site, will greatly improve and highlight quantitatively and qualitatively the overall environmental quality of working lands. There are also numerous direct benefits to agriculture as well (e.g., native pollinators). The quantitative data collected will support the establishment of these projects on a larger, potentially regional, scale on California's working lands. For measuring riparian/wildlife habitats,

existing systems on working lands will be used since it would otherwise take two to three years to actually establish these zones before quantitative data could begin to be collected. By using existing systems, data can be collected immediately. There are several questions that would drive the collection of specific types of data. They include (but not limited to) questions such as;

- How much nitrogen can be prevented from surface runoff and by a riparian buffer at different stages of growth?
- How many bird/beneficial insect species can be expected by the introduction of a wildlife buffer and what are the reductions (if any) in crop pests?
- How much nitrogen can be reduced from a crop field without effecting yields or reduced yields by 5 or 10%? Are the reductions tradable and economical?
- How many native pollinators and habitat area is required to maintain effective pollination services for a specific crop?
- What are the cost and maintenance for implementing specific management practices (e.g., 100 feet of wildlife habitat) on working lands?

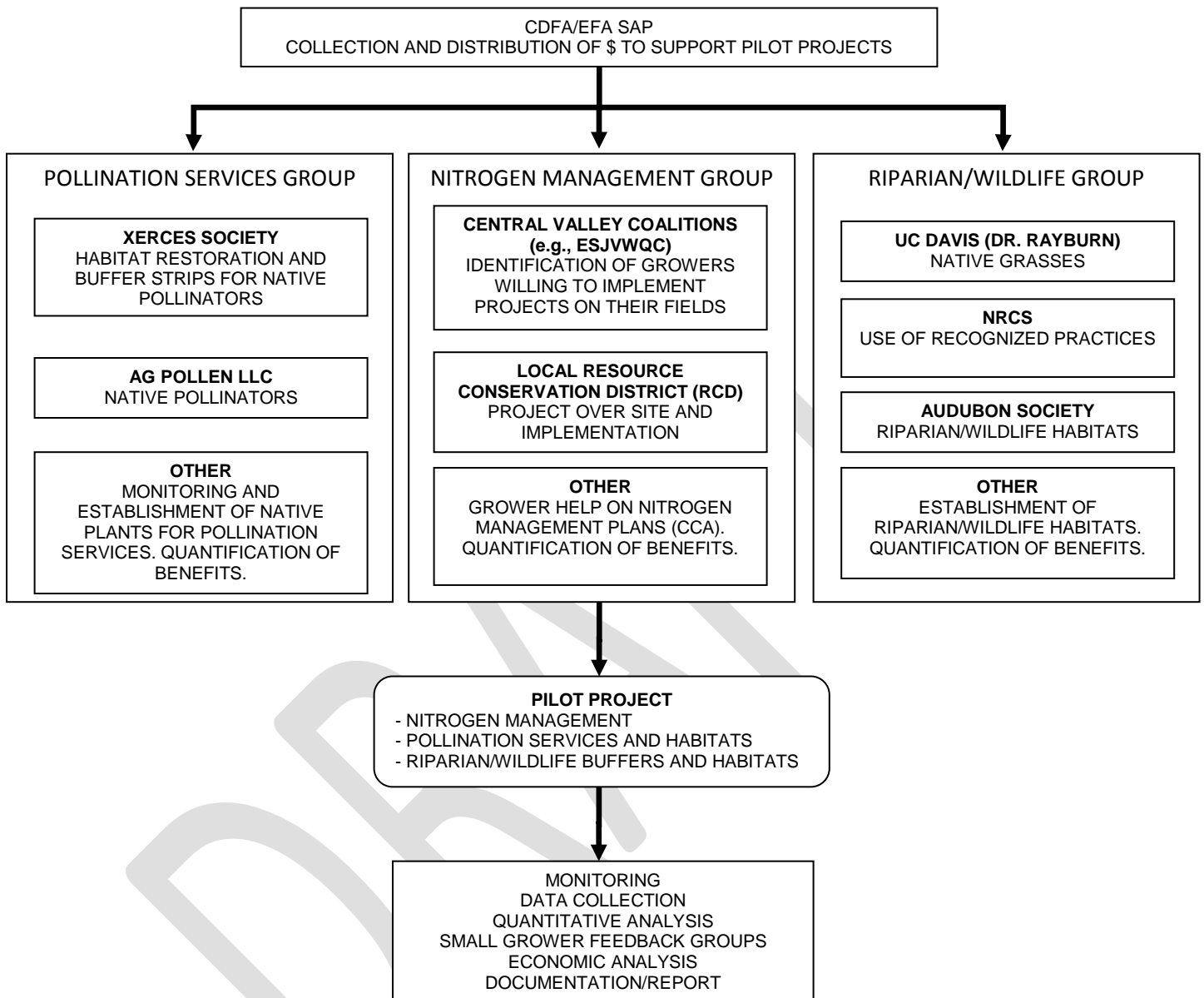
ESTABLISHMENT OF THE PILOT PROJECTS

All pilot projects will be established using experts in each of the three primary subject areas described above. Many of these experts are with nonprofit organizations and UC/CSU education and extension services. Several of these organizations presented their work at the recent EFA SAP public meeting held on November 8, 2012. Presentation materials can be found on the CDFA Environmental Stewardship website; http://www.cdfa.ca.gov/EnvironmentalStewardship/Meetings_Presentations.html. The diagram below shows potential partners that can help establish pilot project on working lands. The diagram also shows how monetary dollars will support the activities of the pilot projects.

FUNDING

The department and EFA SAP are currently seeking funds to establish pilot projects in partnership with groups described in the diagram above (and potentially other groups). Additional partners will be identified once some initial funds have been secured. Growers will also be identified through the Central Valley coalitions once initial funds have been secured. Cost sharing will be a priority between the partners and growers and will be built into the structure of establishing the pilot projects. Several potential funding sources have been identified and departmental activities have been listed below.

- Federal funds – Specialty Crop Block Grant Program – Concept proposal completed and submitted by CDFA on 12/7/12 (\$400,000)
- Agricultural associations – TBD (need to distribute document)
- Environmental associations – TBD (need to distribute document)
- NRCS – TBD (need to distribute document)
- State agencies – TBD (need to distribute document)



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