2018 Product Evaluation Demonstration

Alpine F16 on Four Wheat Varieties

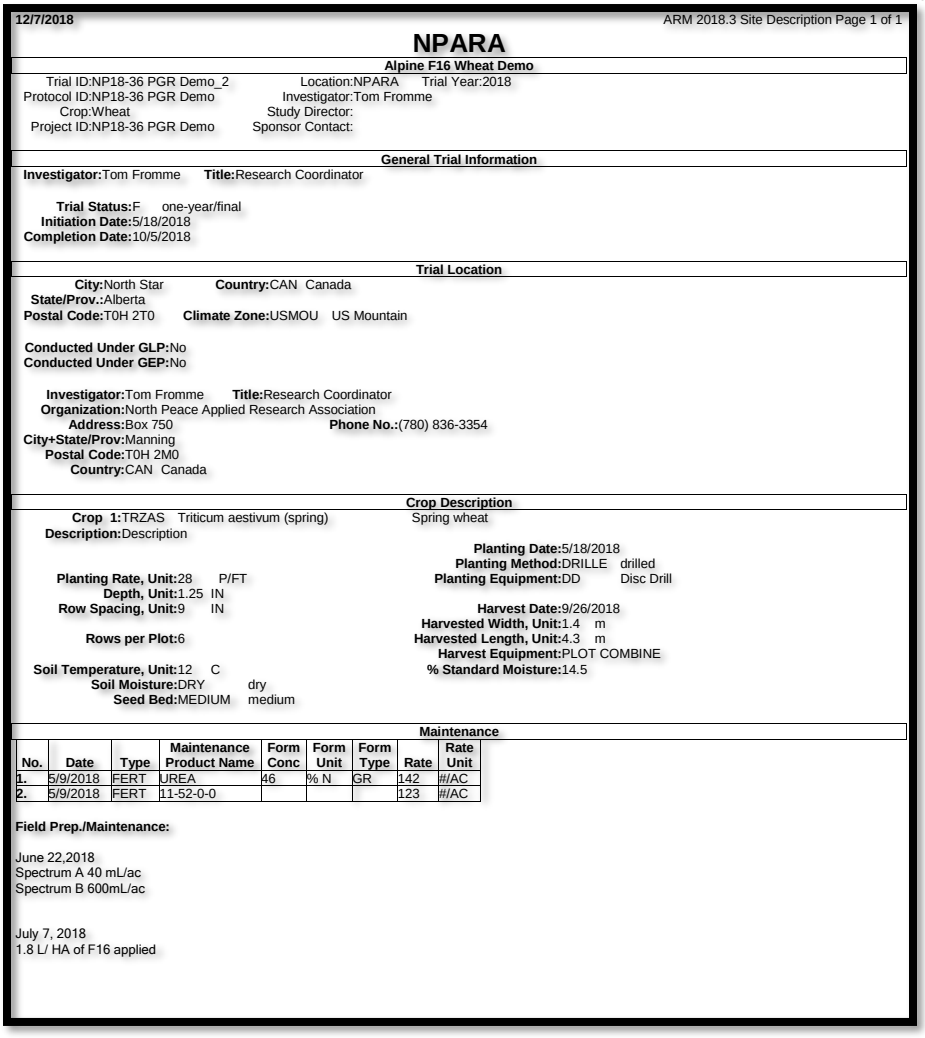
North Peace Applied Research Association

This North Peace Applied Research Association (NPARA) project is in cooperation with Alpine (Nachurs Alpine Solutions) and Albert Michaud, Alpine Sales Representative for northern Alberta. We also had support from FP Genetics, Canterra, and Alberta Wheat Commission.

Four wheat varieties were used to evaluate a single application of Alpine F16 at GS 37-38. The demonstration was seeded May 18, 2018. Growing conditions were favorable at the NPARA research farm all season, starting with a warm dry spring and adequate moisture through the summer. Very low incidence of disease or insect pests characterized the season. Harvest was September 26.

