

# MAIZE NITROGEN THROUGH THE GROWING SEASON



Maize nitrogen (N) management strategies assume roots compete poorly with soil microbes for inorganic N and rely on inorganic N fertiliser additions to achieve high levels of crop production.

High organic matter soils are likely to meet maize N requirements through mineralisation of soil N during the period of rapid growth, reducing the need for additional artificial N.

Soil N release is influenced by soil type, moisture, temperature, organic matter and soil biology, with N availability increasing through June to August coinciding with increasing N demand in UK maize.

Soil organic matter (SOM) can supply 60 to 130 kg N/ha depending on soil type, conditions and N stocks.



## Focus on NIAB research

In 2023, NIAB and the Maize Growers' Association investigated soil N release in relation to levels of soil organic matter at three sites across the UK.

At the Somerset site there was no benefit from applying inorganic N, soil N supply (SNS) >300 kg/ha, met crop needs. At the Norfolk site there was a yield and quality benefit of applying inorganic N post drilling, suggesting that the SNS alone (130 kg N/ha) was insufficient to meet crop needs on the lower OM soil.

Increased understanding of the rate of soil N release during the maize growing season, the effects of crop rotation and tillage system (as these alter SOM dynamics and C and N cycling) should allow better synchrony of applied N to crop need, improving Nitrogen Use Efficiency (NUE) reducing costs and environmental impacts.



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