

Learn more about boron fertilizers

The use and benefits of the micronutrient boron (B) in agriculture are quite widespread. However, several sources of boron are available on the market and this has caused doubts for farmers and agronomists about which boron source to use. Depending on the source of boron, its solubility may vary, affecting the recommended rate and the boron management in the field. With the intention of clearing up doubts about different products on the market, Barth & Suyama (2017) conducted a percolation study to compare the release rate of various boron sources.

The work was conducted in Castro, PR, Brazil, in the laboratory of the Fundação ABC. The experiment was conducted under two conditions: Sandy soil (pH 4.7) and clayey soil (pH 4.1). Among the sources tested were the refined borate fertilizer *Granubor*[®] (15% B), produced in the United States; granulated ulexite (10% B), from Argentina; and another source of granulated ulexite (10% B) from Bolivia. *Granubor* is a water-soluble sodium tetraborate pentahydrate fertilizer, while ulexite is a sodium and calcium borate, partially soluble in water.

The results showed that the Argentinian ulexite released 45.4% of boron after 280 days (40 weeks) in sandy soil (Figure 1) and 35.2% in clayey soil (Figure 2). The Bolivian ulexite released 39.8% of boron after 280 days in sandy soil (Figure 1) and 34.4% in clayey soil (Figure 2). *Granubor* released 99.7% of boron in sandy soil (Figure 1) and 99.5% of in clayey soil (Figure 2) after 280 days. On average, the ulexites released 38.7% of boron after 280 days, while *Granubor* released 99.6%.

Figure 1: Percentage of boron released in sandy soil with a pH of 4.7

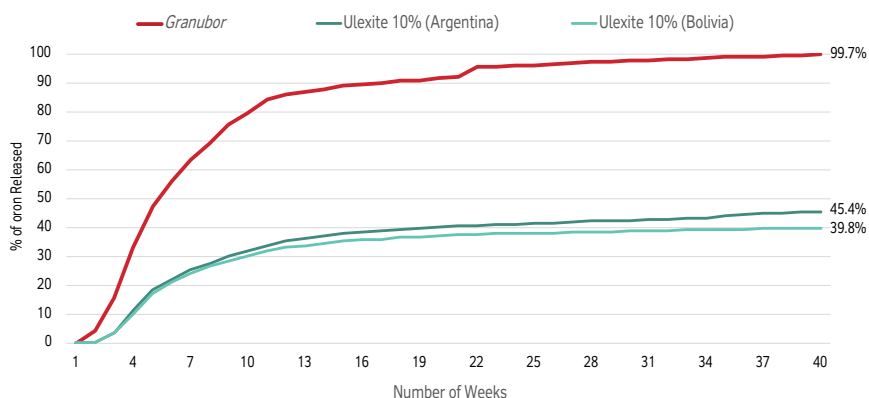
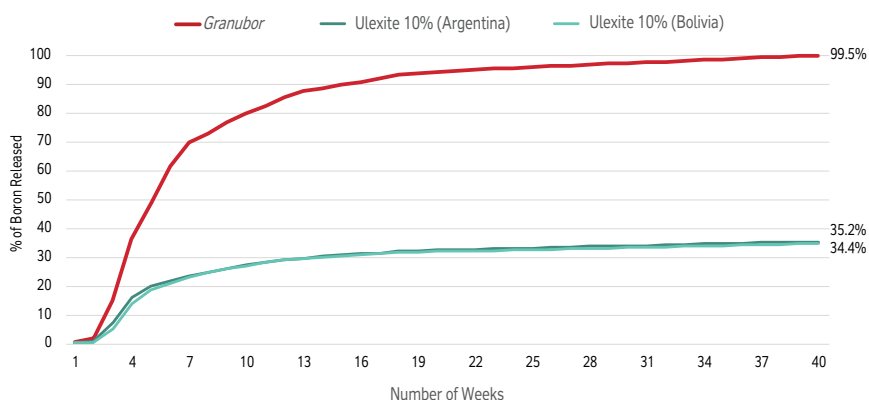


Figure 2: Percentage of boron released in clay soil with a pH of 4.1



The main differences between ulexites and GRANUBOR®



Ulexite

- Guarantee: 10% boron (granulated)
- Low water-solubility
- Bioavailability of boron in soil: Inconsistent levels of release, varying between 34 and 45%
- High hygroscopicity (ability to absorb water)
- Irregular granulometry with high dust content, causing separation and irregular distribution of the product in the field
- Possible presence of impurities such as the heavy metal arsenic (As)
- Limited field studies and certifications



 GRANUBOR®

- Guarantee: 15% boron
- 100% water-soluble
- Gradual boron release in the soil, meeting the needs of agricultural crops from planting to harvesting
- Bioavailability of boron: 100% release
- Low hygroscopicity (ability to absorb water)
- Average particle size of 2.8 mm, perfect for mixing with NPK
- Highly resistant granules, thus limiting the formation of dust or fine granules during transportation and handling
- Does not contain impurities, fillers, or the addition of chemical ingredients
- OMRI-listed and USDA-certified for use as a fertilizer in organic agriculture

Visit <https://agriculture.borax.com/products/granubor> to learn more about *Granubor* and other products from U.S. Borax.

Sales Contacts

Adam Brodie, North America: adam.brodie@riotinto.com

Lucy Meng, China: lucy.meng@riotinto.com

Swee Hau Chew, SE Asia: sweehau.chew@riotinto.com

Jaime Gonzalez, Latin America: jaime.gonzalez2@riotinto.com

Punit Antal, India: punit.antal@riotinto.com

Agronomy Contacts

Wendall Boehlje, North America: wendall.boehlje@riotinto.com

Abigail Jiang, China: abigail.jiang@riotinto.com

Weng Kee Ch'ng, SE Asia: wengkee.ch'ng@riotinto.com

Cleiton de Sequeira, Global: cleiton.desequeira@riotinto.com

References

Gabriel Barth and Juliana Tamie Suyama, 2017. Fundação ABC.