Total Rainfall:
May- 0.28"
Jun- 3.76"
Jul- 2.46"
Aug- 1.59"
Sept- 1.48"
Total=9.57"

Crop yield is not the best measure of production success. Once the product *quality* becomes a factor in overall return per acre producers begin to look at *net return per acre* as the measure of performance. A recurring wheat production question by NPARA member producers concerns protein levels, and management techniques for economically achieving protein above 13.5%. Researchers are still trying to dial in on nitrogen fertilizer applications for a solution. It is certainly possible to *buy* high wheat protein; recent and ongoing work by Dr. Sheri Strydhorst indicates that adding very high levels of synthetic nitrogen increases protein and



12/7/2018 ARM 2018.3 Site Description Page 1 of 1

NPARA

Alpine F16 Wheat Demo

Trial ID:NP18-36 PGR Demo_2 Location:NPARA Trial Year:2018
Protocol ID:NP18-36 PGR Demo Investigator:Tom Fromme
Crop:Wheat Study Director:
Project ID:NP18-36 PGR Demo Sponsor Contact:

General Trial Information

Investigator: Tom Fromme **Title:**Research Coordinator

Trial Status:F one-year/final
Initiation Date:5/18/2018
Completion Date:10/5/2018

Trial Location

City: North Star **Country:**CAN Canada
State/Prov.: Alberta
Postal Code:T0H 2T0 **Climate Zone:**USMOU US Mountain

Conducted Under GLP: No
Conducted Under GEP: No

Investigator: Tom Fromme **Title:**Research Coordinator
Organization: North Peace Applied Research Association
Address: Box 750 **Phone No.:**(780) 836-3354
City+State/Prov: Manning
Postal Code:T0H 2M0
Country:CAN Canada

Crop Description

Crop 1:TRZAS Triticum aestivum (spring) Spring wheat
Description: Description

Planting Date:5/18/2018
Planting Method:DRILLE drilled
Planting Rate, Unit:28 P/FT **Planting Equipment:**DD Disc Drill
Depth, Unit:1.25 IN
Row Spacing, Unit:9 IN

Harvest Date:9/26/2018
Harvested Width, Unit:1.4 m
Rows per Plot:6 **Harvested Length, Unit:**4.3 m
Harvest Equipment:PLOT COMBINE
Soil Temperature, Unit:12 C **% Standard Moisture:**14.5
Soil Moisture:DRY dry
Seed Bed:MEDIUM medium

Maintenance

No.	Date	Type	Maintenance Product Name	Form Conc	Form Unit	Form Type	Rate	Rate Unit
1.	5/9/2018	FERT	UREA	46	% N	GR	142	#/AC
2.	5/9/2018	FERT	11-52-0-0				123	#/AC

Field Prep./Maintenance:

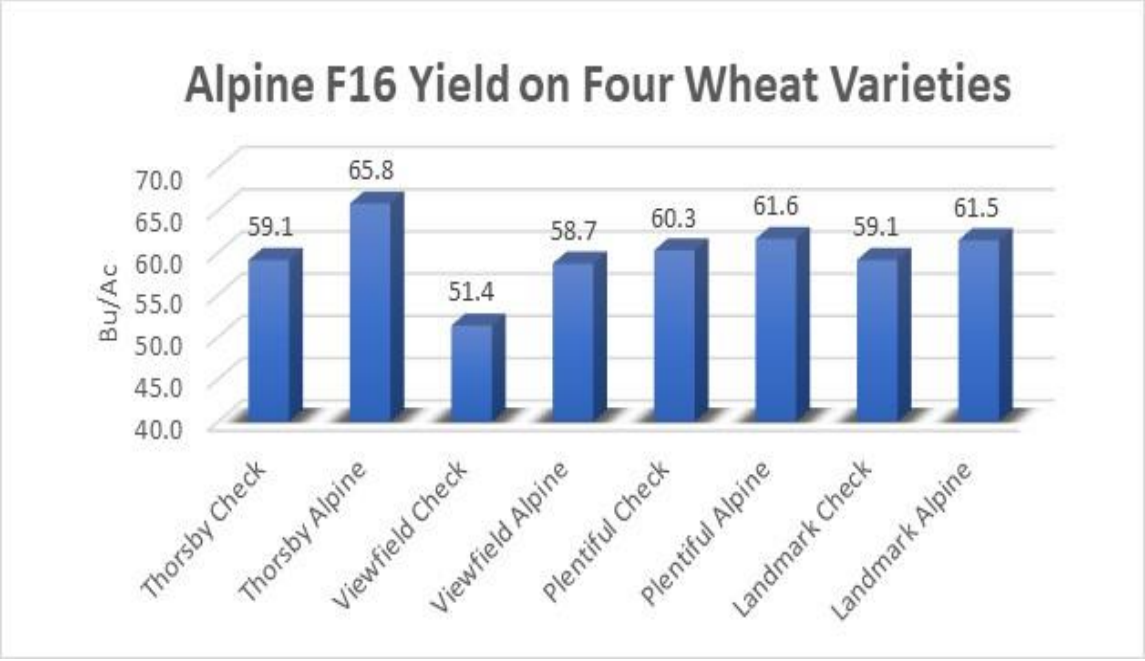
June 22,2018
Spectrum A 40 mL/ac
Spectrum B 600mL/ac

