



Harvest Minerals Limited / Index: LSE / Epic: HMI / Sector: Mining

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Harvest Minerals Limited ('Harvest' or the 'Company')
Outstanding Results from Agronomic Tests of KPférti! on Grass

Harvest Minerals Limited, the AIM listed fertiliser producer, has received outstanding results from recent agronomic studies testing KPférti!, its direct application natural fertiliser and remineraliser product, on Brachiara (or Signal grass).

Highlights

- Agronomic tests demonstrate that as a slow release source of potassium ('K') and phosphate ('P'), KPférti! outperforms traditional Super Triple Phosphate ('TSP') fertilisers, increasing both plant growth (dry matter production) and yield (agronomic efficiency)
- The application of KPférti! improved the pH and nutrient content of the soil including potassium, phosphate, calcium ('Ca') and magnesium ('Mg').
- The study concluded there was a 53% increased concentration of phosphorus in the soil compared to using TSP meaning that KPférti! provided continued fertilisation for further crop cycles, highlighting the slow release, long term properties of KPférti!
- Signal grass is the most widely used grass for pasture in Brazil with over 40 million hectares planted
- Results create a significant new market opportunity for the Company which has already generated sales
- Tests were conducted by the Federal University of Uberlândia ('UFU'), an institution approved by the Brazilian Ministry of Agriculture, Livestock and Supply ('MAPA').

Harvest's Executive Chairman, Brian McMaster, said, *"These results confirm the long term effectiveness of KPférti! as a remineraliser for grass pasture; opening up a huge market for us given that Brazil has over 40 million hectares of signal grass planted. Even though these tests were completed only recently, our sales team has already secured several small orders so that customers can begin to see the benefits for themselves. We expect this take-up rate to increase as we develop and implement our market strategies to the local graziers."*

Further Information

The study was conducted by UFU, an institution approved by MAPA, to assess the effectiveness of using KPférti! as a soil remineraliser for Signal grass (Brachiaria) compared to traditional fertilisers. In particular, the tests examined the residual or slow release nature of KPférti! that enables plants to continue to receive essential nutrients over a longer period of time, thereby improving the effectiveness of the application.

The tests included measuring:

- the increase in plant growth (dry matter production)
- the amount (and accumulation of) nutrients including P, K, Ca and Mg in the leaves (aerial part of the plant)
- the nutrients available in the soil including, P, K, Ca and Mg

The study was conducted in sandy and clay rich soil that had been used in previous agronomic studies and is common to the areas occupied by our clients. This study compared a range of fertiliser options from a control dosage, containing no K and P, through to a high-end commercial fertiliser containing Muriate of Potash ('K') and TSP (considered the most effective source of P in the market). The study was carried out over two consecutive 40-day cycles with no additional fertiliser, including KPfértil, being applied following the initial dosage.

Results

Agronomic Efficiency Index

The study concluded that after the second cycle, the Agronomic Efficiency Index ('AEI'), which records the increase in plant growth per unit of nutrient applied, values from KPfértil compared to TSP, were:

- Sandy soil - 627.7% (KPfértil powder) and 1,046% (KPfértil filler)
- Clay rich soil – 134.5% (powder) and 119.5% (filler)

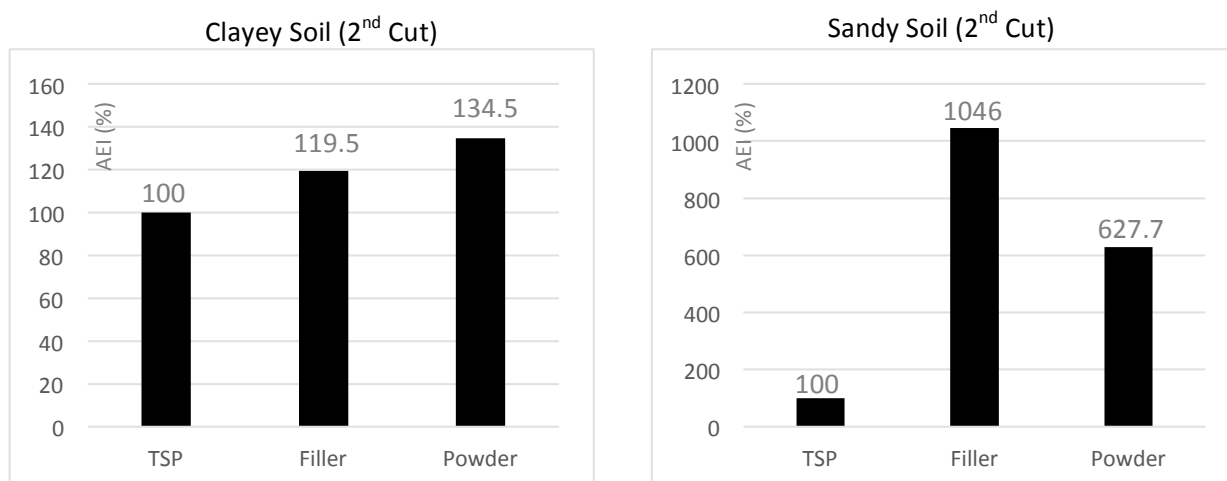


Table 1 –AEI of KPfértil as filler and powder compared with TSP following the second Signal grass cycle in both clay rich and sandy soil.

