



EIPWALES

Cydweithio er ffyniant gwledig
Collaborating for rural success



menter
a busnes

WITHOUT THE RIGHT

wheat for bread,

WE'RE TOAST



Investigating the potential for cultivating heritage
and ancient wheat in south west Wales

The project

There is increasing demand from artisan bakers, and more commercial outlets, for ancient species of cereals. Although the demand for these ancient cereal species has increased, it can be difficult to produce them economically, given generally low yields. This project seeks to trial several agronomic practices for ancient cereal species to identify the most appropriate methods of production.

The trials

The trials are based on 4 farms in the St David's area, Pembrokeshire, three certified organic and one conventional. The project runs over two growing season, 2018/19 and 2020/21, including both spring and autumn sown varieties. This factsheet summarises the preliminary findings for the first set of spring sown varieties (2019).



Spring varieties/ species (2019 & 2021)	Autumn varieties / species (2020/21)
Einkorn (ancient hulled wheat)	Hen Gymro (Welsh landrace, wheat)
April Bearded (heritage spring wheat)	Population (100+ varieties) from Lyon, France
Mulika (modern control)	Modern autumn sown variety

Each cereal variety included in the trial are being sown:

- With different seed rates (high and low, exact rates depending on variety)
- With or without clover undersown to investigate how, or if it affects growth, development, yield, or quality

The following data was collected from each plot:

Agronomic	Grain quality
Yield	Protein content
Crop development	Specific weight
Weeds	
Lodging	
Foliar diseases	

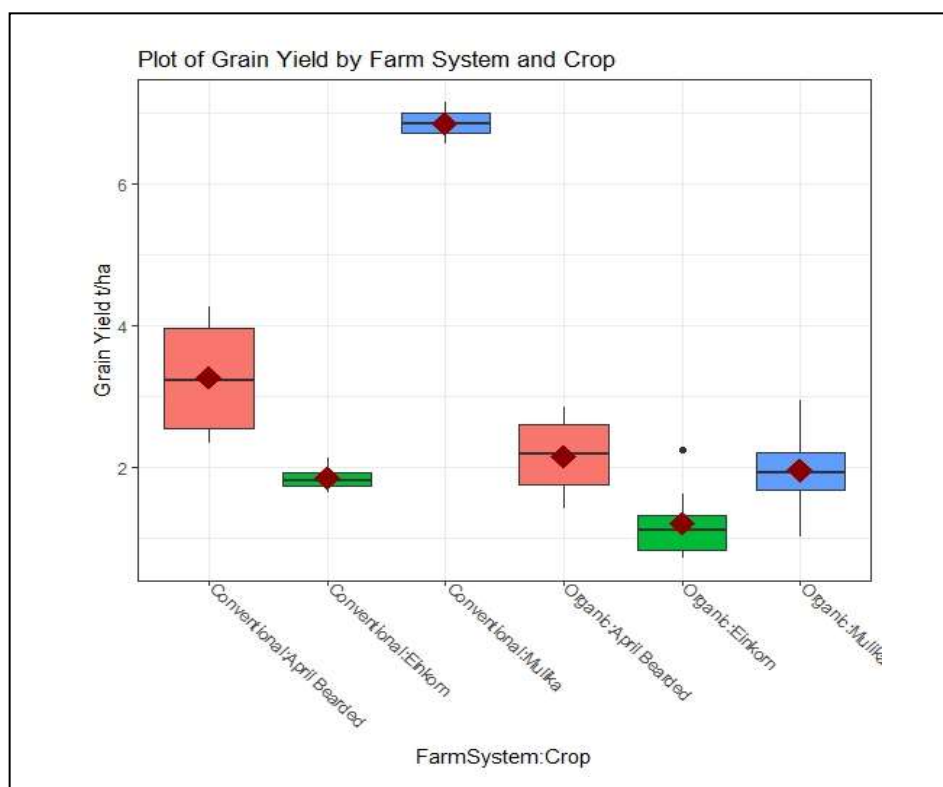
Yields

On the organic farms, **April Bearded** outperformed the modern variety, **Mulika**.

Einkorn had the lowest yields.

In the conventional system, **Mulika** only out-performed **April Bearded**.

