

# Cereal Populations - Coping With Unpredictable Weather And Climate

## WHAT IS A POPULATION?

All plants in a population are genetically distinct while all of those in a pure line variety are (almost) identical. This means that populations are better able to adapt to unpredictable environments.

## CREATING A POPULATION

A Composite Cross Population (CCP) is created by inter-crossing (by hand) selected parent varieties in all combinations. The resulting F1 hybrid plants produce segregating F2 populations which are bulked together and grown in the field. Segregation and natural selection over a number of generations then leads to populations comprising very large numbers of homozygous but genetically distinct lines.

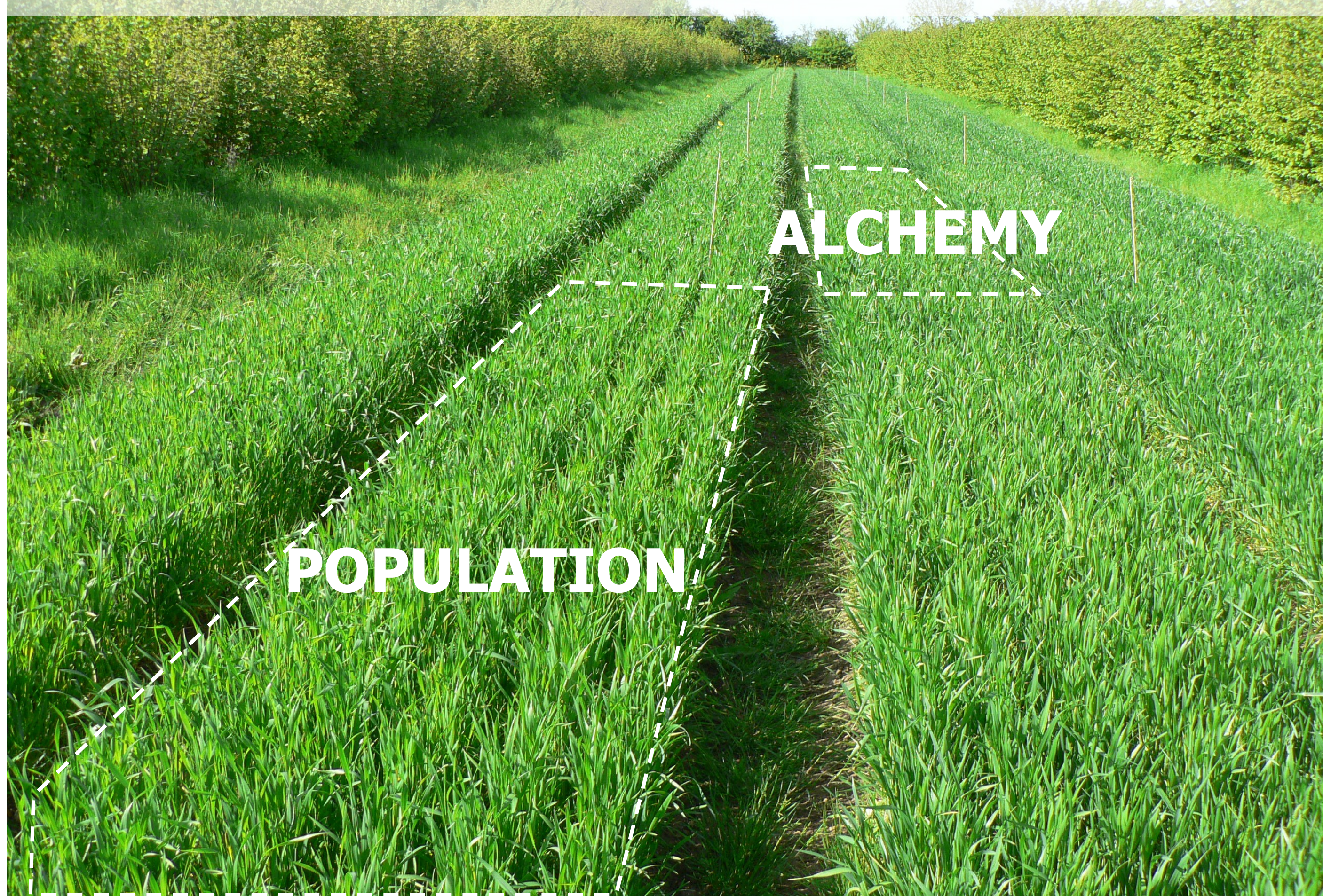
	Bezostaya	Cadenza	Hereward	Maris Widgeon	Mercia	Monopol	Pastiche	Renan	Renesansa	Soissons	Spark	Thatcher	Buchan	Claire	Deben	HTL	Norman	Option	Tanker	Wembely
Bezostaya	yq	yq	yq	yq	yq	yq	yq	yq	yq	yq	yq	yq	Y	Y	Y	Y	Y	Y	Y	Y
Wembely	yq	YQ	YQ	YQ	YQ	YQ	YQ	YQ	YQ	YQ	YQ	YQ	Y	Y	Y	Y	Y	Y	Y	Y
Tanker	yq	YQ	YQ	YQ	YQ	YQ	YQ	YQ	YQ	YQ	YQ	YQ	Y	Y	Y	Y	Y	Y	Y	Y
Option	yq	YQ	YQ	YQ	YQ	YQ	YQ	YQ	YQ	YQ	YQ	YQ	Y	Y	Y	Y	Y	Y	Y	Y
Norman	yq	YQ	YQ	YQ	YQ	YQ	YQ	YQ	YQ	YQ	YQ	YQ	Y	Y	Y	Y	Y	Y	Y	Y
HTL	yq	YQ	YQ	YQ	YQ	YQ	YQ	YQ	YQ	YQ	YQ	YQ	Y	Y	Y	Y	Y	Y	Y	Y
Deben	yq	YQ	YQ	YQ	YQ	YQ	YQ	YQ	YQ	YQ	YQ	YQ	Y	Y	Y	Y	Y	Y	Y	Y
Claire	yq	YQ	YQ	YQ	YQ	YQ	YQ	YQ	YQ	YQ	YQ	YQ	Y	Y	Y	Y	Y	Y	Y	Y
Buchan	yq	YQ	YQ	YQ	YQ	YQ	YQ	YQ	YQ	YQ	YQ	YQ	Y	Y	Y	Y	Y	Y	Y	Y
Thatcher	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
Spark	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
Soissons	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
Renesansa	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
Renan	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
Pastiche	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
Monopol	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
Mercia	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
Maris Widgeon	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
Hereward	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
Cadenza	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q

The parental crosses involved in creating the ORC YQ CCP

## POPULATIONS ARE RESILIENT IN POOR CONDITIONS

This year (2012-13) many autumn sown wheat crops failed due to a range of factors including the poor weather conditions, forcing late drilling, and high levels of Fusarium infection in the seed crop. The trials here demonstrate that, unlike the YQ Population, the pure-line variety Alchemy failed when drilled only nine days later (25th October) than the plots in which both crops established well (drilled 16th October). The photos below from June 2013 demonstrate, dramatically, the advantages of the greater genetic diversity in populations.

Drilled 16th October 2012



Drilled 25th October 2012

