

## Introduction to Section 1 (1e – Planning Crop Rotations & Cover Crops based on Climate & Available Irrigation Water)

<b>Producer:</b> Rio Grande Community Farm (RGCF); visit their website at: ( <a href="http://www.riograndefarm.org/about/">http://www.riograndefarm.org/about/</a> ) <b>Crop:</b> corn to be planted into cover crop mix <b>Soil Texture:</b> silty clay loam & clay loam <b>Irrigation System:</b> Drip & Surface Irrigation <b>Water Quality:</b> ECiw = 0.77dS/m & SAR = 0.86 <b>Other:</b> Certified Organic Farm irrigated through a drip irrigation system (utilizing a Conservation Innovation Grant).	<b>Variety:</b> to be determined <b>Soil Structure:</b> granular (w/ poor aggregate stability) <b>GPM or CFS:</b> <b>Water Availability (on demand, fixed schedule, pumped, etc):</b> on demand (well water)	<b>Field #:</b> 4 <b>Acres:</b> 16 <b>Yield:</b> to be determined <b>Soil Drainage (rapid, mod. &amp; slow):</b> moderate <b>Water Source:</b> well and canal water available <b>Precipitation &amp; Temperature reference:</b> U.S. Climate Data
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Data-Set (West ABQ)	UNITS	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	183 frost free days
						avg. Last Frost: Apr 20				avg. First Frost: Oct. 20				
avg. Precipitation	inches	0.47	0.43	0.59	0.51	0.59	0.67	1.26	1.73	1.06	0.98	0.63	0.47	Total = 9.4"
avg. High Temp.	°F	48	55	62	71	80	90	92	89	82	71	57	48	Hardiness Zone 7b
avg. Low Temp.	°F	24	28	34	40	50	59	65	63	56	44	32	24	5 °F - 10 °F
Heat Units (base Temp. of 45 °F)	GDD	0	0	93	315	620	885	1,038	961	720	387.5	0	0	Total = 5,019 GDD
Total Monthly ET (for sweet corn – 1 <sup>st</sup> yr)	inches	0	0	0	0.96	4.38	8.84	9.51	0	0	0	0	0	Total = 23.69"
Crop Rotations (Cash Crop) & Cover Crops (emphasis on diversity)	1 <sup>st</sup> yr.	← Cover Crop →				← Sweet Corn →				← Cover Crop →				Negligible crop growth in Dec. thru Feb.
	2 <sup>nd</sup> yr.	← Cover Crops →				← Pinto Beans →				← Cover Crops →				
	3 <sup>rd</sup> yr.	← Cover Crop →				← Green Chile →				← Cover Crop →				
	4 <sup>th</sup> yr.	← Cover Crop →				← Squash →				← Cover Crop →				
Irrigations for 1 <sup>st</sup> year of rotation	in.	Irrigation applied thru drip as needed to meet ET (i.e., based on cash crop & cover crops, soil type and moisture monitoring)												≈ 35" needed/yr

Growing Degree Days (GDD) = max daily Temp. + min. daily Temp. ÷ 2 minus base Temp. of 45 °F (if answer is negative, assign zero GDD). Average Method was used to calculate GDD. Base temperature is the temperature at which crop photosynthesis & growth begin. Base Temp. can be 40 to 50 °F, depending on crops grown and area. e.g. calculation for July: avg. daily high temp. 92 °F + avg. daily low temp. 65 °F ÷ 2 = 78.5 °F - 45 °F = 33.5 GDD x 31 days in July = 1,038.5 GDD for the month of July.

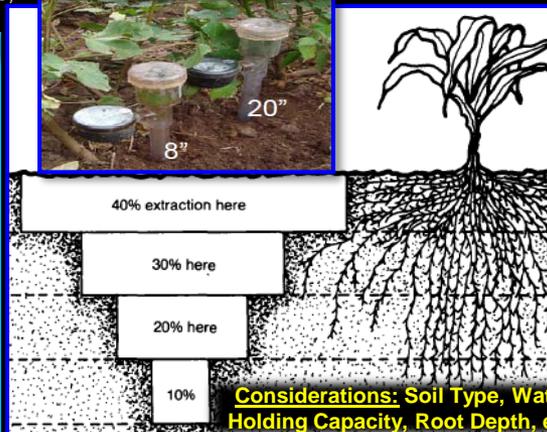
8-way Cover Crops are quickly Improving soil structure & soil health. Fall cover crop was planted on 9/15/2010 & consisted of: red winter wheat, grain rye, triticale, winter peas, bell beans, common vetch, daikon radish and mustard mix.

Cover Crop mixture (at RGCF) are working together and not competing.



Photos taken on 11/9/2011 (O.M. is 1.4% at planting)

### Soil Moisture Monitoring



**Considerations:** Soil Type, Water Holding Capacity, Root Depth, etc.

**Goals for soil building:** plan for a continual live root. Always try to include crop types in the cover crop mixture that are not used in the annual crop rotation.

Cabbage plant with live roots (avg. root length of 15 to 18 in.). Has survived temp. below 15 °F.



Photo taken on 1/29/2011: my back yard