The most suitable cereal varieties (wheat, rye,...) for agroforestry systems

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Cereals are usually linked to human and livestock production. Extreme heats associated to climate change can be linked with cereal production losses. Therefore the production of cereals associated to silvoarable agroforestry systems that reduces temperatures in the crop environment due to the shade is seen as a good strategy to adapt cereal crops to climate change. However, most of cereal varieties that are sold were selected to be grown in open sites, and therefore there is a need of selecting cereal varieties to be developed under shade. A experiment was carried out in a greenhouse where 45 commercial varieties of wheat, maize and rye were evaluated with simulated shade. Rye and wheat were sown in autumn without shade and when tree leaves sprout outdoors, the cereal varieties were shaded with a mesh in the greenhouse, while maize evaluation was tested with shade because maize is a species that is developed during summer. The experiment showed that for rye and wheat there were differences among varieties with regard to the behavior when grain and forage production under shade was considered, while maize production was seriously limited in most of the varieties. The selected varieties of wheat were Ingenio and Tocayo while with rye the most promising varieties were Bono, Petkus and Gatano. The maize varieties that better performed under shade where DS0747, HUXXTOR and Sinpatico.

Wheat varieties were more productive with moderate shade with walnut than in open sites due to the lower competition with annual species that reduced production in open sites. Ingenio showed better quality than Tocayo with regard to Protein and Phosphorous. The experiment showed that cereal varieties can be selected to grow under shade conditions. This selection should be carried out in different conditions as shade effect varies with different tree species and varieties as well as with the

Figure 1. Rye grown between chestnut trees.

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