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Use of crops by the partridge (*Perdix perdix*) in the context of methanization

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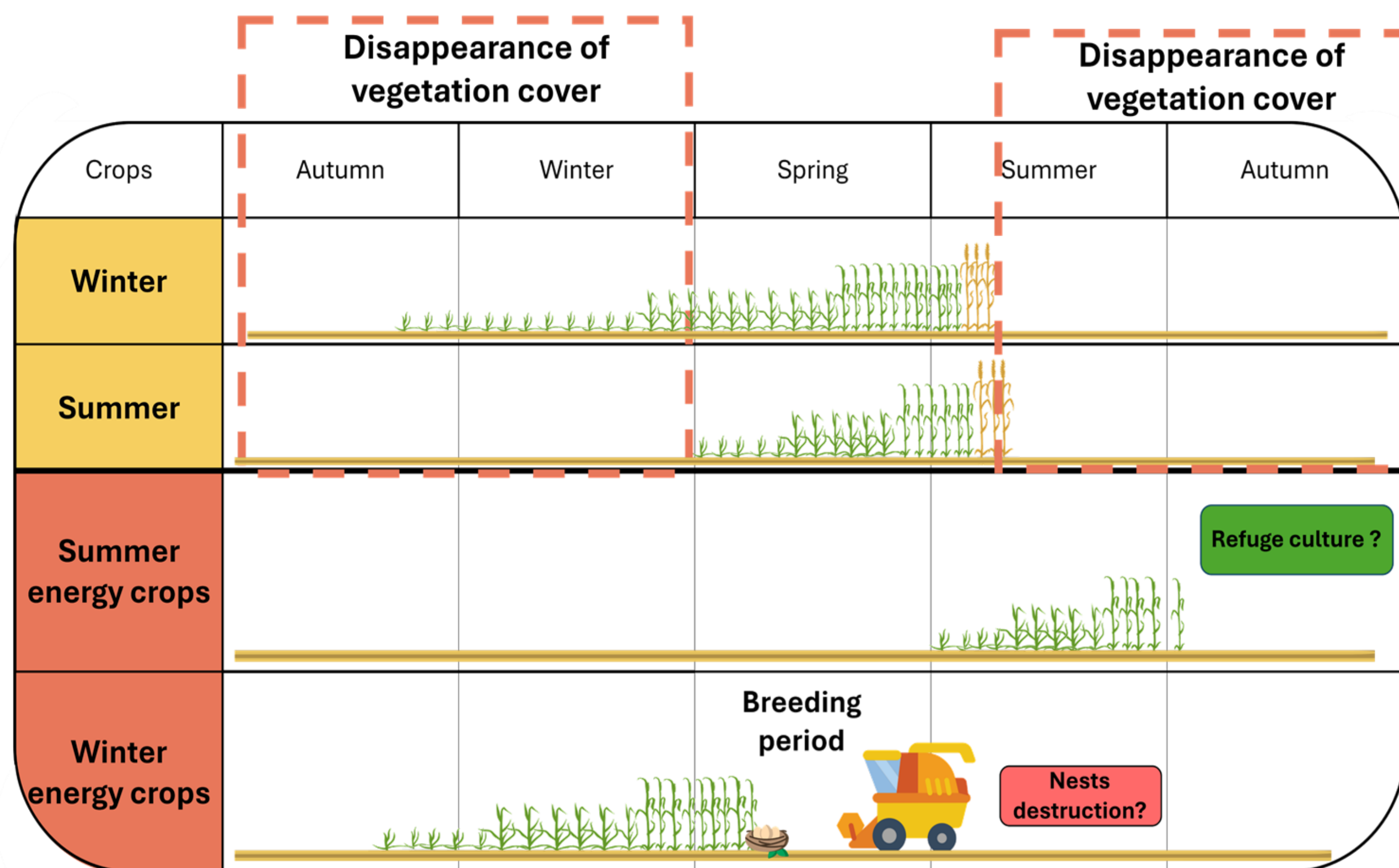
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Background

For methanization, farmers use new crops called intermediate energy crops to put into the biogas plant. These new crops lead to **changes in the landscape**.

