



**Managing for Soil Health on Dry Land**  
**A Farmers Perspective**  
**April 8, 2014**

**Soil Health In A Desert**

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**Hugo, CO**

# Ravenkamp Farms

- **Lincoln & Elbert County, Colorado**
- **5400' – 5800' Elevation**
- **12" - 14" Rainfall "Average"**
- **Soil Type - Sand Loams and Silt Loams**
- **Entirely Dry Land Production**

# About Us



# Crops

- **Primary Crops**

- **Winter Cereals – Winter Wheat, Cereal Rye, Winter Triticale**
- **Corn**
- **Sunflowers**
  - Primarily Oil
- **Proso Millet**
  - Red and White

- **Experimental Crops**

- **Field Peas, Black Oats, Cover Crops, Milo**
  - Safflower, Canola, Different Millets

# Rotations

- **Continuous Crop Rotations**
  - **Started with**
    - **ww-ww-c-s-pm**
  - **Moved towards**
    - **ww-c-s-pm**
    - **ww-c-pm**
  - **Now**
    - **Adaptive Rotation**

# Challenges

- **The Mindset that it CAN'T be done**
- **Moisture**
- **Residue**
- **Chemicals – Weed Resistance**
- **Insurance**
- **Livestock**

## Precipitation Record

Year	Month												Total	Snow"
	January	February	March	April	May	June	July	August	September	October	November	December		
2002	?	?	?	?	0.20	1.40	0.30	3.15	2.10	0.00	0.20	0.15	7.50	?
2003	0.20	0.40	1.10	1.20	2.60	5.10	0.45	0.65	2.25	0.00	0.10	0.10	14.15	20.00
2004	0.40	0.40	0.20	1.75	0.30	2.65	1.05	3.00	0.90	0.00	0.70	0.25	11.60	27.00
2005	0.10	0.00	0.75	2.10	1.30	1.53	0.50	2.20	0.65	1.40	0.00	0.30	10.83	26.00
2006	0.00	0.05	0.50	0.05	0.96	0.70	2.85	2.05	0.23	1.55	0.20	0.60	9.74	22.00
2007	0.50	0.30	0.40	2.00	2.60	0.80	0.50	2.95	0.00	0.00	0.08	0.50	10.63	30.00
2008	0.00	0.30	0.40	0.90	0.10	0.52	1.15	2.35	0.40	0.70	0.60	0.40	7.82	36.00
2009	0.20	0.05	1.00	2.35	0.52	1.75	3.40	2.70	1.15	1.70	0.40	0.40	15.62	52.00
2010	0.00	0.25	0.50	1.10	0.90	0.40	2.45	0.95	0.00	0.00	0.30	0.15	7.00	19.00
2011	0.15	0.20	0.15	0.55	2.60	1.00	2.15	1.10	0.30	0.35	0.20	0.25	9.00	25.00
2012	0.00	1.00	0.10	4.00	0.55	0.10	0.56	0.00	0.69	0.19	0.00	0.20	7.39	24.00
2013	0.01	0.30	0.50	0.65	1.54	1.06	3.22	2.56	3.62	0.60	0.10	0.10	14.26	25.00
Total w/snow	1.56	3.25	5.60	16.65	14.17	17.01	18.58	23.66	12.29	6.49	2.88	3.40	118.04	306.00
Average	0.14	0.30	0.51	1.51	1.27	1.42	1.66	1.86	0.93	0.59	0.24	0.30	10.73	27.82
Cumulative Avg,		0.44	0.95	2.46	3.73	5.15	6.81	8.68	9.60	10.19	10.44	10.73		

# The Challenge and Importance of Keeping Residue





Black Oats August 2013



Cereal Rye March 2014



**Soil Blowing from Stripped Wheat Stubble**





















# Livestock Challenges

A photograph of a herd of cattle grazing in a green field. In the foreground, a light-colored dog is sitting on the grass. The background shows more cattle and a person's legs in the distance.

- **Tonnage**
- **Water**
- **Fences**
- **Possibly Moving to Stockers**
- **Overcoming Obstacles In Our Minds!**

# Cover Crop Experience

A background image of a field of sunflowers. The sunflowers are in various stages of bloom, with bright yellow petals and dark brown centers. The leaves are green and large. The overall scene is bright and sunny.

- **Started after attending NTOP Whirlwind Tour in Wallace, NE**
- **Based some off of highly sophisticated test plots and observations**
- **Wanted to increase soil health**
- **Wanted to increase carbon both above and below ground**

# Late Summer Cover Mix

- **Common Vetch 3.1 Lbs.**
- **Winter Pea 7 Lbs.**
- **Soybean Non GMO 4.2 Lbs.**
- **Oats 28 Lbs.**
- **Pearl Millet 2 Lbs.**
- **Sorghum Sudan 3.1 Lbs.**
- **Ethiopian Cabbage 1 Lb.**
- **Flax 4 Lbs.**
- **Sunflower 2 Lbs.**
- **Safflower 2 Lbs.**
- **Seeded 8-20-13**

























## **“Native” Rangeland Mix**

- **Yellow Sweet Clover 1.5 Lbs.**
- **Alfalfa 2 Lbs.**
- **Rapeseed 1 Lb.**
- **Buckwheat 4 Lbs.**
- **Cereal Rye 30 Lbs.**
- **Seeded 9-18-13**









# Lessons Learned

- **Have a Plan**
- **Be Adaptive**
- **Moisture Use**
- **Soil Health**
- **Rotations**
- **Insurance**
- **Costs vs. Benefit**
- **CARBON**



# Current State of Operation



- Focus on not only carbon on surface but below surface also
- Continue on with Cover Crop/Alternative Crop experiments and Compost
- Integrate livestock back in cropland
- Work through issues with new land
- Improvements to “Native” Rangeland?













# Contact Info

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- **Mother Nature is not a nudist...she will find something to cover herself with.** Professor Raymond J. Pool 1937