



**Aim for Long Term Gain** by Troy LaForge, Rack Petroleum, P. Ag. CCA

Successful crop nutrition planning provides numerous benefits on the farm. A successful nutrition plan is built not only on annual nutrient use, but also on short and long term production goals. Such goals may be to improve disease tolerance, yield performance and/or grain quality. All soil parameters (not just nitrogen) are important in determining your fertility program and rotation strategy including organic matter, phosphate, potassium, and micronutrients. Balanced soil components work together to improve the quality, quantity and sustainability of crop production. Proper soil testing, analysis and recommendations by trained agronomists will give the producer ability to build successful plans. This will benefit both the short and long term productivity of their business.

Among its many benefits organic matter is responsible for nutrient cycling, water holding capacity and reducing draft requirements of soil engaging equipment. Improving organic matter relies on two key points: carbon content and root mass. Different types of crop residue have varying levels of carbon and as a general rule cereal stubble has more than oilseed stubble which has more than pulse stubble. The amount of root matter differs between crops as well. For example, barley has many more roots per volume of soil versus lentils. Keeping these two points in mind, when planning a crop rotation for organic matter increase it is important to use a greater proportion of higher carbon containing crops residues with larger root masses.

High yielding crop production requires readily available phosphorous. As yield goals have increased with improved farming practices and crop genetics so have the needs for phosphorous. For example, Canola yield goals in the last ten years have increased an average of 10 – 20 bu/ac. Canola removes approximately .9 pounds of phosphorus per bushel produced; which equates to an additional requirement of 10 – 20 pounds of

phosphorous per acre. If a farm business has not increased the rate of phosphorous application in the last ten years to accommodate the removal levels, the full yield potential of the newer genetics may not be met. It is critical that phosphorous levels be at least maintained and in many circumstances improved in order to utilize the yield potential of today's genetics and farming practices.

Potassium and micronutrients are often forgotten in nutrient planning. Many crops use approximately 80% as much potassium as they do nitrogen. As our rotations have changed to include more oilseeds and pulses so have the removal levels of this key element. Western Canada was initially blessed with many potassium rich soils but with the change in rotation has come an increasing need for potassium. A bushel of wheat removes .34 lbs of potassium, a bushel of canola removes .46 lbs of potassium and a bushel of lentils removes 1.1 lbs of potassium. Much like phosphorous the needs have crept up but applications have not. The micronutrients of the soil (mainly Copper, Zinc, Manganese, Iron and Boron) are much the same picture in that needs have increased and applications have not. Micronutrients generally cause the plant to function more efficiently and if left unchecked yields tend to flatten out or fall.

Nutrient Removal lbs/ac						
	Wheat		Canola		Lentil	
bu/ac	35	50	30	45	20	30
Phos.	21	30	27	41	12	18
Pot.	12	17	14	21	22	33

\*Based on IPNI harvest removal chart (Oct 2010)

Long term nutrition planning considers all aspects of soil components. Building a plan that will build your soil's productivity results in long term benefits so that you can achieve your Ultimate Yield. This winter, spend time building a nutrient plan with one of Rack's agronomists and look at building for this year and future years' productivity.

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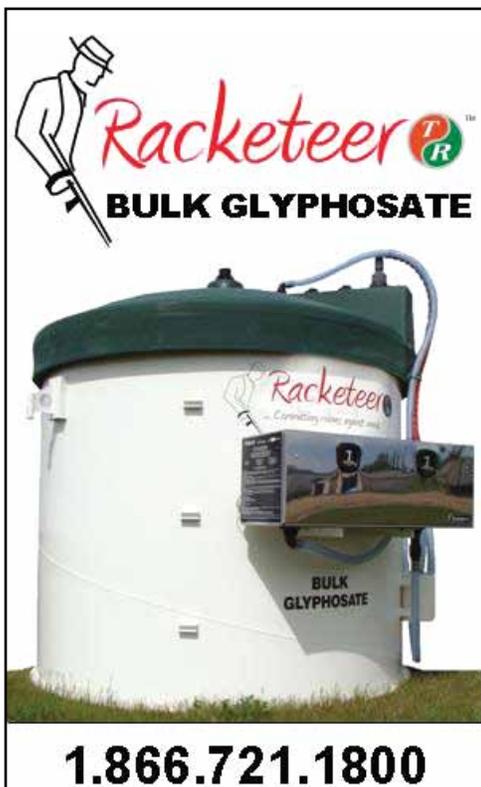
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## Increase your Micronutrient Efficiency with Impregnation

