

## **Sustainable Cropping Systems**

**USDA-NRCS New Mexico**

**A sustainable cropping system is an integral part of a complete farming system of soil, water, air, plant, animal, and human resources. The New Mexico Integrated Cropping Systems and Water Management Handbook, <http://www.nm.nrcs.usda.gov/technical/handbooks/iwm/nmiwm.html>, is intended to be user friendly for use by planners with producers. NRCS provided training for planners, partners and producers on “how-to” evaluate and understand site-specific field conditions, including chemical, biological and physical. This enables us to evaluate and implement best management practices/approaches for cropland management within an integrated farming system. Considering how the farm fits into broader watershed management (e.g. off-site effects and resource opportunities) is also essential to problem-posing and problem-solving resource management success and development of sustainable communities.**

**The Handbook provides guidance on understanding and improving soil quality, water quantity/quality, air quality, nutrient and salinity management, crop yield and quality, irrigation water management, integrated pest management.**

**It also provides guidance on reducing overall on-farm energy use, inputs, production costs, pest incidences, pumping costs, as well as soil and water losses. The end result targets becoming a more economical, sustainable farming enterprise, including resource efficient and resource conserving.**

**The key approach to achieving integrated sustainable management is to think system (ecosystem, whole farm, and watershed), think critically (connect the dots), actively seek resource opportunities, emphasize technology “exchange” vs. “transfer” with other producers and partners, plan creatively and flexibly, and focus on keeping energy flow through the integrated system. A reemphasis on biological factors is also necessary since recent agriculture has essentially forgotten biological, but rather focused on chemical and physical factors. Improving soil quality is key to improving soil, water, air, plant, and animal resources. Case studies, field trials, demonstrations are all important approaches for technology exchange. Interdisciplinary teams including producers and partners are essential in developing integrated sustainable farming systems.**

## **Maintenance of Soil Health Emphasized**

**New Mexico NRCS agronomists, water quality specialists, and soil scientists have embarked upon a mission to increase understanding of the role of conservation planning in the maintenance and improvement of soil health. Using soil quality indicators to determine overall soil health, training sessions for conservation planners and partners were conducted during the summer of 2008 summer emphasizing the effects of tillage, irrigation, and nutrient and pest management upon long-term soil productivity. A comprehensive Integrated Cropping Systems and Water Management Handbook, available on the New Mexico NRCS website, <http://www.nm.nrcs.usda.gov/technical/handbooks/iwm/nmiwm.html>, was developed for use by planners with producers on integrated systems. The end result will be a more economical, sustainable, and producer-acceptable farming enterprise.**

**The role of conservation planning is to take soil health and productivity from its current level and manage it to achieve its full potential. One of our most powerful tools to deliver soils information into the hands of farmers, ranchers, conservationists, and homeowners is the Web Soil Survey. The Web Soil Survey is an Internet accessible resource that puts local soil maps, descriptions, data, and suitability ratings into the hands of users.**

**New Mexico has acquired soil quality test kits for all local field and soil survey offices in the state. These test kits, along with conventional soil analytical analyses, will allow our conservationists to demonstrate to farmers the condition of their soil, and offer recommendations on options to improve its health. It is critical that we get into the field with agricultural producers and demonstrate the importance of recognizing the indicators of soil health. To that end, a series of producer workshops have been held throughout the state to provide hands-on demonstration of soil sampling, testing, and evaluation of soil conditions.**

**We must utilize holistic approaches to management of soil and water resources. Integration of needed conservation practices and management schemes assures critical resource concerns are addressed and water quality, soil quality, and overall ecosystem health is maintained or improved. Considering how the farm fits into broader watershed management is also essential to ‘problem-posing and solving’ resource management success.**

**This time is critical to implement management schemes to protect long-term soil sustainability. The US is both an importer and exporter of agricultural products and is finding increased competition for products we have become accustomed to seeing on grocer’s shelves. Global reduction in agricultural productivity due to soil erosion and degradation, depletion of irrigation water supplies, and competing land uses is putting a squeeze on capacity to meet increasing world-wide demand for food and fiber. Couple this with the economic challenges posed by the high cost of fossil fuels and derived products, such as fertilizers, and struggling farm economies and it becomes clear that the continued success of agricultural systems is dependent upon our ability to maintain soil health and manage water resources through holistic approaches in conservation planning.**