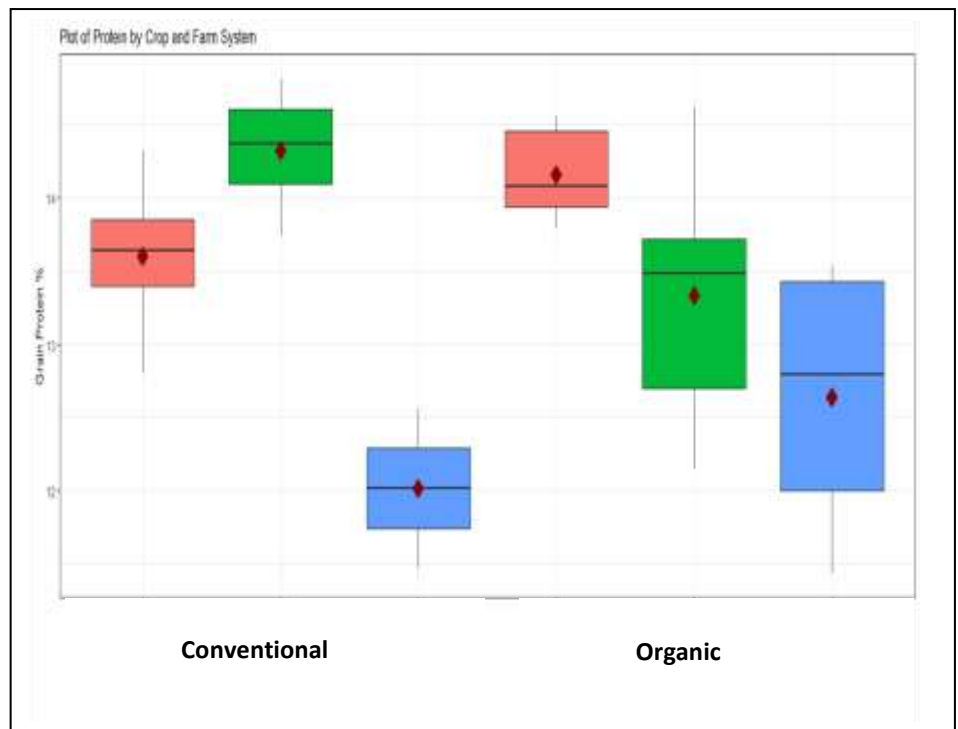
This result is not unexpected; **Mulika** is not bred for the lower nitrogen availability and higher weed burdens often found in an organic system



Protein

Protein content of **April Bearded** was much higher than **Mulika** in the organic system despite both yielding around 2 t/ha. Protein content of **April Bearded** was also higher in the conventional system but this would be expected due to the yield difference and subsequent dilution effect in **Mulika**.

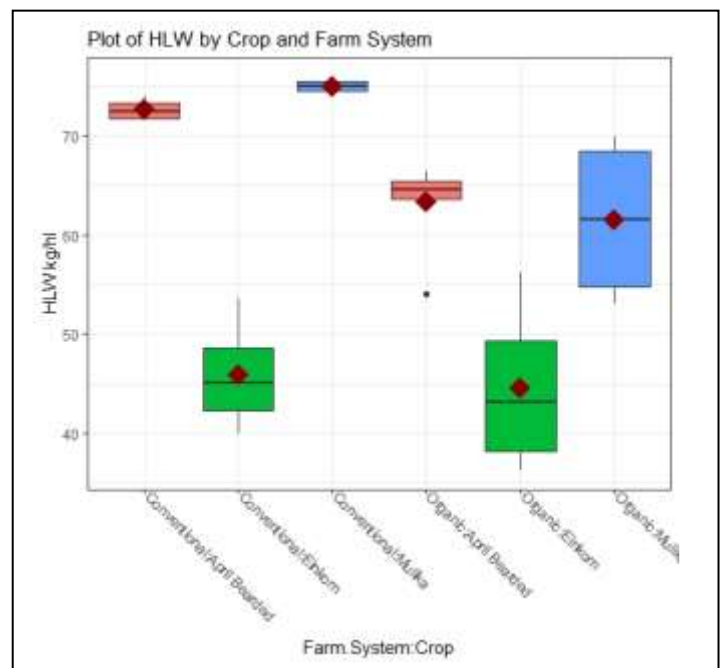
What was unexpected was protein content of **Einkorn**, which was higher in the conventional system than the organic systems despite also yielding higher.



Specific weight

Mulika had a higher Hectolitre weight (HLW) than **April Bearded** in the conventional system but the reverse was true in the organic system. HLW was higher in the conventional system for both **April Bearded** and **Mulika**.

HLW for **Einkorn** is unreliable as the grain was hulled. The test weight would be expected to improve if the grain were de-hulled but averaged and hulled for conventional and organic respectively.



