'Better together!'

*We know from plant ecology that in nature diverse communities generally work better than uniform ones[1,2]. These benefits can also be obtained in agroecosystems where the growing of two or more crops together simultaneously in the same piece of land has been shown to be beneficial in terms of yield stability, increase in total yield, pest and disease management, weed management, erosion control, and soil fertility[3,4,5]. **Dominic Amos** reports on work investigating the potential of intercropping as a practice for building resilient cropping systems, as part of the Diversifood project.*

Trials are being carried out at the University of Reading Sonning Farm looking at spring wheat and beans in combination, with different spatial arrangements (alternate or mixed rows), throught the EU Horizon 2020-funded Diversifood project. A spring version of the ORC Wakelyns population is also being tested, to compare its performance in an intercropping situation compared to a standard elite line, and also to apply a selection pressure in order to encourage adaptation as an intercropping component. The Spring population has been developed by continued spring sowing of the winter population which has selected for genotypes with a lower vernalisation requirement and a shorter growing season. Plots that include both a bean and a wheat population will continue to be grown each season to monitor both adaptability and yield stability. Results from this experiment will be available in the next Bulletin.

As well as the trial at Reading, various intercropped plots were drilled for NOCC 2017 and were on show for visitors to view. Various wheat and bean mixtures (all mixed rows) have been sown, including two elite bean cultivars, Vertigo and Fuego, and a bean composite cross population developed in the SOLIBAM project. We've again included a spring wheat population as well as the two elite wheat lines, Mulika and Paragon. The idea is to look at how varietal selection can make a difference when designing crop partnerships and to think about some of the other key considerations including spatial arrangement, drilling rates and canopy height.

Intercropping spring beans and wheat trials at Sonning Farm

Research has shown that a 50:50 mix does not always perform best. We also included plots of various spring cereals (wheat, barley, oats and triticale) and pea mixes from Western Seeds Combicrop blends, although unfortunately at the time of writing the peas had failed to come through due to the incredibly dry spring. It could be argued that this is one of the benefits of an intercrop as risk is spread so that if one crop fails a second is able to take its place and continue to provide the farmer with a crop.

The idea behind mixing a cereal and grain legume is to provide a feed high in both protein and starch, giving a boost to protein by up to 50% above that of a straight cereal. Foliar disease risk in the cereal is reduced, and residual nitrogen is left by the peas for the following crop. The cereal-legume canopy architecture is complementary, with the cereal providing support for the pea to climb. Peas will ripen a little earlier than the wheat or oats but will hold on until the cereal component is ready to harvest. The peas and barley should come at the same time. These cereal/pea blends can be combined dry, crimped or wholecropped, and the straw is also very palatable. Growing these mixes could help reduce or even eliminate the need for bought-in concentrate.

Finally, although not part of the intercropping showcase, a plot of Carlin peas, also known as Black peas or black badger peas has been drilled, and despite the dry conditions has come through very well. Carlin peas (*Pisum sativum* var. *arvense*) are being grown by Hodmedod's, the innovative British pulse and grain retailer, and can provide a very suitable British-grown substitute to both chickpeas and lentils.

An intercropping event was held at the beginning of June at Shimpling Park Farm, as part of the OK-Net knowledge exchange project, with farmers from France experienced in intercropping practice sharing their experiences.

A new project focusing on intercropping called Diversify has just started and will explore the practice in depth over the next few years (see p18).

References:

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