This clearly demonstrates the strong slow release nature of KPfértil, which releases the P into the soil in a more gradual way, favouring its absorption by plants over time compared to TSP, making the filler over ten times as effective as TSP in sandy soil after 80 days.

Dry Matter Production

After the second cycle, the Signal grass plants were submitted for biometric evaluation with the dry matter produced, being the weight of new plant growth less water content, being weighed (Table 2).

Treatment	Source	Dose K ₂ O ----- mg kg ⁻¹ -----	Dose P ₂ O ₅ ----- g -----	Clay Soil	Rich Sandy Soil
1	Control (without K and P)	0	0	8.73	8.98
2	MoP	80	-----	16.70	12.85
3	TSP	-----	253	13.74	9.02
4	MoP + TSP	80	253	16.30	17.21
5	KPfertil (filler)	20	63	8.61	11.63
6	KPfertil (filler)	40	127	13.27	12.59
7	KPfertil (filler)	80	253	14.71	14.62
8	KPfertil (filler)	160	507	18.22	15.52
9	KPfertil (powder)	20	63	11.90	9.73
10	KPfertil (powder)	40	127	12.22	10.89
11	KPfertil (powder)	80	253	15.47	10.66
12	KPfertil (powder)	160	507	17.87	15.66

Table 2 – Dry matter production from 2 cycles of Signal grass plants

The Study concluded that, applying the same dose of P and K as KPfertil in the clay rich soil (T7 filler and T11 powder), produced 90.24% (T7 = 14.71g) and 94.90% (T11 = 15.47g) of the dry matter produced using conventional fertilisers (T4 = 16.30g).

Similarly, the Study concluded that applying the same dose of P and K as KPfertil in the sandy soil, (T7 filler and T11 powder) the green matter production reached 84.95% (T7 = 14.62g) and 61.94% (T11 = 10.66g), respectively, when compared with the conventional sources of P and K (T4 = 17.21g).

These results demonstrate that in like-for-like dosages, KPfertil will perform almost to the same standard as traditional fertilisers, and by applying slightly more KPfertil, the performances can be identical. The significance of these results is that, as KPfertil is substantially cheaper than the traditional sources, farmers can obtain a clear economic benefit from using KPfertil with no decrease in effectiveness. This benefit is further increased by the long term properties of KPfertil as KPfertil releases the nutrients slowly. As a result, it is expected that dry matter production would be better for KPfertil than traditional fertilisers over further cycles as shown by the residual levels of P in the soil.

Residual Effect of P in Soil

After the second cycle the nutrient levels in the soil were measured and it was observed that the P from the conventional TSP source was depleted in the soil, which slowed plant growth, while it was

observed in the areas to which KPfétil was applied that the P wasn't depleted and there was comparably improved plant development.

The study demonstrated that KPfétil is more efficient in raising P levels than both TSP and the complete MoP + TSP treatment (Table 03) with P levels from filler 53% higher than for MoP + TSP.

Treatment	Source	Dose P_2O_5 mg kg ⁻¹	Clay Rich Soil	Sandy Soil
			P in mg dm ⁻³ ---	
1	Control (without K and P)	0	2.90	2.17
2	MoP (conventional source of K)	-----	-----	-----
3	TSP (conventional source of P)	253	5.01	9.81
4	MoP + TSP	253	3.18	10.70
5	KPfétil (filler)	63	2.18	5.42
6	KPfétil (filler)	127	3.48	8.68
7	KPfétil (filler)	253	9.28	16.39
8	KPfétil (filler)	507	17.80	46.17
9	KPfétil (powder)	63	2.85	5.37
10	KPfétil (powder)	127	3.60	6.80
11	KPfétil (powder)	253	6.06	9.55
12	KPfétil (powder)	507	9.50	38.54

Table 3 – Residual Effect of P in soil after 2 cycles of Signal grass plants by treatment.

Next Steps

The results summarised above are the latest in a raft of good test results produced by KPfétil over the past 1-2 years. Going forward, we will be conducting a trial over two years demonstrating the long term benefit of replacing traditional fertiliser with KPfétil for Signal grass.

This announcement contains inside information for the purposes of Article 7 of EU Regulation 596/2014

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Notes

Harvest Minerals (HMI.L) is a Brazilian focused fertiliser producer advancing the 100% owned Arapua Fertiliser Project, which produces KPfétil, a proven, multi-nutrient, slow release, organic, MAPA-certified remineraliser. KPfétil offers many economic and agronomic benefits and addresses the significant demand for locally produced fertiliser in Brazil, with its abundant agricultural land; currently, the country imports 90% of the potash it uses but has a target to be self-sufficient in fertilisers by 2020. Covering 14,946 hectares and located in the heart of the Brazilian agriculture belt in Minas Gerais, Arapua is a shallow, low cost mine with an indicated and inferred resource of 13.07Mt at 3.1% K₂O and 2.49% P₂O₅. This is based on drilling just 6.7% of the known mineralisation, leaving significant upside potential. This resource is equivalent over 29 years' production and the known mineralisation expected to support 100+ years' production at 450,000 tonnes per annum.