Article title	Greenhouse Evaluation of Phosphorus Sources Produced from a Low-Reactive Brazilian Phosphate Rock
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Abstract	The Patos de Minas phosphate rock (PR) in Brazil is not suitable for direct application due to its low reactivity or for commercial production of P fertilizers because of its high Fe-Al content. The objective of this study was to investigate the potential agronomic effectiveness of P sources with low water solubility produced from the PR. The P treatments were (i) compacted granular Patos PR with a single superphosphate (SSP) containing high water-soluble P content at a P ratio of 50:50, (ii) powdered low-grade single superphosphate (LG SSP) produced from Patos PR with low water solubility, (iii) powdered Patos PR, (iv) powdered mixture of PR and SSP at 50:50 P ratio, and (v) compacted granular SSP. The P sources were incorporated into an acid soil with pH 5.3 at 0, 10, 25, 50, and 100 mg P kg^{-1} to grow wheat (*Triticum aestivum* L.) and ryegrass (*Lolium perenne* L.) as test crops in a greenhouse study. We confirmed that Patos PR was low in agronomic effectiveness, only 1 and 30% as effective as SSP in producing dry matter yield of wheat and ryegrass, respectively. There were no significant differences between LG SSP or compacted PR+SSP [PR+SSP(C)] and SSP in dry matter yields of both crops, whereas mixed PR+SSP was less effective than PR+SSP(C) compared with granular SSP. Compacted PR+SSP and LG SSP can be potential P sources to be produced from the low-grade PR that could not be used either for direct application or acidulated P fertilizers.
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