EXPLOITING NOVEL WHEAT GENOTYPES FOR REGENERATIVE AGRICULTURE

As we aim to reduce the environmental footprint of agricultural production, for example through the Government's 25-year Environmental Plan and the NFU's Net Zero by 2040, additional criteria, besides yield, should be considered, to achieve crop production with limited environmental impact.
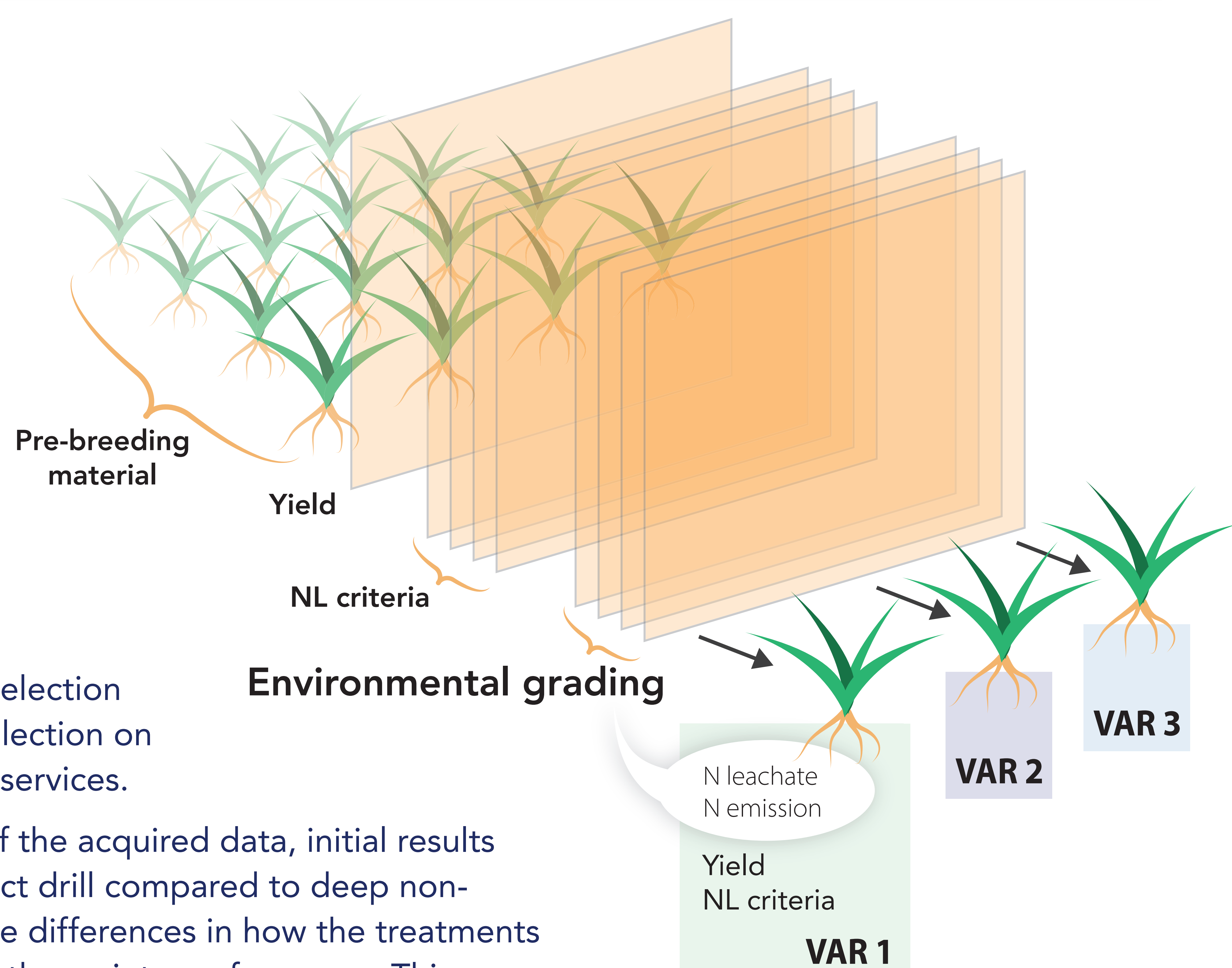
Current commercial wheat varieties have been assessed and selected for high yield production under standard agronomic practices. Selecting varieties under regenerative agriculture conditions and lower synthetic nitrogen inputs is likely to lead to varieties better adapted to these conditions in the field.

focus on Niab research

Funded by The Morley Agricultural Foundation, Niab is evaluating the performance of new wheat genetic material, including resynthesised wheat (SHW) lines. These are managed under regenerative agricultural practices and lower nitrogen inputs at long-term experimental sites with known management histories across East Anglia.

The research includes additional environmental grading criteria for selection to consider the impact of variety selection on landscape diversity and ecosystem services.

While Niab is still analysing much of the acquired data, initial results show higher grain yields under direct drill compared to deep non-inversion drill. There were also some differences in how the treatments (nitrogen level and tillage) affected the variety performance. This supports the idea that some varieties perform better under a set of agronomic conditions compared to others. Interestingly, it appears that the tillage level had little effect on the grain protein content. It is important to keep in mind that these results were obtained in only one year, and this trial is planned to be repeated in 2025, while others testing the interaction of tillage and cover crops are underways.

Pre-breeding material

Yield

NL criteria

Environmental grading

N leachate
N emission

Yield
NL criteria

VAR 1

VAR 2

VAR 3

More information

Check out the project online and take part in our grower survey.

Which wheat variety do you grow under regen ag?

Custom-made chamber for measurements of greenhouse gas (CO_2, CH_4 and N_2O) emission from soil and crop plants