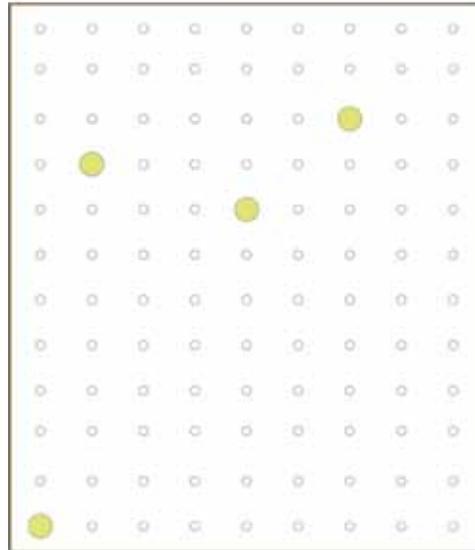
by Andrew Swenson  
Regional Manager, Premium Offerings  
Yara Belle Plaine Inc.

When it comes to micronutrients, it is important that each plant is fed its required amount in each growing season. The amount applied may be small compared to NPK&S needs, but the impact is potentially large. Micronutrients are necessary for a plant to remain healthy and strong throughout the season. These products can potentially help with disease control, weather variation and ultimately yield gain, as these nutrients ensure that the plant is in optimal health. Through soil and tissue testing, your agronomist will be able to determine what nutrients your crop requires.

One of the most important micronutrients required is Zinc. Early in the plants growth cycle it is important that Zinc is available to the plant due to the important role it plays in the uptake of Phosphate. The balance between Phosphate and Zinc availability in the soil is crucial to the plants ability to utilize the two nutrients at maximum

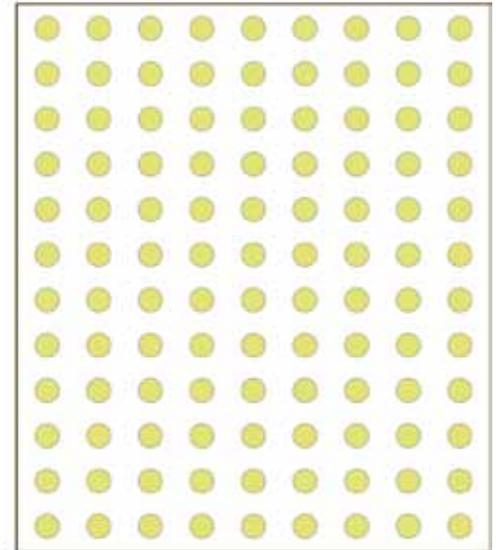


Granular micronutrient blended with dry fertilizer



This diagram depicts a field with only granular micronutrients used.

YaraVita™ impregnated granules



This diagram depicts a field that has YaraVita impregnated granular fertilizers.

The balance between Phosphate and Zinc availability in the soil is crucial to the plants ability to utilize the two nutrients at maximum efficiency.



Granular

vs

Impreg

efficiency. Applying Zinc effectively can be difficult as granular prills often do not allow for sufficient access by all plants. To increase access to this vital nutrient, it is believed that early Zinc demands of the crop can be met through impregnation of Zinc on the NPK fertilizer blend.

By having Zinc present on each fertilizer granule, every plant will have access to the Zinc it requires during the growing season. Zinc is relatively immobile in the soil and does not move to the plant as easily as nutrients such as Nitrogen. Using dry Zinc formulations increases the distance between Zinc prills, thus reducing the access to this nutrient by all plants. By applying liquid Zinc to dry granules in an NPKS blend, we are able to ensure that the plants roots are not only finding the dry fertilizer, but are

also finding the impregnated micronutrient. The increased number of feeding sites offers the plant more opportunity to find and ultimately use the nutrients they require.

Rack has partnered with Yara to access a fully formulated product called Zinrac. It has an analysis of 40% and is the only liquid product of its kind on the market. Due to Zinrac's high Zinc concentration, relatively little product can coat dry fertilizer to provide the equivalent of up to 3lbs per acre of Zinc on a fertilizer blend. This is all done at your local Rack retail to ensure the product is properly applied and to reduce unnecessary handling by the customer. Call today to order your Zinc impregnated Phosphate.

