

Evaluating Fertilizer Timing in Durum and Barley (Nesson Valley 2012).

Tyler Tjelde

Objectives

This project investigated the crop response to applying urea (46-0-0) granular fertilizer at different times throughout the growing season. Maximizing crop fertilizer uptake and minimizing urea loss in an irrigated system is very important environmentally as well as financially. This project was initiated as a result of grower interest to determine if supplemental applications would be more beneficial than one application at planting time.

Methods

The project was designed to compare five fertilizer timing treatments with Tradition barley and Alkabo durum. The experimental design was a randomized complete block replicated four times. Buffer plots were planted between each treatment. Each individual treatment plot was soil sampled (0-12", 12-24", 24-36") prior to planting and fertilizer applications to determine available soil NO₃-N. The previous crop was sugarbeets. Durum and barley yield goals were 80 and 120 bushels and planting populations were 1.5 million and 1.25 million PLS per acre respectively. The trial was planted on 24 April. Fertilizer was applied using a barber granular spreader and incorporated by applying a minimum of .50 inches with overhead irrigation. All cultural practices (tillage, planting populations, chemical, irrigation, and fungicide applications) were the same for each treatment to minimize the effects of other variables. The durum and barley were harvested 30 July using a small plot combine.

Results & Discussion

2012 Nesson Valley Durum Fertilizer Timing

Treatment	Soil Test (0-36") NO ₃ -N (lb/A)	Fertilizer* lbs N / acre	Yield bu/A	Test Wt lb/bu	Protein %
Check (no fertilizer applied)	34.0	0	38.7 c	61.6 a	12.9 c
ALL PRE	39.5	160.5	51.6 a	60.6 b	16.0 ab
PRE/POST1	41.0	79.5,79.5	49.7 ab	59.6 c	16.7 a
PRE/POST1/POST2	36.0	55,55,55	47.1 ab	59.6 c	16.4 ab
PRE/POST1/POST2/POST3	48.0	38,38,38,38	47.5 ab	60.2 bc	15.4 b
POST1/POST2/POST3	40.5	0,53,53,53	44.9 b	59.7 c	16.8 a
CV %			8.0	0.7	4.8

*1st application ALL PRE - April 24 (planting)

2nd application POST1 - May 25 (5 leaf T2 stage)

3rd application POST2 - June 15 (flag leaf stage)

4th application POST3 - June 29 (heading stage)

In the tables, numbers followed by the same letter are not significantly different (0.05)

2012 Nesson Valley Barley Fertilizer Timing

Treatment	Soil Test (0-36") NO ₃ -N (lb/A)	Fertilizer* lbs N / acre	Yield bu/A	Test Wt lb/bu	Protein %
Check (no fertilizer applied)	63.5	0	63.2 c	49.9 ab	11.0 c
ALL PRE	64.0	116	74.1 abc	48.6 d	12.6 b
PRE/POST1	55.5	62,62	81.4 ab	49.4 c	13.6 ab
PRE/POST1/POST2	64.5	38,38,38	78.2 ab	49.6 bc	13.4 ab
PRE/POST1/POST2/POST3	65.5	29,29,29,29	82.7 a	49.6 bc	12.8 ab
POST1/POST2/POST3	48.5	0,44,44,44	71.6 bc	50.1 a	13.8 a
CV %			9.6	0.6	5.2

*1st application ALL PRE - April 24 (planting)

2nd application POST1 - May 25 (5.5 leaf T2 stage)

3rd application POST2 - June 15 (flag leaf stage)

4th application POST3 - June 29 (heading stage)

In the tables, numbers followed by the same letter are not significantly different (0.05)

This project will be conducted again in 2013. Additional years of research are needed to fully assess the effects of fertilizer timing on small grain production. A site will be selected that has a lower soil NO₃-N. Irrigation needs and N needs will be monitored more closely to maintain efficient use of fertilizer crop use. As always remember that one year's data should always be used with caution.