

Table 2. Characteristics of different P sources and their relative agronomic effectiveness (RAE) for rape grown on an alkaline soil (pH 7.8) to maturity (Chien et al., 2003).

P source	Total P ₂ O ₅ ¹	Solubility in 2% citric acid, %	Reactivity class ²	RAE, %
TSP	46.2	100	-	100
Gafsa PR (Tunisia)	30.1	13.1	High	88
Ain Layloun PR (Syria)	28.1	12.2	Medium high	82
Chelesai (Kazakhstan)	17.0	10.0	Medium	74
Tilemsi PR (Mali)	26.2	10.3	Medium	72
El-Hassa (Jordan)	31.3	9.0	Medium	64
Kenegesepp (Russia)	29.9	7.8	Medium low	64
Kadjari (Burkina Faso)	25.3	6.0	Low	60
Kaiyang (China)	32.4	5.1	Low	42
Panda Hills (Tanzania)	24.8	2.1	Very low	0
Check	-	-	-	0

¹As percent P₂O₅ of rock.

²Based on CO₃/PO₄ substitution in apatite structure.

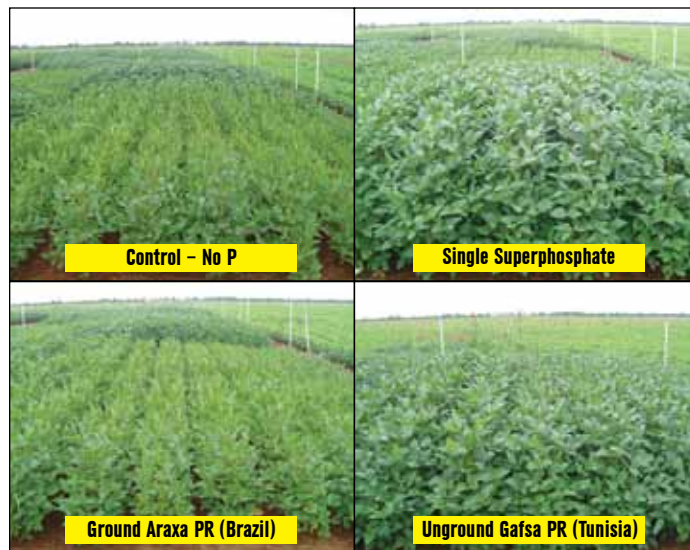
during composting, where conditions may result in an alkaline rather than acidic environments (Chien et al., 2009) and the chelation of organic matter with Ca ions derived from apatite may be important to dissolve PR.

Phosphate Rock Decision Support System (PRDSS)


Many global agronomic trials with PR have been integrated into a single tool to predict its agronomic effectiveness in specific situations. IFDC (An International Center for Soil Fertility and Agricultural Development), in collaboration with FAO/IAEA (Food and Agriculture Organization/International Atomic Energy Agency), developed and published a PRDSS model for PR sources (Smalberger et al., 2006; ><http://www-iswam.iaea.org/dapr/srv/en/dapr/home><). The PRDSS can be used in making decisions between use of WSP fertilizers and PR to meet crop nutrition needs. The PRDSS also provides assistance to determine conditions where the use of PR is more economical than WSP as a source of plant nutrients.

Conclusions

The agronomic and economic effectiveness of PR can be equivalent to or better than WSP fertilizers in some circumstances. Unlike WSP fertilizers, which can be widely used, there are specific factors – including the reactivity of PR



Response of soybeans to P source in Brazil.

sources, soil properties, management practices, and crop species – that must be taken into account in order to maximize the utilization of PR. Use of the PRDSS model is an effective means to predict the best use of this nutrient resource. 

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Crop Nutrient Deficiency Photo Contest Entries Due by December 15

December 15, 2010, is the deadline for entries in the annual IPNI contest for photos showing nutrient deficiencies in crops. There are four categories: Nitrogen (N), phosphorus (P), potassium (K), and Other (secondary nutrients and micronutrients).

Preference is given to original photos with supporting/verification data. Cash prizes are offered to First Place (USD 150) and Second Place (USD 75) in each of the four categories, plus a Grand Prize of USD 200 will be provided to best overall photo.

Entries can only be submitted electronically. For details and instructions, visit this website: >www.ipni.net/photocontest<.

