363-21 Testing Nitrogen Fertilizer Sources to Increase N-Use Efficiency of Common Beans in the Brazilian Savanna.

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Maria da Conceição S. Carvalho[1], *Pedro Silveira*[1], *Beata Madari*[1], *Marcia Thais Carvalho*[2] *and Tatiely Bernardes*[3], *(1) Embrapa Rice and Beans, Brazilian Agricultural Research Corporation - EMBRAPA, Santo Antonio de Goias,GO, Brazil (2)Embrapa Rice and Beans, Brazilian Agricultural Research Corporation - EMBRAPA, Santo AntÃ´nio de GoiÃ¡s,GO, Brazil*
(3)Agronomy, Federal University of Goias, Goiania, GO, Brazil

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Brazil is the world's largest producer of common beans (*Phaseolus vulgaris*). In Brazilian savanna, common beans are grown mainly under irrigation throughout winter season. In such conditions, averaged yield is the highest in Brazil (2,297 kg/ha). The cost of production, however, is increasing each year, especially due to application of high amounts of fertilizers. For this reason, there is a demand to increase fertilizer use efficiency. Nitrogen (N) fertilization is one of the most important production factors and urea is the most used source of synthetic N in Brazil. Urea applied under soil surface in no-tillage system, however, results in high losses of N by volatilization of NH_3. Using urease inhibitor and polymers covering urea granules are technological options to reduce N losses. A field study was carried out in a clayey Rhodic Ferralsol, in winters 2009 and 2010, aiming to evaluate the effect of five N fertilizer sources on N losses by volatilization, and on common beans yields. The experiment consisted of six treatments: five N sources (common urea, urea with NBPT urease inhibitor, polymer coated urea, ammonium sulphate, and ammonium nitrate) and one control (with no N addition), in a randomized complete block design with five repetitions. Nitrogen, 80 kg ha^{-1}, was applied in a single top-dressing fertilization when plants were at V4 stage (three trifoliate leaves). Results showed that urea with NBPT urease inhibitor and polymer coated urea were effective in reducing up to 35% NH_3 volatilization. There was no significant difference among N sources for common beans yields. The apparent fertilizer N recovery was lower in common urea (37%) than in other fertilizers tested (from 51 to 65%). We concluded that all fertilizers tested showed higher N-use efficiency compared to common urea.

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<< Previous Abstract | *Next Abstract*