

# Soils, Forages & Water Dynamics Day 2

by Victoria Kress

On a beautiful autumn day, on October 4<sup>th</sup>, 2014, a diverse group of people traveled to the Glen Burn Ranches (Ron & Karen Buchanan) in Upper Cache. We were attending the second day of the Soils, Forages, and Water Dynamics course hosted by the Forage Association and UNBC and coordinated by Sandra Burton. After a brief introduction by Sandra at the base camp in the field, we drove the short distance to the Buchanan's barns, where Lori Vickers & Carmen Schneider led us all in a fun group mixer activity, involving a race to identify an assortment of cattle handling and processing tools. Ron Buchanan told us about the size of his ranch (4700 ac owned; 4500 ac leased), with 250 head of cattle. He then discussed his goal of having a long-term, sustainable ranch.



Ron Buchanan describes his ranch and long term goals for it.



Julie Robinson and Ron Buchanan illustrate the difference in soil between ungrazed (*Julie's*) and bale grazed (*Ron's*) fields.

After snacks back at the base camp, Bill McGill and Sandra Burton introduced us to the course and explained how the day would proceed. We split up again into our groups and spent most of the day rotating between field stations, learning about the range management issues that presented a challenge to the Buchanans. There were four stations, each manned with specialists in the topic being discussed. The station topics were on managing plants and livestock for forage longevity, winter feeding and nutrient distribution, soil landscapes and profiles, and soil erosion. Each station was an hour in length. Two stations were held before lunch, and two stations after lunch.

potassium, and sulphur are also important for fertility. Phosphorous contributes to root development while potassium is important for drought tolerance. We learned that enhancing phosphorous availability can be effective in spring, when soils are still cold, and overall fertility can be enhanced by alternating between a hay field and pasture.

An entertaining and educational tailgate party in the field below the camp was hosted by Bill McGill and Bill Wilson. They led us in demonstrations of how winter feeding re-distributes nutrients, and can improve longevity of forages and quality of feed. We were treated to a miniature ranch where group members participated by placing the "manure" on the field. We learned that nutrients can be lost from manure through water logging, leaching, and runoff. There are a variety of ways to re-distribute the nutrients through winter feeding and strategically placing water and feed. Bill and Bill showed a soil sample with no feeding that had a very poor organic horizon, while a sample taken 20 years after only one year of winter feeding had a thick, rich organic horizon.



Group members distribute the manure on a snowy field around the hay bales at Bill Wilson & Bill McGill's tailgate party.

At the field above the camp, Julie Robinson and Ron Buchanan led a lively discussion on how management of livestock and plant species can influence longevity and health of forage. Ron showed samples of soil profiles from a control field and the bale grazed field, showing a much thicker organic horizon on the grazed field. Julie emphasized that in addition to nitrogen, the presence of phosphorous,

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As attendees inspected the erosion gully carved into a field next to a creek, Marten Geertsema and Sandra Burton discussed water movement and causes of erosion. We learned that once erosion gullies start, they continually worsen because of the concentrated drainage. Water will either infiltrate down into the soil or travel as sheet, rill or gully erosion, depending on the power of the water. Marten talked about erosion from a landscape perspective, while Sandra discussed the importance of vegetation in intercepting water, and how conifers and tall vegetation are more effective at rain drop interception. Water movement and infiltration also depend on the soil type. There was much animated discussion among the groups about how to slow down erosion. Some key conclusions were that although certain factors can't be controlled, there are still effective ways to control erosion. Examples include avoiding haying or grazing in the immediate area, putting in check dams to slow down the water, or diverting some of the water upslope.

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### Thank you to our enthused station masters:

Ron Buchanan, Julie Robinson, Bill McGill, Bill Wilson,  
Richard Kabzems, Marten Geertsema, Sandra Burton

### Thank you to our knowledgeable mentors:

Darryl Kroeker, Carmen Schneider,  
Lori Vickers, Jim Chramosta

**Photo Credits:** Victoria Kress

**Meal Credits:** Chris Thomson & Shepherds Inn



From the depths of a huge soils pit, Richard Kabzems kept everyone engaged as he explained how soil landscapes, properties and profiles can tell a story about the health of the land. We observed how the high clay content in the upper horizons of the soil was hindering water movement and limiting the rooting depth. Richard talked about how plowing may not be the solution to increase rooting depth for plants such as alfalfa, as it could bring up the poor soil of the B horizon. Groups were given opportunities for some hands-on soil sampling, including the very messy hand-texturing test. Richard demonstrated tests for pH and carbonates.

When the final station was finished, everyone went to the base camp for more refreshments and a group discussion led by Bill Wilson and Bill McGill. We talked about what we learned at each station and some of the bigger overall lessons, and attendees offered some practical solutions for Ron and Karen Buchanan and their ranch. These suggestions echoed those that had come up during group discussions at the stations.

After a group photo in the giant soil pit, there was an optional field tour, where we travelled through Buchanan's ranch. We talked about poor crop performance due to lack of fertilizer, problems with grazing and grass health, controlling willows, and reclaiming gullies. Ron asked attendees to offer suggestions on how to remedy the situations, presenting a diversity of thoughtful viewpoints on the best courses of action.

Overall, it was a full day of educational and stimulating activities and discussions, punctuated by delicious food, good company, and beautiful weather.