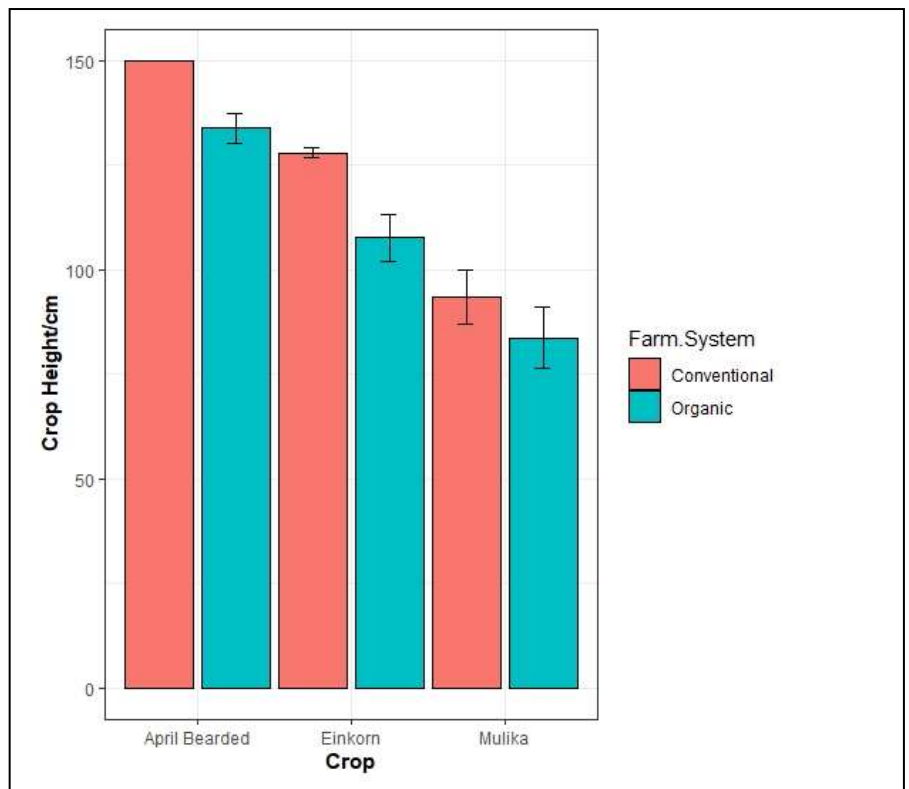
Crop Height, Weeds & Lodging

No lodging was observed for the shortest crop, **Mulika**, as a semi-dwarf high yielding variety, in either farm system.

Both **April Bearded** and **Einkorn** showed high levels of lodging and the Lodging Index was highest for both under the Conventional Farm system.

The conventional system had a much lower weed burden than the organic systems.

April Bearded provided strong competition against weeds in the organic farms.

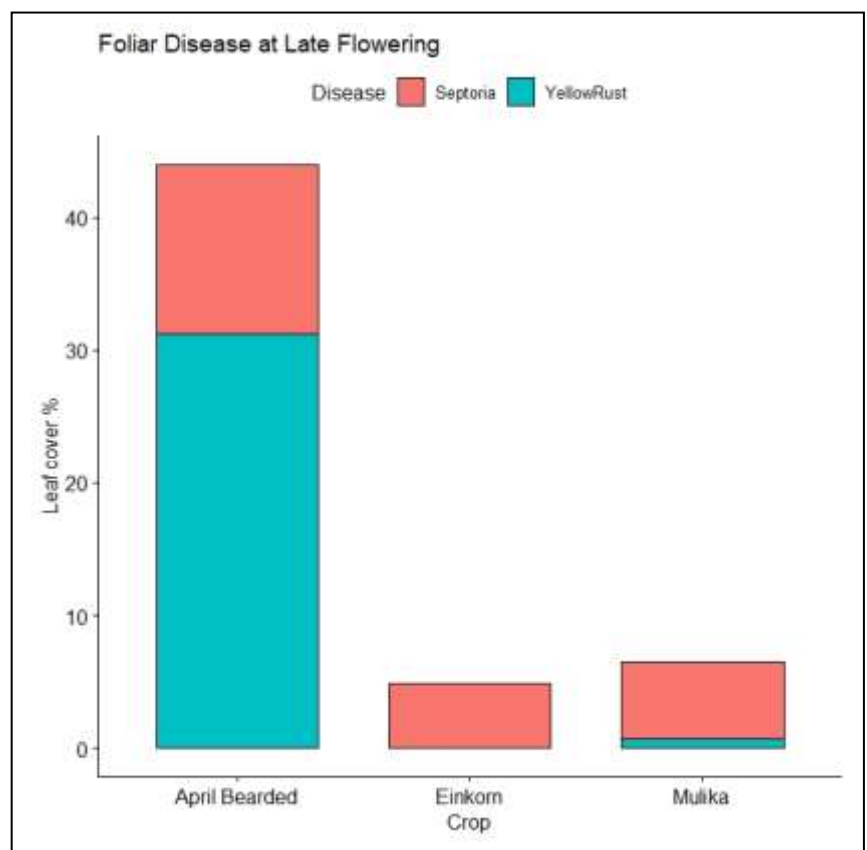


Foliar diseases

Levels of Septoria were generally similar amongst the three crops.

Yellow Rust severity was much higher in the **April Bearded**.

Yellow rust is easily controlled in conventional farming but can be quite damaging for yield and quality in organic farming and attention should be paid to **April Bearded** susceptibility.





Summary

- The heritage wheat April Bearded performed as well as the modern high yielding variety Mulika for yield and performed better in terms of protein content and specific weight under organic farming systems
- Mulika outperformed April Bearded in the conventional system
- Einkorn offers an opportunity for crop diversification but its overall performance and difficulties in processing (de-hulling) mean that its potential is limited.

Next steps

- Autumn 2020 and Spring 2021
- Autumn trials will focus on Welsh landrace Hen Gymro and a French wheat population in comparison to a modern control variety
- Spring trials will again assess the heritage wheat April Bearded against a modern control and will include either Einkorn or Emmer wheat.

