

IPM CONFERENCE 2024

Holistic IPM: Reducing pesticide use

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Three-year results of IPM implementation in the Swiss demonstration farms network PestiRed.

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Objectives

- ⇒ **75% reduction of the treatment frequency index (TFI)** across an entire 6 year crop rotation
- ⇒ Maximum **10% economic loss**

Methodology

- ✓ 68 farmers - 5 groups – 3 cantons
- ✓ **2 fields in comparison** – one control (conventional), one innovative (IPM strategies)
- ✓ Continuous co-innovation process through 2 meetings per
- ✓ Around **20 IPM measures** implemented on the innovative plots
- ✓ Monitoring of pests, diseases, weeds and beneficials
- ✓ Technical and economical evaluation

Crops (total PestiRed fields number 2020-2022)	Average TFI reduction (2020 - 2022)	Average yield loss (2020-2022)
Sunflower (18)	100%	10%
Peas (42)	99%	9%
Winter wheat (80)	93%	4%
Maize (42)	91%	16%
Rapeseed (72)	79%	25%
Barley (58)	78%	17%
Soybean (10)	77%	5%
Spelt (22)	68%	-1%
Sugarbeets (12)	49%	11%
Potatoes (8)	24%	16%

Fig. 1: Average TFI reduction and yield loss between innovative and control fields, over the three years 2020 to 2022, by crop, in the PestiRed network

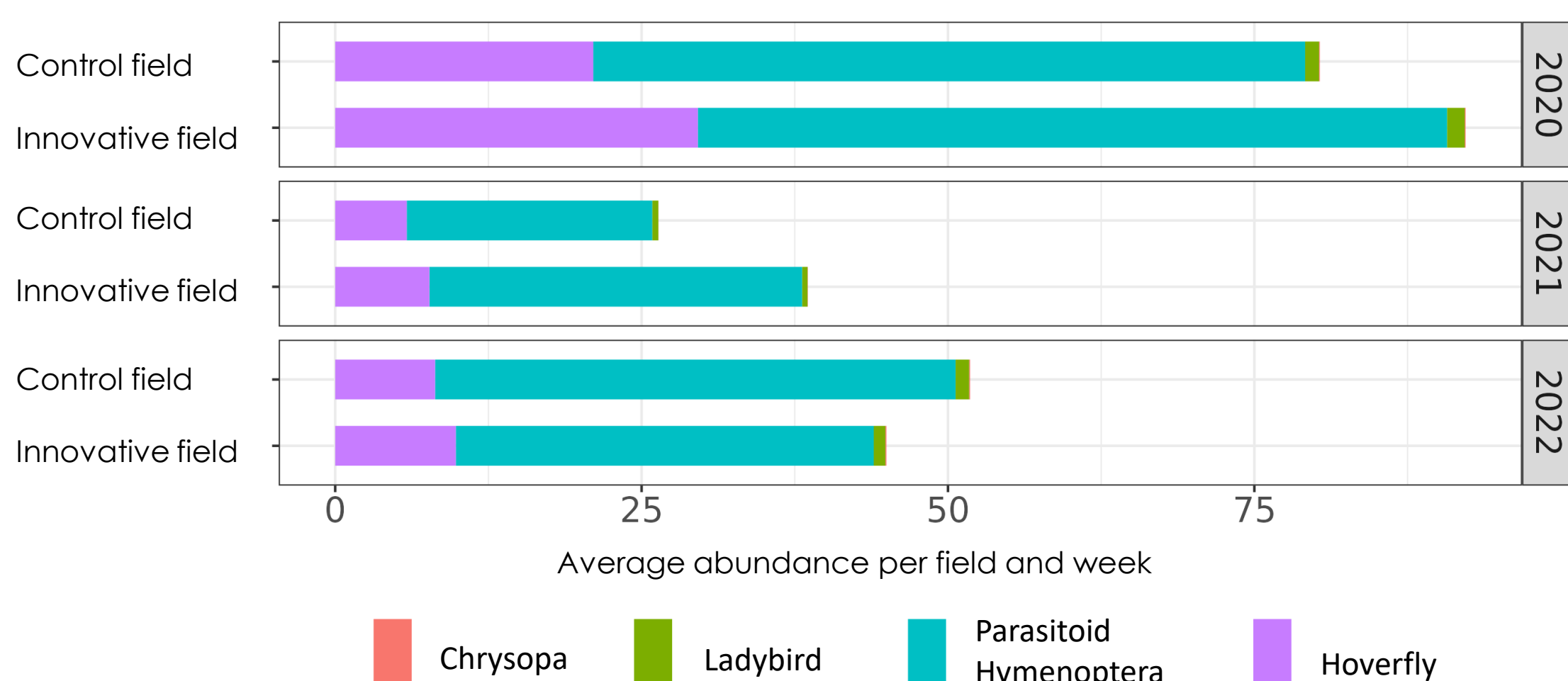


Fig. 2: Average abundance of beneficials in the innovative and control fields in 2020, 2021 and 2022. The beneficials were captured for 6-7 weeks from the end of April. Most of the innovative plots were grown without insecticides or fungicides.

