



## **From Land Degradation to Soil Health Education**

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Worldwide, land degradation continues to erode crop production capabilities by an estimated one-half of a percent of annual global production and is a threat to society. Historically, land degradation has been a contributing factor in the downfall of once thriving civilizations. Agriculture feeds multitudes of people around the world. However, unless care is taken to improve soil health, while also harvesting valuable food crops for humans and animals, societies could crumble. Applying the five principles of soil health to crop and animal food production soil health has been shown to improve without negatively affecting food production per hectare. The five principles of soil health include: 1. Residue covering the soil surface serving as Soil Armor, 2. Minimal Soil Disturbance using no-till planting and seeding equipment, 3. Crop rotations that include a variety of crops for Plant and Root Diversity, 4. Utilization of crop types and sequences in the rotation that insure that there is a Continual Live Plant and Root In The Soil for as long as possible, and 5. Integration of Livestock in the crop rotation. Farmers and ranchers, soil scientists and soil microbiologists, and adaptive research initiatives have identified parameters of soil health as trustworthy indicators for soil health education. Programming at the Dickinson Research Extension Center has been coordinated with regional university agriculture education to deliver hands-on education in the field for high school, university, farm agency personnel, university extension specialists, and farmers and ranchers. Educational sessions throughout the day focus on presentations that define the principles of soil health, provide examples of crop rotations that not only feed the soil with organic matter for soil microbial decomposition, but provide for competition against weeds. Programming further provides attendees with demonstrations of how improved soil health increases soil aggregation, soil water holding capacity, soil water infiltration, and evidence of soil arbuscular mycorrhizal fungi exudates that facilitate soil aggregation. Livestock grazing provides special enhancement to soil health that stimulates carbon-rich exudates leading to increases in soil organic matter. Educational methods and procedures used during the soil health workshop will be presented.