Sustainable & Profitable Ranching with Steve Kenyon

Cranbrook, Jan 9 & Greenwood, Jan 10 (2019)

Event Summary

Steve Kenyon's 3.5 hour presentations in Cranbrook and Greenwood drew on his decades of ranching experience to identify key management considerations. Before Steve's presentation, FBC presented on best practices for small farm tax accounting.

Steve and his family custom graze 800 to 1200 cattle on 3000 acres leased northwest of Edmonton. He owns the business, not the land or animals. He also pastures pigs and poultry. He first identified as a "cattle rancher" in 1996, then as a "grass farmer," and now he describes himself as a "soil farmer."

Carbon Positive

Good grazing operations sequester more carbon in soil than they release into the atmosphere:

- Steve's farm is carbon positive: 94% sequestration to 6% emissions.
- Measure your farm's carbon footprint: cffcarboncalculator.org.uk

Business Approach

In order of importance, all three of the following must check out ***before*** you pursue a new farm venture:

1. **Human Resources**: Is there available skilled labour?
2. **Economics & Finance:** Will it make money and is there a market? Can I afford to do it?
    - Gross Margin Analysis is an extremely important tool.
3. **Production:** How will we actually do it? (This is the least important of the three.)

Soil and Fertility

"We don't grow plants from soil, we grow soil from plants." Most of soil (say, 97.5%) is from air and water: carbon, hydrogen, oxygen, nitrogen. The other 2.5% is from soil life, "my employees."

- Nutrient comes from air and water; plants and soil turn it into biomass; livestock recycle it.
- Don't use synthetic fertilizers. "Nature is never nitrogen deficient, all the microbes are there."
- "Monocultures are ugly." Polycultures of plants have diverse root systems, soil life, pollinators…
- Underground "black market" uses sugar as currency. Soil life trades mineral resources, water, and information (E.g. mycorrhizal fungi, earthworms, mutualist bacteria, …)
- Let soil life feed the plants. "If you give a plant what it needs and bypass the soil life, they'll get cut out of the black market and will die."

Water

"Water is more important than any nutrient." Water holding capacity from organic matter in soil is more important than fertility. Water losses occur from:

- Runoff — avoid bare soil, "armour" it with living and dead plants
- Evaporation — avoid bare soil, water gets wicked from below and leaves salts on surface.
- Leaching — increase soil carbon and avoid overwatering, excess water (or insufficient soil "sponge") takes water and nutrient below the root zone.

Leave More Residue

The most important grazing principle is to leave more plant matter behind:

- "Leave as much residue as you can cash-flow." It's an investment in your soil.
- Residue reduces runoff and evaporation, increases organic matter and water storage capacity.
- Assess how much bare soil there is by looking *straight down*.
- Plant a diversity of species, lots of legumes and different kinds of grasses.

Maximize the Growing Season

- Perennials with strong roots will jump out of the ground as soon as the soil warms up.
- Good soil will grow plants longer into the droughty periods.
- For Steve, 2 weeks of grazing is worth $15,000: good soil and diverse perennials increase his grazing by 4-6 weeks relative to neighbouring ranches.

Renovate Pastures

Good grazing (see "Four Steps to Good Grazing") moves degraded soil to decent soil in 2-3 years:

- Option 1: Leave it alone.
- Option 2 (better): Quickly graze once or twice a season, leave LOTS of residue.

Graze Legumes but Avoid Bloat

- Steve grazes lots of legumes and has never lost an animal to bloat: "Ranchers lose more money from the fear of bloat than from bloat itself."
- Change diets gradually over a few days, then keep diets as consistent as possible.
- Move animals once per day, in the afternoon. (In the mornings they fill their rumens with the stem-heavy leftovers of the previous day before moving into new leafy pasture in the afternoon.)

Support Your "Employees"

De-wormers, fly poisons, and other 'cides kill the good guys and make the problem worse:

- Dung beetles are the key to S.H.I.T. (Soil Health Improvement Treatment)
- Fly larvae also decompose dung.
- Dragonflies and spiders in a healthy (bushy) riparian zone are the key to mosquito control.
- Predators (e.g. Red Velvet Mite, etc.) are the key to pest insect control.
- If dung is not decomposed by soil life, nutrients vaporize or get leached.
- Avoid tillage, it destroys soil life habitat.

Avoid Under- and Over-Grazing

Overgrazing is caused by *time*, not numbers of animals: too long grazing or too little rest period. Graze to keep grass in "stage 2". Overgrazing keeps stage 1 grass dormant, eventually killing it. Undergrazing keeps too much stage 3 grass, shading out regeneration.

- Stage 1: Slowly growing, short grass — low productivity, ie. just mowed or grazed.
- Stage 2: Quickly growing grass — highest productivity.
- Stage 3: Fully grown grass, going to seed — low productivity, palatability.

Four Keys to Good Grazing

All four of the following are required for "good grazing":

1. **Grazing Period:** After the "first bite", move the animals. Avoid the "second bite" on new shoots of recovering grasses, which may poke up just a couple days after the first bite.
2. **Rest Period:** This is an "art." In 4 months of grazing, 16 paddocks is a minimum, more are better. The more brittle/dry the paddocks, the longer the rest period required.
3. **Stock Density:** The higher the number of animals in a paddock at one time, the better. High densities increase plant utilization and manure distribution.
    - "Mob Grazing" with moves several times per day at extreme densities is very labour intensive but very beneficial to the soil.
    - Rule of thumb: "If you can avoid hitting cow pats with your quad, the density is too low."
4. **Animal Impact:** Trampling connects residue and seeds with the ground, increasing decomposition and assisting germination. Animal mucus and oils are "manna" for soil life.

Cell Design

Steve recommends getting professional help to design effective grazing systems. Draw simple maps (with fences, buildings, roads, water sources, pipes, water features, and bush) to help with planning, communication with farm labour, record keeping, etc. Fences should:

- Coordinate with road access and watering systems.
- Work with physical constraints (i.e. don't force a straight line.)
- Separate forage types (e.g. all bush or all open.)
    - Lower productivity cells should be larger than high productivity cells
- Protect water sources.

Six general **cell designs** that can be mixed and matched. Animal movement is the most important consideration, don't graze yourself into a corner.

- **One-Alley & Two-Alley:** Alleys allow water infrastructure to stay in one place. Less fence with two alleys. Rectangular cells have worse utilization than square. Manure builds up in alleys.
- **Water Truck:** Keep truck on far side of fence to avoid mucking up around it.
- **Pipeline:** High infrastructure cost but lowest labour
- **Cell Centre:** Water at "hub" of "wagon wheel." Most fencing and overutilization at hub.
- **Strip Grazing:** Often with a pipeline to a portable trough. Flexible paddock sizes.