

Ultrapotassic syenites: an alternative K-source worldwide

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Abstract

Tropical soils, such as the Brazilian Cerrado, are poor in macro and micronutrients. Despite many tropical countries being part of the top ones in agribusiness, they have few producing potash mines so that most needs to be imported. This very uncomfortable dependence also has a significant impact on the country's trade balances. Due to actual low potash market prices, it is unlikely that any significant new production capacity will be developed in these countries from the local potash salt deposits.

Embrapa is the leading Brazilian research institute for agriculture and to change, specifically, the Brazilian dependence on imported potash, strongly supported the amendment 12,890 (2013) to the Brazilian Fertilizer Law 6,894 (1980), thus defining officially rock powder with proven agronomic efficiency as soil remineralizer and alternative potash fertilizer.

Having this in mind, Advanced Potash Technologies (APT) screened locations close to agricultural regions from the Cerrado and with favourable geology and logistics, for syenitic rocks with up to 14.5% potash content and other macronutrients. These rocks are uncommon, but APT was able to locate them in key areas by using modern geological tools including development of petrogenetic models, DTM patterns, and radiometric signatures.

The exploration model is low cost and based on petrology, geomorphology and geophysics, saving time and money, as geology teams go to the field with very well defined targets and priorities. With this model validated, APT were enabled to find syenites around the world and already has several ultrapotassic syenite projects in different regions of Brazil, USA, and Australia.

At the same time, a five year research program from APT with the MIT/USA developed Hydropotash (Ciceri et al. 2014, 2017), a second generation low cost high efficiency potash fertilizer produced from syenites, without by-products, with controlled accelerated release of potash and also other benefits for agriculture.

References

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