2020
2021

Fertilizer

in Wheat

Quality Assurance

synAgri Grow crops differently

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LIQUID STARTER IN WHEAT

The 7-24-3*** formula applied according to the recommendation of 47 L/ha (5 US gal/ac) in wheat and positioned close to the seed (pop-up) produced excellent results with net gains of $77/ha and $25/ha.

The purpose of a liquid starter like the 7-24-3 (5*) is to stimulate plant growth early on to help the roots establish quickly. The keys to the starter's efficiency are its high phosphorus availability and its speed of absorption. An optimal N:P ratio is also an important point factor to consider when choosing a starter.

The best ratio to maximize phosphorus absorption is 1 part nitrogen to 3 parts phosphorus. The further away from the 1:3 ratio, the slower the phosphorus assimilation. Synagri's 7-24-3 (5*) Starter is an excellent product with the correct N:P ratio and acidic properties with a pH of 6. This is very important, as non-acidic starters promote the presence of ammonia which is harmful to young developing seedlings.

The 7-24-3 (5*) also contains zinc and boron, which are very useful given the limited availability in cold Québec soils when sowing. In addition, 54% of the soils in Québec are lacking in zinc and 87% in boron, of which 51% are very poor.
Adding these two minor elements promotes root development.

Chemical Analysis of the 7-24-3 (5*)

7% N – 24% P_2O_5 – 3% K_2O – 2% S – 0.5% Zn – 0.06% B

To be effective, this liquid starter must be applied near the seed, which is called pop-up placement. Phosphorus migrates very little in the soil. Therefore, if it is applied too far from the root, it will not be assimilated. Dosage is important to maximize results.

Recommended doses of 7-24-3 (5*)*

	Sandy soils	Clay soils
With pop-up placement:	37 L/ha (4 US gal/ac)	47 L/ha (5 US gal/ac)

Input

kg/ha (for 37 l/ha) : 3.3 N – 11.8 P_2O_5 – 1.5 K_2O – 0.037 B – 0.26 Zn
kg/ha (for 47 l/ha) : 4.2 N – 15.0 P_2O_5 – 1.9 K_2O – 0.047 B – 0.33 Zn

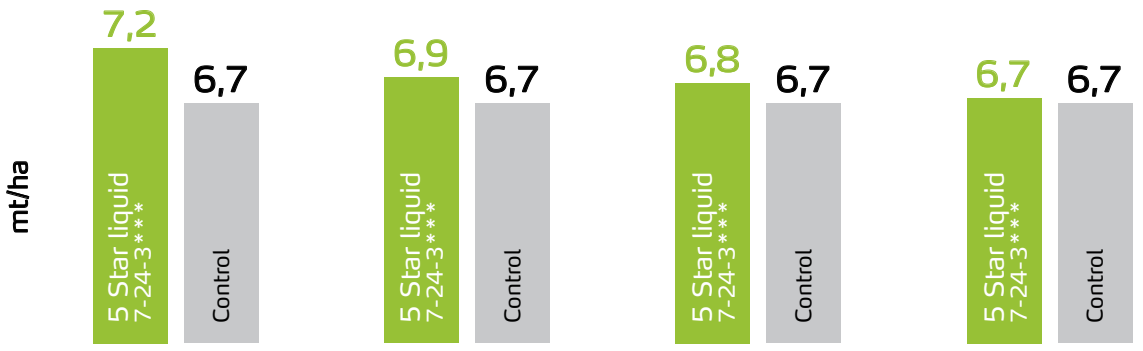
In light soils where conditions may promote earlier and faster root development, the rates should be lower than in heavier soils to avoid root damage.

We carried out tests with 7-24-3 (5*) two years in a row in order to determine the financial profitability, and compared the results with a control (without the starter). The tests were held in a clay soil. Three doses were compared with the control (without the starter):

- 47 L/ha (5 US gal/ac) – **Recommended dose**
  To facilitate application during sowing, the content has been diluted at a ratio of 50% pop-up and 50% water, and the mixture was applied at 10 US gal/ac.
- 94 L/ha (10 US gal/ac) – **Twice the recommended dose**
  Two types of application for this dose:
  1- Content diluted at 50% pop-up and 50% water and applied at 20 US gal/ac.
  2- Applied undiluted at 10 US gal/ac.
- 188 L/ha (20 US gal/ac) – **Four times the recommended dose**
  Applied undiluted at 20 US gal/ac.

LIQUID STARTER IN WHEAT

LIQUID STARTER TESTS WITH 7-24-3 (5)* APPLIED IN POP-UP PLACEMENT (NEAR THE SEED) 2018



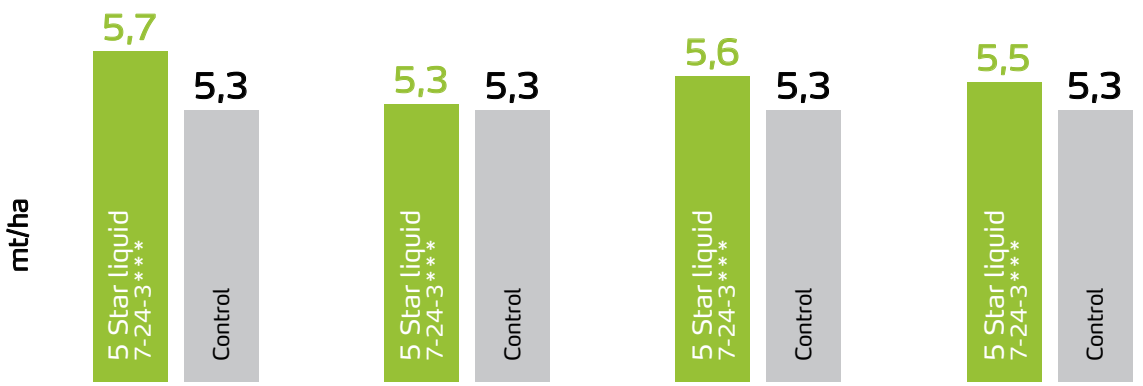
47 L/ha
(5 US gal/ac)
50 % diluted
+550 kg
Cost : $66/ha
+$77