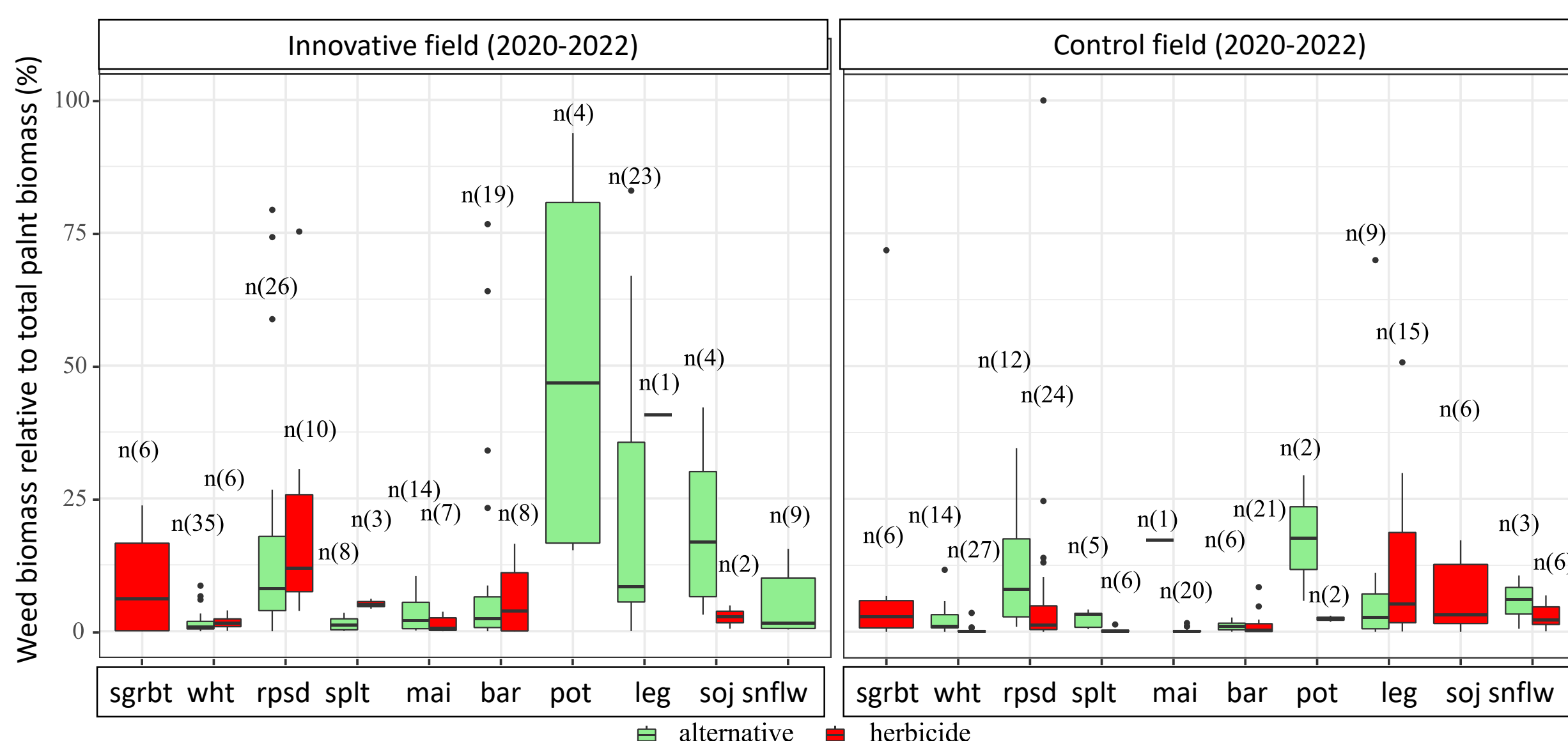


Fig. 4: Weed biomass relative to total plant biomass (i.e. weeds and crop)(%) before harvest on innovative and control fields (2020 to 2022). In green, fields with alternative weed control measures without herbicide (alternative). In red, fields with alternative weed control measures and herbicide application (herbicide). n = number of plots.

