Fertoz

Fertoz Rock Phosphate (FRP) : Sustainable, Productive, Profitable and Good for the Environment

Natural, Sustainable and Better for the Environment

Fertoz-Phos is a direct mined, crushed, screened, granulated, and transported cost effective alternative to conventional fertilizers. Fertoz-Phos is a sustainable option for organic, regenerative and conventional producers. Fertoz fertilizers are certified organic and have zero chemical additives . Rock phosphate provides extended long-term nutrient release. Reduced leaching and run-off losses from Fertoz Rock Phosphate (FRP) does not impact natural waterways and aquatic ecosystems.

Proven Yield Increases

A thorough review of multiple research studies show substantial yield increases from rock phosphate compared to no P application. Similarly FRP increased production in numerous field trials.

Rock Phosphate Production Significantly Reduces Carbon Release into the Atmosphere

Conventional phosphate (P) fertilizer production creates 5.6 times more CO_2 than rock phosphate (RP) due to its manufacturing processes according to the chart below.

Difference in CO_2 emissions between conventional phosphate and rock phosphate

Volume of fertilizer through mining, processing and transportation	*For every kg of Rock Phosphate (RP) produced, 0.2 kg of CO_2 is released*	*For every kg of conventional P produced, 1.3 kg of CO_2 is released*
	Volume of CO_2 released from RP production	**Volume of CO_2 released from Conv. P production**
1 ton	0.2 tons	1.3 tons
30 tons (1 truckload)	6 tons	39 tons
100 tons	20 tons	130 tons
1000 tons	200 tons	1300 tons

*Data supplied to charts are a result of Fertoz' internal research

It Takes Fewer Acres to Neutralize the Carbon Release from Rock Phosphate

Field crops sequester CO_2 from the atmosphere and use it to produce biomass. Assuming average forage production, the number of conventional acres required to be carbon neutral based on plant type and volume of fertilizer used are outlined as follows:

Number of acres required to neutralize CO_2 from fertilizer production

Volume of fertilizer applied	**Grass (acres)**		**Alfalfa (acres)**	
	Rock Phosphate	**Convent. fertilizer**	**Rock Phosphate**	**Convent. fertilizer**
1 ton	0.01	0.065	0.005	0.03
30 tons (1 truckload)	0.3	1.95	0.17	1.11
100 tons	1	6.5	0.57	3.71
1000 tons	10	65	5.71	37.14

**Sequestration factors for each crop (volume of CO2 removed from the atmosphere in tons per acre) grass (20 tons/acre), alfalfa (35 tons/acre) Manitoba Forage Council,2008*

Yield Increases – Additional Benefit with Organic Fertilizer

Potentially increase returns using Fertoz-Phos on average 500 acre farm seeded to wheat compared to no current fertilization application

Example: Multiple research and field trial data indicate an approximate yield increase of 15% from rock phosphate application compared to no phosphorus application. A 500 acre farm, applying rock phosphate (RP) at 100 kg/acre yields the following crop returns:

	Wheat		**Corn**		**Alfalfa**		**Legumes**	
	Yield without P	**Yield with RP**	**Yield without P**	**Yield with RP**	**Yield without P**	**Yield with RP**	**Yield without P**	**Yield with RP**
Yield	25	29.4	40	47.1	1	1.18	20	23.5
Yield Increase		4.4		7.1		0.18		3.5
$/acre return (net)		$52.8/acre		$56.8/acre		$27/acre		$35/acre
$ return 500 acres (net)		$26,400		$28,400		$13,500		$17,500

*Assumed organic grain prices: Wheat ($12/bu), corn ($8/bu), Alfalfa ($150/t), Legumes ($10/bu)

Reduce your Carbon Footprint with FRP

There is a growing concern around high CO_2 emissions and effect on climate change. Making your agricultural management practice more sustainable gives the soil opportunity to become a sink for CO_2. Choosing fertilizers that reduce CO_2 emissions minimize agricultural impacts on climate change. Carbon credits derived from sequestration may be able to be sold via carbon trading platforms, therefor generating additional income stream for farmers.

Replace 20% of your Total Phosphate needs with Rock Phosphate and Reduce CO2 Emissions

Reduce carbon emissions and lower your carbon footprint by using rock phosphate. Start by replacing 20% of your mono-ammonium phosphate, di-ammonium phosphate or triple super phosphate to see extended P availability and long-term soil and environmental benefits.

Difference in CO_2 emissions between straight conventional phosphate and 80:20 conventional P: rock phosphate inclusion

Volume of fertilizer through mining, processing and transportation	*For every kg of 80:20 (conv. P:RP), 1.04 kg of CO_2 is released*	*For every kg of conventional P produced, 1.3 kg of CO_2 is released*	*A blend of 80:20 reduces CO_2 production by 0.26 kg compared to straight conv. P*
	Volume of CO_2 released from in an 80:20 conv.P:RP production	**Volume of CO_2 released from Conv. P production**	**Difference**
30 tons (1 truckload)	31.2 tons	39 tons	-8.8 tons
100 tons	104 tons	130 tons	-26 tons
1000 tons	1040 tons	1300 tons	-260 tons

Number of acres required to neutralize CO_2 from fertilizer production

Volume of fertilizer applied	**Wheat (acres)**		**Corn (acres)**		**Grass (acres)**		**Legumes (acres)**	
	Convent. fertilizer	**80:20 P:RP**	**Convent. fertilizer**	**80:20 P:RP**	**Convent. fertilizer**	**80:20 P:RP**	**Convent. fertilizer**	**80:20 P:RP**
1 ton	0.26	0.21	0.26	0.21	0.065	0.05	0.13	0.1
30 tons (1 truckload)	7.8	6.24	7.8	6.24	1.95	1.56	3.9	3.12
100 tons	26	20.8	26	20.8	6.5	5.2	13	10.4
1000 tons	260	208	260	208	65	52	130	104

Higher Crop Yields Increase Carbon Sequestration and Reduces Carbon used per bushel of Production

An organic production system can reduce the amount of CO2 per bushel of production by using fertilizer at optimal rates. In the example below, CO2 emissions are reduced by 3 kg per bushel of production using rock phosphate fertilizer over not using any fertilizer at all.

For example:

	Organic Producer using no fertilizers	**Organic Producer using 100 kg Rock Phosphate**
Average Yield	25 bu/ac (62 bu/ha)	29 bu/ac (72 bu/ha)
CO2 emitted from 1 ha wheat	1500 kg CO^2/ha*	1500 kg CO^2/ha*
CO2 emitted from RP production	0 kg CO_2 (no RP production)	20 kg CO_2/100 kg RP produced
kg CO_2 emitted per bu wheat	24 kg CO_2/bu	21 kg CO_2/bu

**Wheat Carbon Footprint of 1500 kg CO^2/ha retrieved from Desjardins et al., 2020.*

References

Manitoba Forage Council. 2008. Forage Technical Bulletin. Impact of alfalfa and fertilizer on pastures: Carbon Sequestration in Pastures. *https://static1.squarespace.com/static/5c6d9be4797f740e645a4310/t/5ca11037ee6eb01a14b11e46/1554059320273/carbon_sequestration_in_pastures_final_june_26_p.pdf*

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