

# DuSolo's rock phosphate a major step in helping Brazil improve agricultural efficiency



DuSolo Fertilizers (TSXV: DSF) is a new player in the fertilizer market, focusing on natural rock phosphate. The company, formerly known as Eagle Star Minerals, has focused on the production of highly efficient and very low cost mineral fertilizer, which offers the additional benefit

of a greater residual effect in the soil. DuSolo's phosphate offers high porosity, allowing for closer contact in the ground, resulting in a larger and more efficient dissolution rate. The fertilizer can be used in all types of soil, while offering a long residual effect such that the phosphorus and other nutrients are released gradually and progressively throughout the crop cycle. This means they can be tapped by later cultures thanks to its residual effect. Finally, the product is not subjected to any type of chemical or thermal treatment.

Brazilian farmers prefer this kind of Direct Application Natural Fertilizer (DANF), which is typically used in conjunction with the phosphate derivative and much more expensive fertilizer NPK (Nitrogen/Phosphorous/Potassium), which sustains phosphate levels during heavy rainfall. DuSolo's project is now focused on a delineation drilling program at the Santiago target resource within the company's BomFim project. Santiago is a former Vale property located near the Canabrava site run by MbAC Fertilizers. Last January, DuSolo announced good results from an 'Initial Mineral

Resource Estimate' for its Bomfim Project based on data emerging from three out of nine identified targets. DuSolo plans to use the same simple extraction and processing method (excavating, drying, crushing, bagging and trucking) that has worked well for MbAC Fertilizers. This means that CAPEX and OPEX will remain low. MbAC has sold its product at about USD\$ 100/ton, generating good profit margins and DuSolo expects to replicate those results. However, MbAC has recently focused on higher end products, essentially abandoning the DANF low end of the market. DuSolo plans to take advantage of the void. It does not even have to generate a new market, given that DANF demand in Brazil is a constant.

The DANF market in Brazil is destined for growth. DANF promotes greater agronomic efficiency because the phosphate rock has low solubility in water and residual effect, sustaining the benefits over a long period of time. DANF, as a natural product, offers another important advantage because it offers an alternative to other natural phosphates that had to be imported from Morocco or Tunisia, which ended up doubling – or more – the cost. Today, geological studies in Brazil are very advanced leading to the discovery of new phosphates that can be used as a source of phosphorus in soil fertility correction processes. This is crucial for Brazilian agriculture: in general, Brazilian soil has low fertility. Therefore, farmers are forced to invest heavily in soil remediation. However, even with this procedure in place, the reactions that occur with phosphates in Brazilian soils have low agronomic efficiency. Therefore, DANF is in very high demand because, with an average cost per hectare between USD\$ 120 – 200, rock phosphates may help to increase the productivity of soluble fertilizers such as DAP.

Brazil is one of the largest food producers in the world and a high population and it is experiencing a period of unprecedented prosperity, generating increased levels of internal consumption. All of Brazil's current production of

potash and phosphates are unable to meet internal demand. This suggests that a productive potash or phosphate mine in Brazil has guaranteed internal markets, benefiting from modern transportation networks and infrastructure and a willing market. Indeed, Brazil currently imports 90% of its potash and 60% of its phosphate needs, which also ensures the Brazilian government's encouragement and support for mining phosphates and potash in view of a stated goal of achieving fertilizer autonomy by 2020. Discoveries of local sources are enabling Brazil to sharply reduce dependence on imports.

Brazilian agriculture produces food and energy, given the high concentration of sugar and other crops producing bio-fuels. Brazil has 500 million acres of arable land and it represents the world's third largest market for fertilizer as the country produces a number of crops, many of which like soya, maize and sugar cane (some 80% of total agricultural output), used for food and bio-fuel production, respond very well to phosphate based fertilizers. As an example, fertilizers could account for as much as 40% of the cost of producing soybeans. Brazilian soil, however, is poor in nutrients, which have to be substituted by fertilizers and some additives.