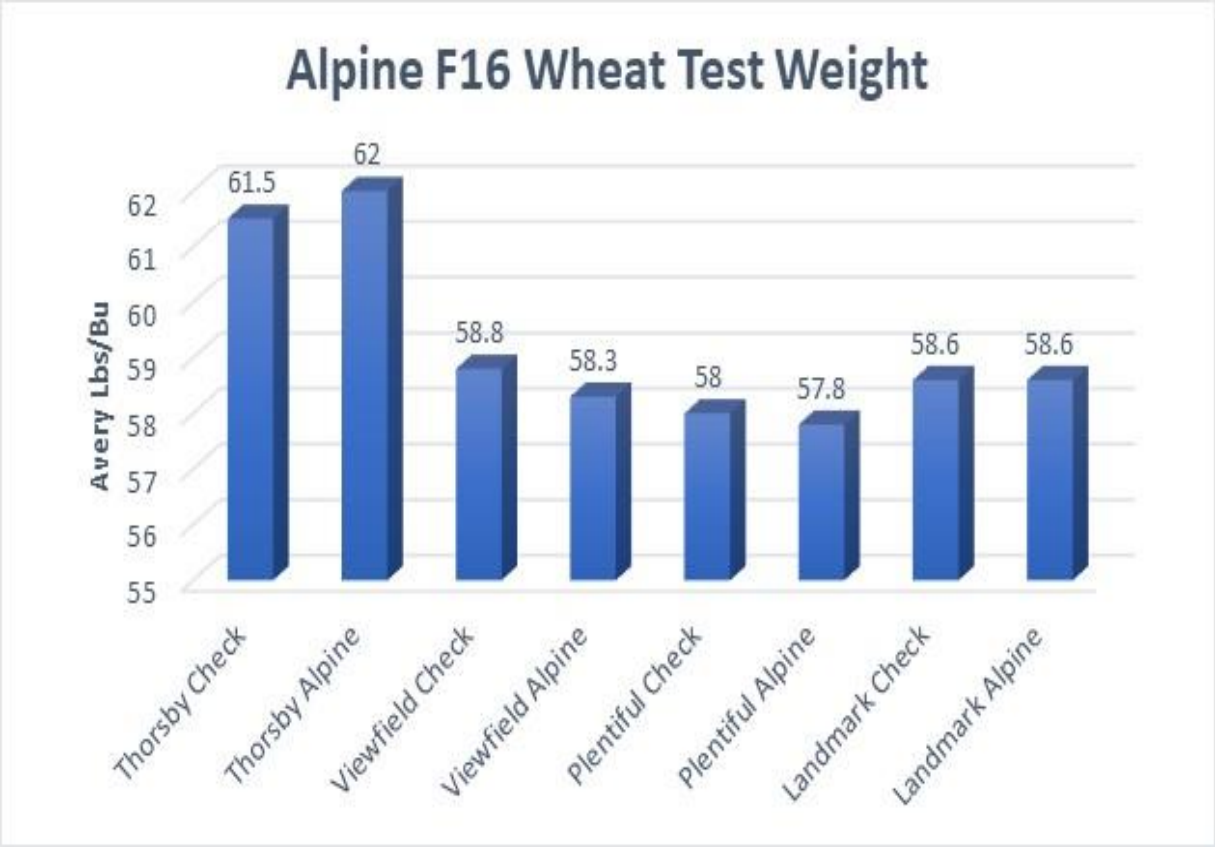
July 7, 2018
1.8 L/ HA of F16 applied

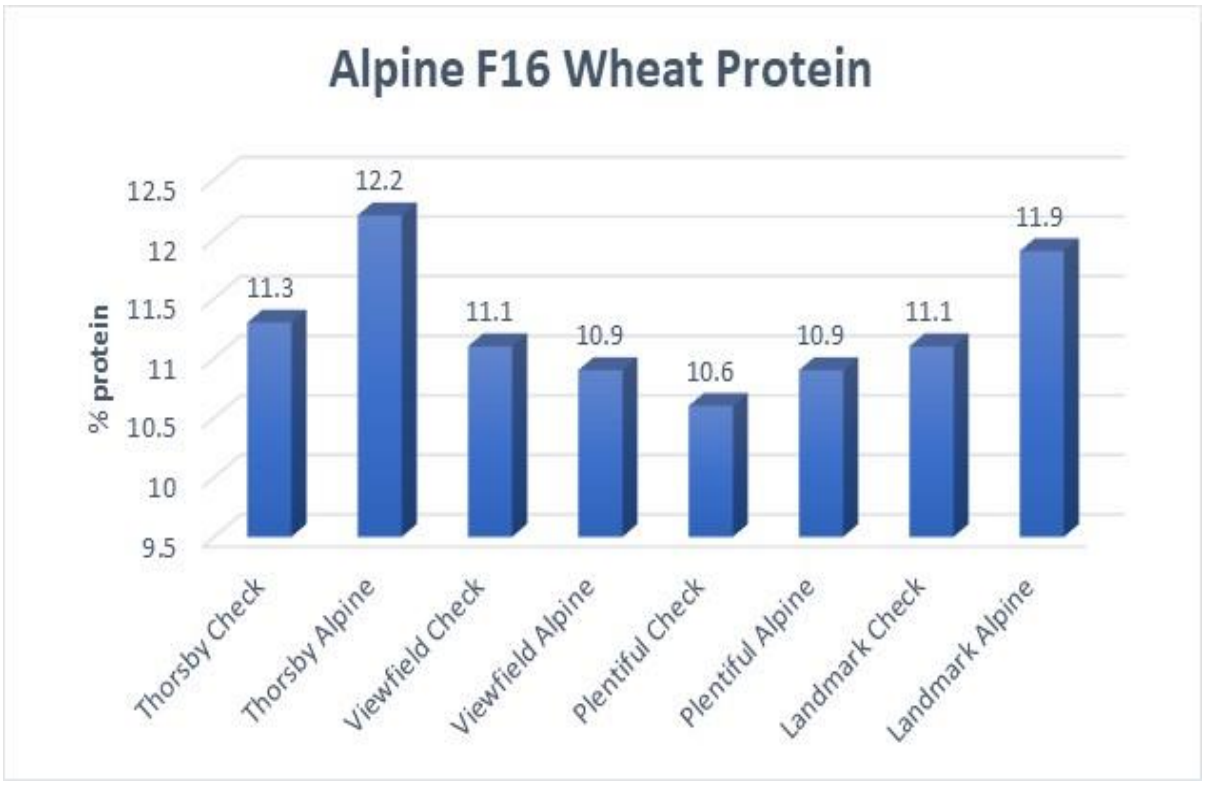
shows positive return on the investment. Considering the total economic and environmental effects, and the use efficiency of nitrogen, an alternative would be attractive. Plant growth regulators (PGRs) typically do not show positive protein response. Foliar fertility applications, micronutrient management, and cultural methods may hold the key to optimum protein levels.

In this non-replicated product evaluation, we should be cautious about making conclusions or decisions based on the data. There is an advantage of having several varieties to evaluate the F16 product. This demonstration showed some varietal-specific yield response, but protein and test weight response were neutral.

Trt Name	Bu/ac	Test Weight Avery lb/Bu	Moisture %	Protein %
