

A Participatory Approach to Variety Trials for Organic Systems

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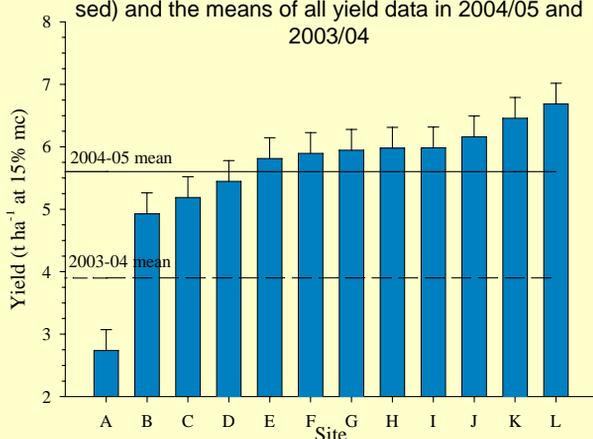
UK farmers look to the Recommended Lists to compare wheat varieties. However, these lists use data from trials managed conventionally and do not provide information on aspects important to organic farmers such as weed suppression and resistance to seed-borne diseases. Organic farmers may also be interested in using varietal mixtures to buffer against diseases, pests and weeds.

The project aimed to (a) identify suitable varieties of winter wheat; (b) assess disease levels in organic farm saved seed; and (c) develop a suitable participatory approach¹. In 2003 and 2004, 19 UK organic farmers were provided with seed of three varieties (Hereward, Solstice & Xi19) and their mixture. The performance of these varieties was assessed by researchers.

Yields and Growth Habit-

- significant site by variety interactions: no single variety was significantly outstanding
- variation among sites was greater than among varieties
- wheat grown in the West was significantly shorter and higher yielding than in the East in 2003/04 but significantly taller in 2004/05

Figure 1. Average 2004/05 yields at each site (error bar = sed) and the means of all yield data in 2004/05 and 2003/04



Grain Quality-

- despite the lower protein concentration, the protein harvested per hectare increased by 16% between 2003/04 and 2004/05
- more varieties achieved milling requirements for HFN (>250s) and specific weight (>76 kg HI-1) in 2004/05 than 2003/04

Table 1. Grain quality results of varieties and the mixture in 2003/04 and 2004/05

	HFN (s)	Protein (%)	TGW (g)	Specific weight (kg/HI)
2003/04				
Hereward	245	11.8	50.3	72.9
Solstice	227	11.7	48.7	72.2
Xi 19	212	12.3	49.9	70.2
Mixture	222	12.0	50.4	72.3
Mean	226	12.0	49.8	71.9
I.s.d.	11.4	0.56	2.53	0.72
2004/05				
Hereward	240	10.2	44.8	79.5
Solstice	256	9.5	45.1	79.7
Xi 19	279	9.5	47.3	76.3
Mixture	248	9.7	45.3	78.7
Mean	256	9.7	45.6	78.5
I.s.d.	49.2	1.54	0.22	0.92

Seed borne diseases-

- levels of *Microdochium* seedling blight were generally low with some site specific higher levels of infection
- *Tilletia tritici* (bunt) levels were very low- all of the seed could safely have been used for resowing
- *Septoria nodorum* was found sporadically among the samples at low levels (~ 1%)
- several samples had high ergot counts (up to 35 ergots per kg)- there is no indication that organic grain is more contaminated than non-organic.



Due to the successful participatory aspect of the project, Elm Farm Research Centre is now including farmer participation in other projects.

Although it is possible to meet most quality requirements for milling with organic winter wheat, achieving required protein concentrations is difficult.

Seed health was good across all sites and varieties. There was no evidence that seed borne diseases occurred at higher levels in organic production.

The results illustrate the variability of organic systems and the difficulty in selecting a single variety suitable for organic farms.

¹ Jones, H., Hinchsliffe, K., Clarke, S.M., Pearce, B., Gibbon, D., Lyon, F., Harris, F., Thomas, J. and Wolfe, M.S. (2006) A participatory methodology for large scale field trials in the UK. *Joint Organic Congress, May 30-31, Odense, Denmark.*