

Improving Soil Health



A joint project of the Ruby Habitat Foundation
and the Natural Resources Conservation Service



“Soil is an amazing substance. It is a complex mix of ingredients: minerals, air, water, and organic matter—the countless micro-organisms and the decaying remains of once living things. Soil is made of life and soil makes life”¹

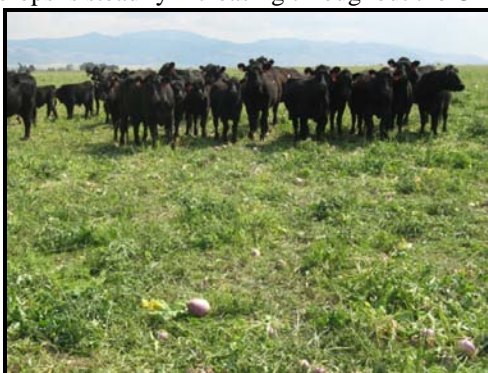
The high cost of inputs including fuel and fertilizer, the ever growing demand for food, the rapidly changing technologies in farming and production agriculture’s role in protecting the environment all motivated the Ruby Habitat Foundation and the local Natural Resources Conservation Service field office to initiate a long term trial demonstrating and comparing the effect of traditional and new, innovative practices on the health of the soil. Over the five year life of this trial, we will illustrate and quantify the economic and biological effects of a variety of farming practices. Progress and results of our findings will be reported in our annual report and through workshops to local producer groups in the area.

During the winter and early spring of 2011, the NRCS organized and conducted two well attended workshops featuring guest speakers on the subject of soil health. In the spring, the foundation purchased the seed and fertilizer for the trial and irrigated the crops on the 45 acres that were set aside for the project. Prior to farming, soil samples were taken for a full food web soil analysis to determine general soil health including population densities of beneficial nematodes, protozoa, bacteria and fungi. The NRCS provides technical assistance and monitoring. The foundation will market the crop and receive any proceeds. The late summer 2011 tour created a great deal of interest in the trials.

Plot 1. Fifteen acres were farmed and cropped under what have been traditional practices. The plot was plowed, disced twice, cultipacked and then drilled with hay barley seed. The crop was later harvested for hay.

Plot 2. Fifteen acres were sprayed to kill the historic hay stand on the field and reduce competition to the new crop. One third of the plot was no-till drilled to hay barley. The remaining two thirds of the plot were no-till drilled to a mixture of hay barley and winter peas. These crops were also later harvested for hay.

Plot 3. The remaining fifteen acres were also sprayed to reduce competition and then no-till drilled with a soil health cover crop containing, oats, radishes, turnips, lentils, millet and sunflowers. “The use of cover crops is steadily increasing throughout the United States. Many no-till farmers consider cover crops to be the next step in conservation agriculture. Leaving the soil undisturbed and keeping something growing as many days as possible restores the natural cycles of the soils. Residues and roots create more organic matter in the soils. Increased organic matter serves as a food source to various soil organisms and increases the biological activity. Higher biological activity increases nutrient cycling and availability and also reduces nutrient loss due to run off. With all this activity, soil structure and tilth are improved, increasing infiltration rates and reducing compaction.”² Late in the fall, the cover crop was lightly grazed by cattle and the remainder of the crop left to decompose.



1. www.iheartsoil.org
2. Conservation Technology Information Center website:
www.ctic.org/Cover%20Crops/

Additional information can be found at the NRCS website: www.nrcs.usda.gov

As the project progresses, soil samples will be taken on each of the plots and compared to determine the effect on soil nutrients and soil microorganisms by each of the treatments. Treatments will be added to the trial annually to incorporate other cropping practices that are common to the area as well as additional innovative practices. In 2012, Plot 1 will be divided with one third remaining in conventionally tilled barley, one third planted to the full season soil health cover crop and the final third being planted to conventionally tilled barley in the spring and following harvest it will be planted to a fall, soil health cover crop. Economic and production data will also be collected and compared to determine the results. Watch for the data as it is collected and reported over the next five years.