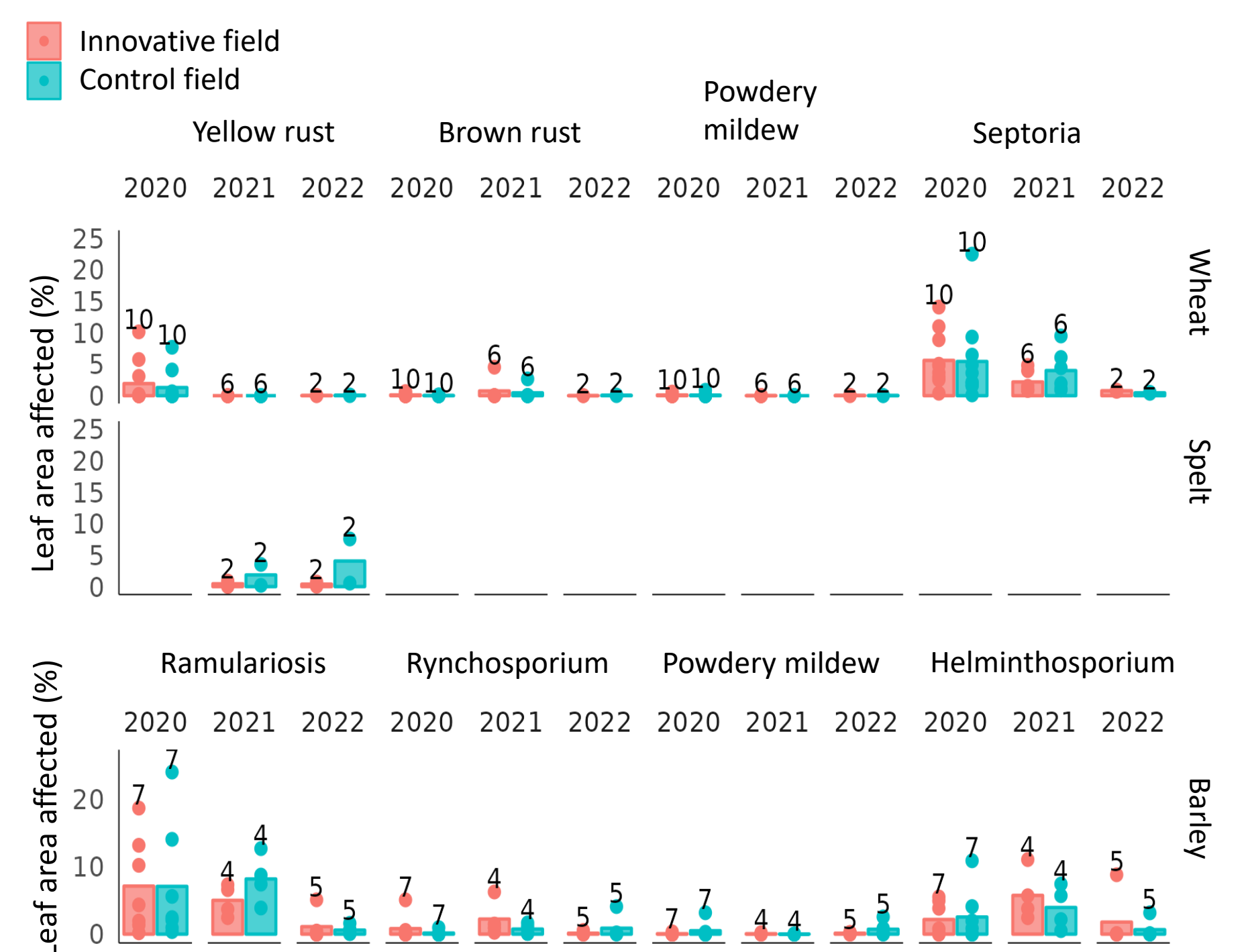


Fig. 3: Average intensity of fungal disease in barley, wheat and spelt, indicated as a percentage of leaf area affected on the last leaf at BBCH 75 stage. The dots represent average values per farm. The number of fields is shown above the bars.

For all crops, except sugar beets and potatoes, TFI reduction between innovative and control fields was over 75% (between 75% and 100%). Herbicides are the hardest to reduce, except in potatoes where fungicides account for the majority of applications. The wheat grain yield loss in innovative fields was only 4% as compared to control fields, while around 25% in innovative rapeseed fields. Weed biomass rate tend to be greater in innovative fields. Insect and disease pressure was similar in both fields. More hoverflies were caught on the edges of innovative fields than on the edges of control plots.