

**D-09: Effect of shade and the application of fertilizers on the dry matter yields of *Rauwolfia serpentina*, *Solanum virginianum* and *Munronia pumila***

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This work was undertaken to determine the effects of shade (50% sunlight) and application of N,P,K fertilizers on 3 tropical medicinal plants.

The plants were grown indoors in pots over one growing season in 1992/93. Treatments were: shading at 0 (full sun) and 50% with no fertilizer and high fertilizer N (50 kg N/ha as urea), P (40 kg P/ha as  $\text{CaH}_4(\text{PO})_4 \cdot 2\text{H}_2\text{O}$ ) and K (27 kg K/ha as KCl) split into 6 applications (applied regularly every 2 weeks).

The initial experiment was a factorial design with 2 levels of shade (full sunlight and 50% sunlight), 3 species of medicinal plants (*Rauwolfia serpentina* (L.) Benth ex. Kurz., *Solanum virginianum* L. and *Munronia pumila* Wight), 2 levels (no fertilizer and with fertilizer) of 3 fertilizers (N,P,K) and 3 replicates. The use of *M. pumila* had to be abandoned because of its very high demand for increased shade (about 15% sunlight) for its survival. It also showed a strong negative response to the application of nitrogen fertilizer. The final design was split-plot with 2 species only (2x2x3x2x3).

There was no significant effect of 50% shade on the total dry matter yield (DMY) of *R. serpentina*. However, the total DMY of *S. virginianum* showed a 32% decrease at 50% shade level.

The application of nitrogen to *R. serpentina* showed a 72% decrease in total DMY. The application of potassium decreased the DMY by 10%. However, the application of phosphorus increased the DMY by 43%.

The application of nitrogen showed a 8% decrease in DMY of *S. virginianum*. The application of potassium increased DMY 34%. The application of phosphorus fertilizers increased the DMY of this species by 20%.

*M. pumila* should be cultivated under deep shade with no application of fertilizer especially N to obtain higher DMY. *R. serpentina* cultivation is suitable under moderate shade in open areas with the application of P fertilizer. The cultivation of *S. virginianum* demands open areas (full sunlight) and the application of K and P fertilizers.