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Implementation of multifunctional areas as a tool to improve natural enemy populations in stone fruit fields in Spain

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INTRODUCTION & AIM

LivinGro® is an initiative that was launched by Syngenta to accelerate the adoption of regenerative agriculture through scientific validation, knowledge sharing, and practical implementation. The project leads trials worldwide in collaboration with scientific collaborators to test the hypothesis that the use of modern agricultural technology and best agricultural practices, together with ecological compensatory measures, can sustainably improve biodiversity and soil health in agricultural landscapes.

Specifically in Spain, we have 5 stone fruit field trials, 3 located nearby Murcia and 2 in the area of Zaragoza, where we have implemented measures such as cover crops and floral margins, to see the effect this has on different agroecosystem parameters. In this case we will show some results on insect biodiversity, and specifically on how the natural enemy populations have increased, and the effect this has on the integrated pest management and therefore on crop production.

Figure 1. Location of stone fruit trials in Spain

METHOD

Figure 2 . Field trials following LivinGro® protocol, A) implementing MFAs such as flowering strips and B) control without MFAs

Trials have taken place in five stone fruit fields found in the region of Murcia and Zaragoza, Spain, throughout the years 2020-2023. Following LivinGro® protocol, insect population were compared between a control site and a treated site in the field, where multifunctional areas (MFAs) are grown. Insect collection methods such as Malaise traps in the control and treated site as well as sweep netting a range of distances from the MFA were used. Taxonomic identification is done from order to species level, as well as understanding their IUCN Red list category, although for certain groups it is not possible to reach this level.

Figure 3 . Malaise and sweep netting in LivinGro trial

RESULTS & DISCUSSION

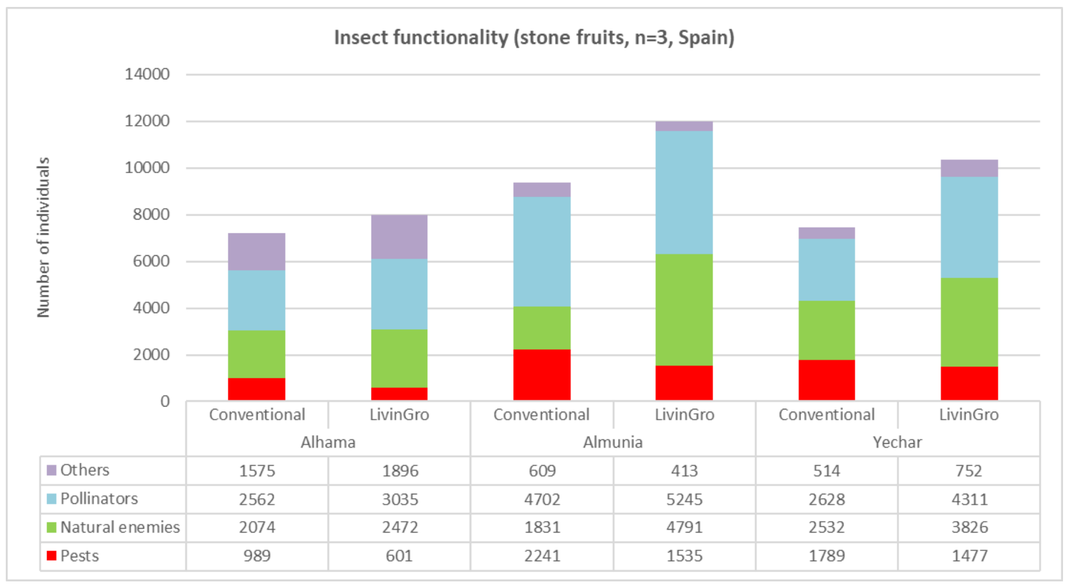

Figure 4. Significant boost in beneficial insects (pollinators and natural enemies) and statistical decrease in crop pests.

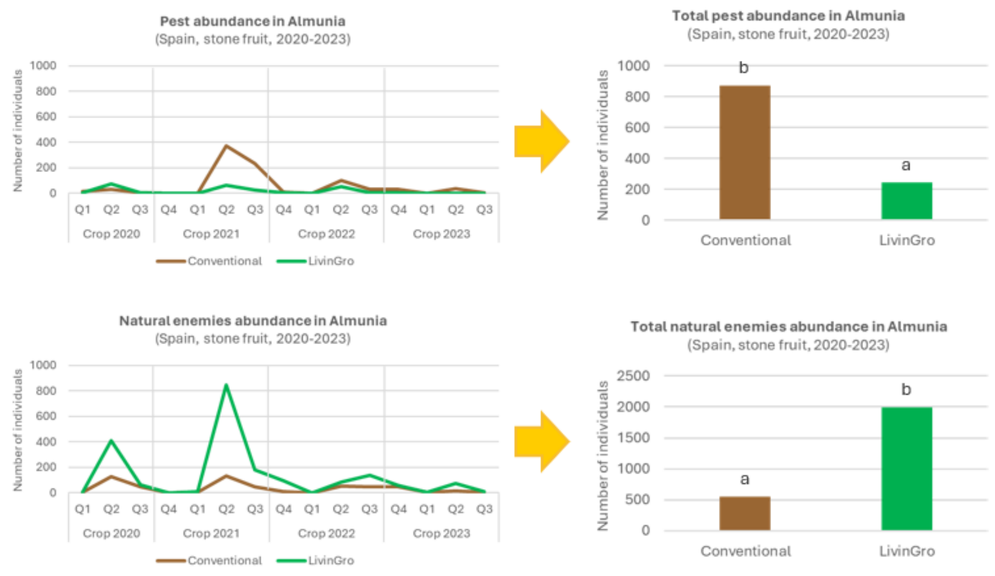

Figure 5. Significant decrease in pest population and significant increase in natural enemy populations with the implementation of LivinGro practices

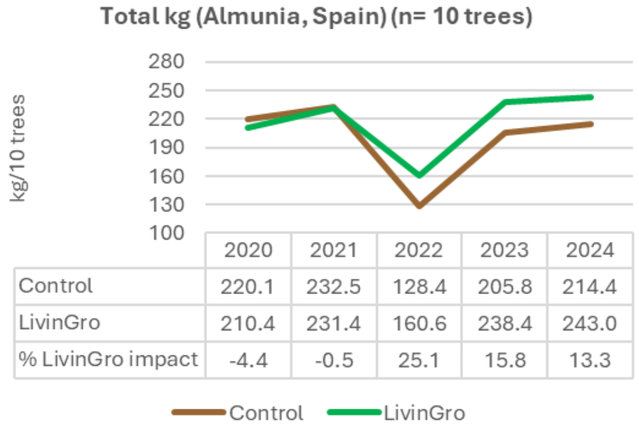

Figure 6. Significant increase in yield and caliber after 2 years of implementation

CONCLUSION

The implementation of LivinGro protocol led to a significant increase in insect populations and support the protection for threatened insects in stone fruit farms. This enabled an increase in stone fruit yield.