

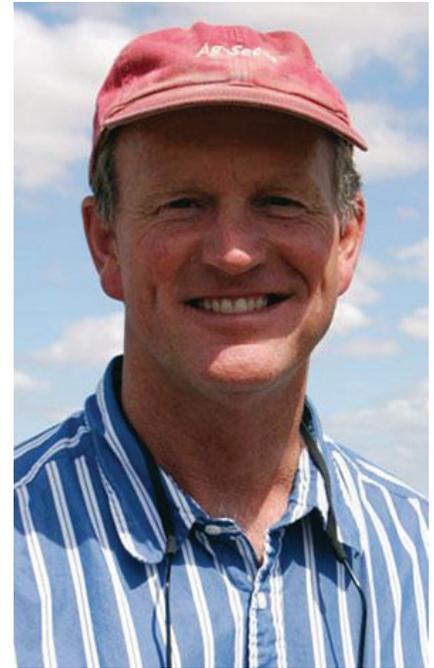
## **Stewardship Profiles in California Agriculture** **Conservation Tillage**

### **TULE FARMS**

Owned by sixth generation farmer Fritz Durst, Tule Farms is located in the Dunnigan Hills outside of Woodland, CA. Mr. Durst farms about 2,000 acres of irrigated land and 4,000 acres of dry land. After graduating from the University of California, Davis with a degree in agricultural economics, Mr. Durst returned to the family farm to address the persistent soil erosion that plagued the land. Sheet and rill erosion that occurred from conventional tillage, resulted in annual soil loss of six tons per acre, sapping the soil of its fertility and contaminating the air and water. Mr. Durst and his father implemented a no-till practice in the mid-1980s, a forward thinking approach for both the time and the region. Tule Farms is now a successful operation thanks to its no-till practices, dry farming, innovative planting techniques, and dedication of Mr. Durst.

### **RECLAIMING THE LAND WITH CONSERVATION TILLAGE**

Mr. Durst has been guided by a simple but powerful principle: “Feed the soil and the soil will feed the plants.” By planting wheat and barley directly into the residue of the previous crop in a no-till process, Mr. Durst was able to stop the erosion of his soil and prevent the formation of large erosion gullies. With a combination of no-till and conservation tillage practices, Mr. Durst was able to rebuild the health of his soils and run a successful farming operation.



### **ACHIEVEMENTS**

- Recipient of the 2011 Conservation Tillage Farmer Innovator Award from the USDA's Natural Resources Conservation Service
- Recipient of the 1986 Resource Conservation District “Cooperator of the Year Award”
- Reduced annual soil loss from six tons per acre to two tons per acre after only 1 year of no-till farming



**“Fritz [Durst] is truly a conservation tillage pioneer in an area of the state that in the early 1980s was subject to massive soil erosion.”**

**– Phil Cogan, Natural Resources Conservation Service**

## CALIFORNIA RECLAMATION DISTRICT 108

Mr. Durst is the president of California Reclamation District 108. The mission of the board is to prevent flooding and/or remove floodwaters from properties in the district, ensure district properties have sufficient water for agricultural production, and to prevent erosion. The group oversees 50,000 acres of farmland in the Sacramento Valley that is irrigated with 25% recycled water, a very large percentage made possible by the flat land and water conservation measures undertaken in the district. At an average water usage of only 3.3 acre-feet of water, RD 108 is not only a leading water conservation district, but its rice fields are becoming prime habitat for birds on the Pacific Flyway. After harvest, farmers are re-flooding their fields and mashing the straw down into the mud with rollers so that it will decompose, a process termed rice water decomposition. This process provides bird habitat from November to February, and farmers are working with the Audubon Society to make this season start even earlier to benefit shore birds. According to the U.S. Fish and Wildlife Service, RD 108's state-of-the art fish screen project benefits the Chinook salmon and other anadromous fish. With leadership from Mr. Durst, California Reclamation District 108 is showing how farmers and ranchers cannot only conserve water, but can also benefit the environment and wildlife.

## PROJECT DETAILS

### NO-TILL FARMING

In 1985, Mr. Durst implemented a no-till wheat production practice on his farm in an effort to reduce soil loss. In a single year, he saw a reduction in annual soil loss from six tons per acre using conventional tillage to two tons per acre in his no-till fields. After witnessing this transformation of his land, Mr. Durst reported on his experiences at several no-till workshops, and received the RCD "Cooperator of the Year Award" in 1986 for being a pioneer of no-till cultivation in Yolo County. The Natural Resources Conservation Service of Yolo county produced a Residue Management Guide that relied heavily on Mr. Durst's well documented no-till practices. No-till and conservation tillage improve air quality as they reduce tractor run time and produce less airborne dust. These practices also improve soil moisture and increase soil quality by increasing organic matter and eliminating disturbance of soil microbes and arthropods. Furthermore, these practices are receiving new interest because of the potential gains in carbon sequestration and reduction of greenhouse gases compared to conventional tillage practices.

### DRY FARMING

On a portion of his land where he grows garbanzo beans, wheat, and safflower, Mr. Durst practices dry-farming. Dry-farming, as the name suggests, relies only on the rain that falls on the land and does not use any irrigation. Tule Farms receives between 8-30 inches of rainfall each year. As Mr. Durst explains, "What we've done is we've adapted to the rainfall. I've learned certain crop rotations where it is best to follow one crop with another crop because of moisture limitations." To keep as much moisture as possible on the land, Mr. Durst uses residue from past crops to trap the moisture, preventing it from running off or evaporating. This technique, combined with well-honed crop rotations allows the plants to survive through the dry season. With falling water tables making well water even more expensive and not enough water from his irrigation district for all of his property, Mr. Durst believes dry-farming part of his property simply makes economic sense.

**"One of the things we're finding is that, by preserving residue on the surface, we're actually decreasing the amount of evaporation substantially during the season, thereby increasing water use efficiency"**

**- Dan Munk,  
UC Cooperative Extension  
advisor**

## PROJECT PARTNERS

University of California  
Cooperative Extension

California Reclamation  
District 108

National Audubon Society

Resources Conservation District  
of Yolo County

U.S. Department of Agriculture  
Conservation Reserve Program

U.S. Department of Agriculture  
Natural Resource  
Conservation Service

U.S. Fish and Wildlife Service