



# Effect of *Alsil* fertilizer on the productivity of groundnut and its residual effects on succeeding Pearl millet under growing conditions in the northern groundnut basin of Senegal

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Submitted 16/1/2025, Published online on 31/03/2026 in the <https://www.m.elewa.org/journals/journal-of-applied-biosciences-about-jab/> <https://doi.org/10.35759/JABs.218.4>

## ABSTRACT

**Objective:** In Senegal, low soil fertility is one of the major constraints on crop productivity, particularly for legumes and cereals. For optimum long-term productivity, appropriate management of soil resources is required. It is in this context that this study was carried out to investigate the direct effects of *Alsil* fertilizer on the productivity of groundnut and its residual effects on succeeding Pearl millet.

**Methodology and results:** The study was carried out during the 2021 rainy season and the 2022 off-season at the CNRA in Bambey using a randomised complete block design with three replicates. The results showed that direct application of *Alsil* and its residual-effect significantly improved groundnut and Pearl millet yields. For groundnut, direct application of *Alsil* produced the highest dry pod and haulm yields (2369 kg.ha<sup>-1</sup> and 3780 kg.ha<sup>-1</sup> respectively). Yield increases were 509 kg.ha<sup>-1</sup> and 302 kg.ha<sup>-1</sup> respectively compared with the recommended mineral fertilizer (N-P-K (6%, 20%, 10%). For Pearl millet, the residual effect of *Alsil* fertilizer recorded the highest grain (1136 kg.ha<sup>-1</sup>) and straw (9561 kg.ha<sup>-1</sup>) yields. The yield increases resulting from the residual effect of *Alsil*, compared with the application of the recommended mineral fertilizer (NPK 15-10-10), were 330 kg ha<sup>-1</sup> for grain and 2,985 kg ha<sup>-1</sup> for straw.

**Conclusion and application of results:** The results showed a positive and significant effect of the application of the *Alsil* fertilizer on the yields of groundnut and millet, compared with the recommended mineral fertilization and compost. The effect of the *Alsil* fertilizer was more pronounced on pod production than on haulm production in groundnut.. This study has applications for sustainable land management and improving groundnut and Pearl millet yields. *Alsil* could not only improve soil fertility in the Senegalese groundnut basin, but also reduce the excessive use of chemical fertilisers, which is harmful to the environment.

**Keywords :** Peanut, Pearl millet, *Alsil* fertiliser, yield, Senegal.