

# Cropping cowpeas with maize to improve soils

## Recognize the problem

Nitrogen deficiency in the soil is a huge problem for most small scale farmers. A common symptom of nitrogen deficiency in maize is the yellowing of the lower leaves of plants across the field. Such yellowing starts at the tips and moves along the middle of the leaf. Many plant diseases can cause yellowing, but these usually start from the middle of the leaf and along the veins (streaks) or appear as scattered spots.

Nitrogen deficiency in maize.  
(Photo by IITA/Jonathan Odhong,  
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## Background

To counter the deficiencies in the soils, farmers have resorted to the use of chemical fertilizers which are expensive. Intercropping with cowpea is a more favourable practice with maize and other cereals. Cowpeas naturally take nitrogen from the air and deposit it into the soil. The nitrogen can then be taken up by roots of the maize plant or other crops. This eliminates the need to use chemical top dressing fertilizer. This practice is particularly suitable for climbing varieties of cowpea which can withstand intercropping and shading better than more erect varieties. It is important to note that during the first season of intercropping, the maize may not benefit much from the deposited nitrogen, but will do so in the second and third seasons.

Cowpeas intercropped with maize.  
(Photo by IITA, CC BY-NC)



## Management

- Increase spacing when intercropping maize from 75 cm x 30 cm to about 100 cm x 50 cm
- Climbing cowpea varieties, such as Bubebe and Lutembwe are recommended for intercropping. They can be obtained from Zambia Agricultural Research Institute or local seed companies. Both varieties perform well in most parts of the country.
- The maize and cowpeas are planted at the same time
- In between the maize rows, plant two stations of cowpea (25 cm apart from maize plant and 10-15 cm apart from each other)
- Where soils are very poor, 200-250 kg/ha of D compound fertilizer can be applied at the time of planting maize. The cowpeas also benefit from fertilizer intended for the maize when intercropped with maize.
- Top dressing with nitrogen fertilizers is not recommended because cowpeas, like most legumes, make enough of their own nitrogen

The recommendations in this factsheet are relevant to: Zambia



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