

Article title	Effect of Different Maize ( <i>Zea mays</i> )/Cowpea ( <i>Vigna unguiculata</i> ) Intercropping Patterns and N Supply on Light Interception, Physiology and Productivity of Cowpea
Authors	Jacques Fils Pierre, Upendra Singh, Luis Latournerie-Moreno, René Garruña, Krista Jacobsen, Roberto Rafael Ruiz-Santiago, Aldo Daniel Chan-Arjona & Esau Ruiz
Abstract	<p>The objective of this experiment was to assess the impact of different planting patterns on light availability for cowpea within the intercrop canopy, as well as to evaluate the corresponding effects on cowpea's physiological characteristics and grain yield in maize/cowpea intercropping systems. The experiment utilized a randomized complete block design with four replicates and included six treatments: sole cowpea with 40 kg N ha<sup>-1</sup> (T1) and 80 kg N ha<sup>-1</sup> (T2), simultaneous sowing of maize and cowpea with 40 kg N ha<sup>-1</sup> (T3) and 80 kg N ha<sup>-1</sup> (T4) and cowpea sown 3 weeks after maize with 40 kg N ha<sup>-1</sup> (T5) and 80 kg N ha<sup>-1</sup> (T6). Results showed that sole cowpea had higher light interception and leaf area index than intercropped maize/cowpea, regardless of sowing date and nitrogen supply. The highest photosynthetic rates of cowpea were observed in the intercropping maize/cowpea sown simultaneously with 40 kg N ha<sup>-1</sup> and sole cowpea with 80 kg N ha<sup>-1</sup>. The water use efficiency of cowpea was found to be higher when intercropped with simultaneously sown maize, regardless of nitrogen supply, with values of 3.23 μmol CO<sub>2</sub>/mmol H<sub>2</sub>O and 3.3 μmol CO<sub>2</sub>/mmol H<sub>2</sub>O for treatments T3 and T4, respectively. Moreover, the highest cowpea grain yield was observed when maize and cowpea were sown simultaneously with the application of 80 kg N ha<sup>-1</sup> (0.99 t ha<sup>-1</sup>), while the lowest yield was obtained when cowpea was sown 3 weeks after maize (0.37 t ha<sup>-1</sup>), irrespective of nitrogen supply. Overall, our findings suggest that maize/cowpea intercropping with simultaneous sowing of maize can enhance the grain yield of cowpea in the Yucatan Peninsula.</p>
Publication date	2024-02
Citation	Pierre, J.F., Singh, U., Latournerie-Moreno, L. <i>et al.</i> Effect of Different Maize ( <i>Zea mays</i> )/Cowpea ( <i>Vigna unguiculata</i> ) Intercropping Patterns and N Supply on Light Interception, Physiology and Productivity of Cowpea. <i>Agric Res</i> (2024). <a href="https://doi.org/10.1007/s40003-024-00699-6">https://doi.org/10.1007/s40003-024-00699-6</a>
Article link	<a href="http://dx.doi.org/10.1007/s40003-024-00699-6">http://dx.doi.org/10.1007/s40003-024-00699-6</a>