94 L/ha
(10 US gal/ac)
50 % diluted
+175 kg
Cost : $132 /ha
-$87

94 L/ha
(10 US gal/ac)
Applied undiluted
+156 kg
Cost : $132/ha
-$92

188 L/ha
(20 US gal/ac)
Applied undiluted
+88 kg
Cost : $264/ha
-$242

LIQUID STARTER TESTS WITH 7-24-3 (5)* APPLIED IN POP-UP PLACEMENT (NEAR THE SEED) 2019



47 L/ha
(5 US gal/ac)
50 % diluted
+378 kg
Cost : $66/ha
+$25

94 L/ha
(10 US gal/ac)
50 % diluted
+42 kg
Cost : $132/ha
-$122

94 L/ha
(10 US gal/ac)
Applied undiluted
+298 kg
Cost : $132/ha
-$61

188 L/ha
(20 US gal/ac)
Applied undiluted
+215 kg
Cost : $264/ha
-$213

YaraVera® AXAN 40-0-0-5.5 (S)
YaraBela® AMIDAS™ 27-0-0-3.75 (S)

Through dozens of tests carried out over three years, we have compared the financial profitability of several doses of nitrogen in wheat. You can clearly see in the graphs below that the higher the nitrogen dose, the higher the yields. The challenge is to determine at which nitrogen dose it is no longer profitable to add more.

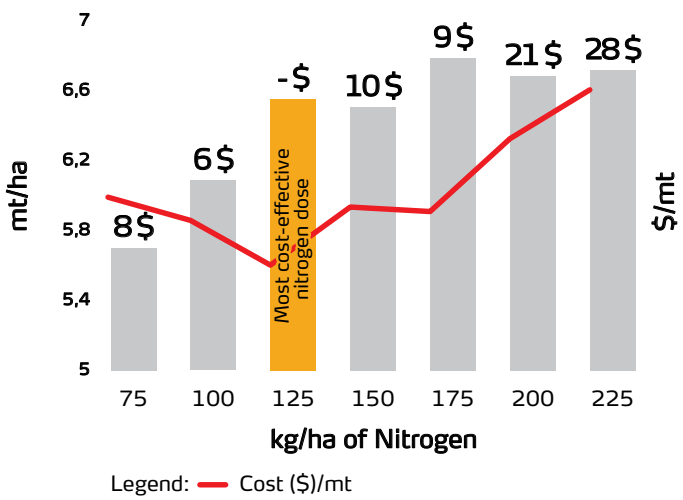
We were able to measure that the most profitable nitrogen dose levels are as follows:

Presidio wheat: 125 to 140 kg/ha. With more intensive management, 150 kg/ha is ideal.
AAC Synox wheat: 110 to 130 kg/ha. With more intensive management, 150 kg/ha is ideal.

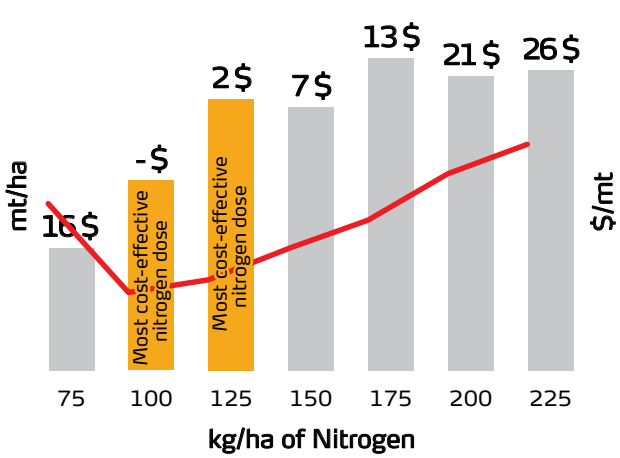
In fields with a lower yield potential, doses of 100 kg/ha are more suitable.

The methodology consisted of using the wheat production budget of CRAAQ (Beauregard) to consider all factors that can influence the cost of production per tonne of wheat (inputs, machinery, drying, transport, etc.). This allowed us to take into account not only the cost of nitrogen itself, but also additional transportation and storage costs as yield increases. We calculated the production cost per tonne of wheat for each dose of nitrogen with the yield obtained in our tests. In the graph, the most cost-effective dose corresponds to the performance indicated by the green column. The amounts ($) in each blue column indicate the additional cost to produce a tonne of wheat with other doses of nitrogen.

PRESIDIO – NITROGEN LEVEL
DIFFERENCE OF COST/MT VS. THE LOWEST



AAC SYNOX – NITROGEN LEVEL
DIFFERENCE OF COST/MT VS. THE LOWEST



Ideally, applications should be done as follows:

- 50 to 60 kg/ha of incorporated nitrogen in preplant (with YaraVera® AMIDAS™)
- 55 to 90 kg/ha of nitrogen at Z29 (with YaraBela® AXAN end tillering – beginning of stem elongation)
- Nitrogen can also be fractionated by reducing by 25 kg/ha the dose at Z29, which will be added at Z39 (end of stem elongation, before boot stage) to improve protein level.

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