

DNA in the Garden – Putting DNA to Work

Improve your posture?

Early 20th century varieties of wheat differ in many ways from those grown today. To improve crops for particular farming and environmental needs, we need to understand the interactions between genetic makeup and crop performance.



Hereward is a short modern variety of wheat with upright leaves (growing in front in the photo). Squarehead's Master is an old and taller variety (growing behind in the photo), which has a more relaxed leaf posture. Experiments at Rothamsted Research suggest that weeds cannot grow as well with Squarehead's Master, because its leaf canopy limits the amount of light getting down to them. But crop yield is less with the old variety because it puts relatively more of its energy into growing stem than ears, and because only its upper leaves benefit from sunlight.



Fascinating Fact!

In many old paintings such as John Constable's "The Cornfield" in the National Gallery in London the wheat is shown as much taller than today's varieties, almost up to a man's shoulder.

Think about the example above. The modern variety of wheat would have been bred from an older variety of wheat.

1 a. How was this done? Was this done through selective breeding or through genetic modification?

1 b. Why was this done?

1 c. How long has this been happening, when did people first start to select for particular traits and breed new crops?

Today's wheat is not like the old wheat. As well as global biodiversity, research is also underway to make sure that genetic variation in our cultivated species in the UK is conserved.

2 a. Why might we want to go back to using the old varieties?

2 b. If we want to use new varieties, should we still keep the older varieties somewhere, and if so why and how?