## Calculate an Accurate Seeding Rate this Spring *by Randi Mattus, B. Sc. Ag.*

Too often growers rely solely on calculations used in the past to determine their seeding rate. Seeding rate is a factor of desired plant population versus seedling survival rate and will change year to year and seed lot to seed lot. Many parameters directly affect both of these factors including thousand kernel weight, germination and disease presence. Because of this, a seed test can be the most valuable tool in determining a proper seeding rate.

$$\text{seeding rate (lb/ac)} = \frac{\text{desired plant population/ft}^2 \times 1,000}{\text{kernel wt. (g)} \div \text{seedling survival rate (in decimal form such as 0.90)} \div 10.4}$$

Desired plant population is the main goal of calculating a proper seeding rate. With a correct plant population, the crop is able to achieve more optimal growth and development under the given growing conditions. Thousand kernel weight is the weight of 1000 kernels of seed and has great bearing on the health of the seed lot as well as the desired plant population. Heavier seed will result in a higher thousand kernel weight and therefore a higher seeding rate. Though it may be tempting to go with lighter seed and a lower seeding rate, keep in mind that plumper, heavier seed can result in higher yields. Several studies have shown stronger emergence, a more competitive crop and resulting higher yields when using plumper seed with a higher protein.

	A	B
Desired Plant Population (sq.ft)	24	24
Thousand Kernel Weight (g)	22	38
Seedling Survival Rate (%)	0.85	0.85
<b>Seeding Rate (lb/ac)</b>	<b>60</b>	<b>103</b>

Germination is one factor used to determine the seedling survival rate. Germination testing determines what percentage of the seed is likely to germinate and is between 90 & 98% for good quality seed. Seed mortality is also included in the seedling survival rate as a percentage of germinated seeds that will not grow into producing plants. This value can vary from 5 – 25% percent depending on the conditions at the time of seeding.

Seed borne diseases will increase the mortality of seedlings thus reducing the total plant population and resulting yield. Some com-



mon crop diseases that are seed-borne include Ascochyta in pulses, Fusarium in cereals, and true loose smut in barley. Cereals that contain less than 5% Fusarium can be used with a registered seed treatment, whereas, a contents of greater than 5% should not be used for planting. True loose smut levels can only reach a maximum of 2% in barley and if used should be accompanied with a registered seed treatment. Since the seed test is only a small representation of the entire seed lot, it is important to recognize that applying a seed treatment is the only way to protect yourself against seed-borne diseases and seedling mortality.

Seed tests are easy to acquire and analyze and may be the most important tool in determining the proper seeding rate. Whether purchasing seed from a registered seed grower or using your own stock, always remember to acquire a seed test so you can accurately determine your seeding rates for spring planting. Visit your local Rack Petroleum location to get your seed tested before the rush of spring.

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Any problems or questions will be handled immediately, 24/7, by calling 1.306.948.6104. We would also like to introduce the Rack Loyalty card for those customers with Dyed Diesel or Farm Permits wishing to use their credit or debit cards. This allows our customers to receive their permit discounts right at the pump.

Gifts of fuel can be difficult as it's very hard to wrap, so Rack also has fuel gift cards available. Any denomination can be prepaid and put on a gift card for personal use or to give to your friends or family. Gift cards and more information on the Rack Petroleum unmanned cardlocks can be obtained by calling 1.866.721.1800 or talking to your local Rack location.



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## About Us

*Rack Petroleum Ltd. is an independently owned and operated agricultural input business that has evolved to excel at supplying farm customers with a range of inputs as well as unsurpassed agricultural advice and recommendations.*

*Our mission is to transfer technology to our customer while striving for excellence in our product and service offerings safely and profitably, at a price that can be customer attractive and measurable for the value received through operational efficiency and excellence.*

*Rack is one of the only independent retail families that offers every fertilizer type; anhydrous, dry, and liquid products. Rack also works closely with farm customers to offer full service 24/7 fuel delivery priced on the open market. The company has shown tremendous growth as a result of its employee commitment to work hand in hand with growers to provide daily solutions in every aspect of farm production.*

*The company prides itself in being able to assist the customer in determining the solution to their unique situation, and deliver the required product or service to the farm or field. The Rack can discuss a problem, create a solution, and supply, deliver & custom apply the inputs to provide the solution, all in a timely manner.*