Thorsby Check	59.1	61.5	14.3	11.3
Thorsby Alpine	65.8	62	14.9	12.2
Viewfield Check	51.4	58.8	14.5	11.1
Viewfield Alpine	58.7	58.3	15.5	10.9
Plentiful Check	60.3	58	15.2	10.6
Plentiful Alpine	61.6	57.8	15.3	10.9
Landmark Check	59.1	58.6	15	11.1
Landmark Alpine	61.5	58.6	14.9	11.9




Alpine F16 Wheat Test Weight
Avery Lbs/Bu
62
61
60
59
58
57
56
55
61.5
62
58.8
58.3
58
57.8
58.6
58.6
Thorsby Check
Thorsby Alpine
Viewfield Check
Viewfield Alpine
Plentiful Check
Plentiful Alpine
Landmark Check
Landmark Alpine


Alpine F16 Wheat Protein
% protein
12.5
12
11.5
11
10.5
10
9.5
11.3
12.2
11.1
10.9
10.6
10.9
11.1
11.9
Thorsby Check
Thorsby Alpine
Viewfield Check
Viewfield Alpine
Plentiful Check
Plentiful Alpine
Landmark Check
Landmark Alpine

ALPINE F16

premium liquid fertilizer

NUTRIENTS SUPPLIED (pounds per litre):

Total Nitrogen (N)	**0.434**
Available Phosphate (P_2O_5)	**0.217**
Soluble Potash (K_2O)	**0.108**
(grams per litre)	
Manganese (Mn)	**0.615**
Molybdenum (Mo)	**0.615**
Iron (Fe)	**1.23**
Boron (B)	**0.62**
Copper (Cu)	**0.615**
Zinc (Zn)	**0.615**

PRODUCT PROPERTIES:

Weight:	11.23 kg per litre
pH:	6.0-7.0
Appearance:	clear green liquid
Odor:	no odor, or mild ammonia

GENERAL PRODUCT INFORMATION:

ALPINE F16™ liquid fertilizer is a total balanced nutrient product intended to be used as a foliar complement to a calculated fertility management program. It may be used alone or in combination with other ALPINE liquid fertilizers, to meet the nutrient requirements of the specific crop.

FIRST AID: Please see MSDS sheet for more information, call (800) 622-4877 or visit us online at www.nachurs.com.

SELLER WARRANTS THAT THE ABOVE PRODUCT CONFORMS TO ITS CHEMICAL DESCRIPTION AND IS REASONABLY FIT FOR THE PURPOSE ON THE LABEL WHEN USED IN ACCORDANCE WITH DIRECTIONS UNDER NORMAL CONDITIONS OF USE (INCLUDING NORMAL WEATHER CONDITIONS). NEITHER THIS WARRANTY NOR ANY OTHER WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, EXPRESS OR IMPLIED, EXTENDS TO THE USE OF THIS PRODUCT WHEN USED CONTRARY TO THE LABEL INSTRUCTIONS OR UNDER ABNORMAL CONDITIONS (INCLUDING ABNORMAL WEATHER CONDITIONS), AND THE BUYER ASSUMES THE RISK OF ANY SUCH USE. ALPINE STARTER OR FOLIAR APPLICATIONS ARE INTENDED TO SUPPLEMENT EXISTING SOIL FERTILITY PROGRAMS AND WILL NOT BY ITSELF PROVIDE ALL THE NUTRIENTS NORMALLY REQUIRED BY AGRICULTURAL CROPS.

CAUTION: BORON AND MOLYBDENUM ARE TO BE USED WHERE SOIL TEST AND/OR TISSUE ANALYSIS INDICATE A DEFICIENCY, AND SHOULD NOT BE USED AT RATES IN EXCESS OF THE RATE RECOMMENDED BY A QUALIFIED INDIVIDUAL/ENTITY SUCH AS A CERTIFIED CROP ADVISOR, AGRONOMIST OR UNIVERSITY. EXCESSIVE APPLICATION OF BORON AND MOLYBDENUM MAY CAUSE CROP DAMAGE.

*THESE ARE GENERAL PRODUCT RECOMMENDATIONS. PLEASE CONSULT WITH YOUR AUTHORIZED ALPINE DEALER OR ALPINE DISTRICT SALES MANAGER FOR SPECIFIC FERTILITY RECOMMENDATIONS.

ALPINE

the starter fertilizer company®

www.alpinepfl.com

product recommendations

RECOMMENDED APPLICATION RATES:

CEREAL CROPS: 2-4L/ac
- 1st application at 4-6 leaf stage Feekes stage 4-5
- 2nd application at flag leaf stage Feekes stage 9

ALFALFA: 2-4L/ac within 10 days after each cutting

CORN: 2-4L/ac
- 1st application at 4-6 leaf stage V4-6
- 2nd application just prior to tassel V18

SOYBEANS: 2-4L/ac
- 1st application at 2-4 trifoliate V2-4
- 2nd application at early bloom R1

DRY/EDIBLE BEANS: 2-4 L/ac

VEGETABLES: 2-4 L/ac every 7-10 days

ALPINE 16-8-4 can be mixed with many crop protection products. Conduct a jar test to verify compatibility with your tank mix product.

Favorable spray conditions:
- Time: Afternoon or evening when temperature has dropped 3 degrees from peak
- Temperature: 18-29 degree C
- Humidity: greater than 70%
- Wind speed: less than 8km/5mph

Addition of ALPINE EDTA chelated micronutrients may be of added benefit at recommended rates. **ALPINE SRN®** liquid fertilizer is the recommended product to be used for additional Nitrogen.

For more specific foliar guidelines, please consult with your authorized ALPINE Dealer or ALPINE District Sales Manager.

ALPINE F16