Classic crops
 No more than 15% in the biogas plant

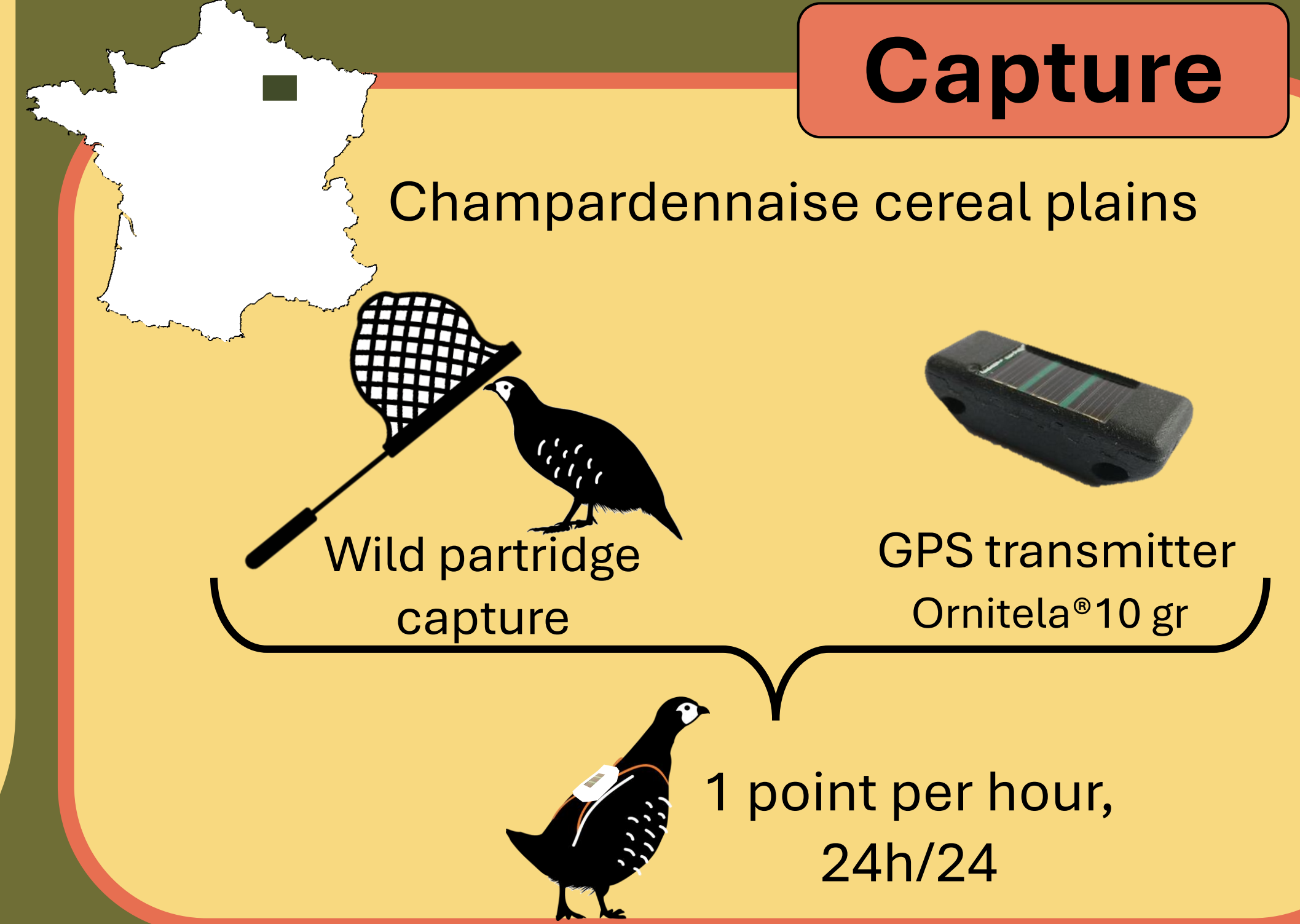
Intermediate energy crops
 Special crops for methanization



Objectives

- Study habitat selection by partridges over the course of the year in cereal plains.
- Study the selection of energy crops by partridges.

Capture



Analyses

Winter : 1 December to 29 February
 Spring : 1 March to 31 May

1-For each period : calculation of Home Range (HR) and generating random locations



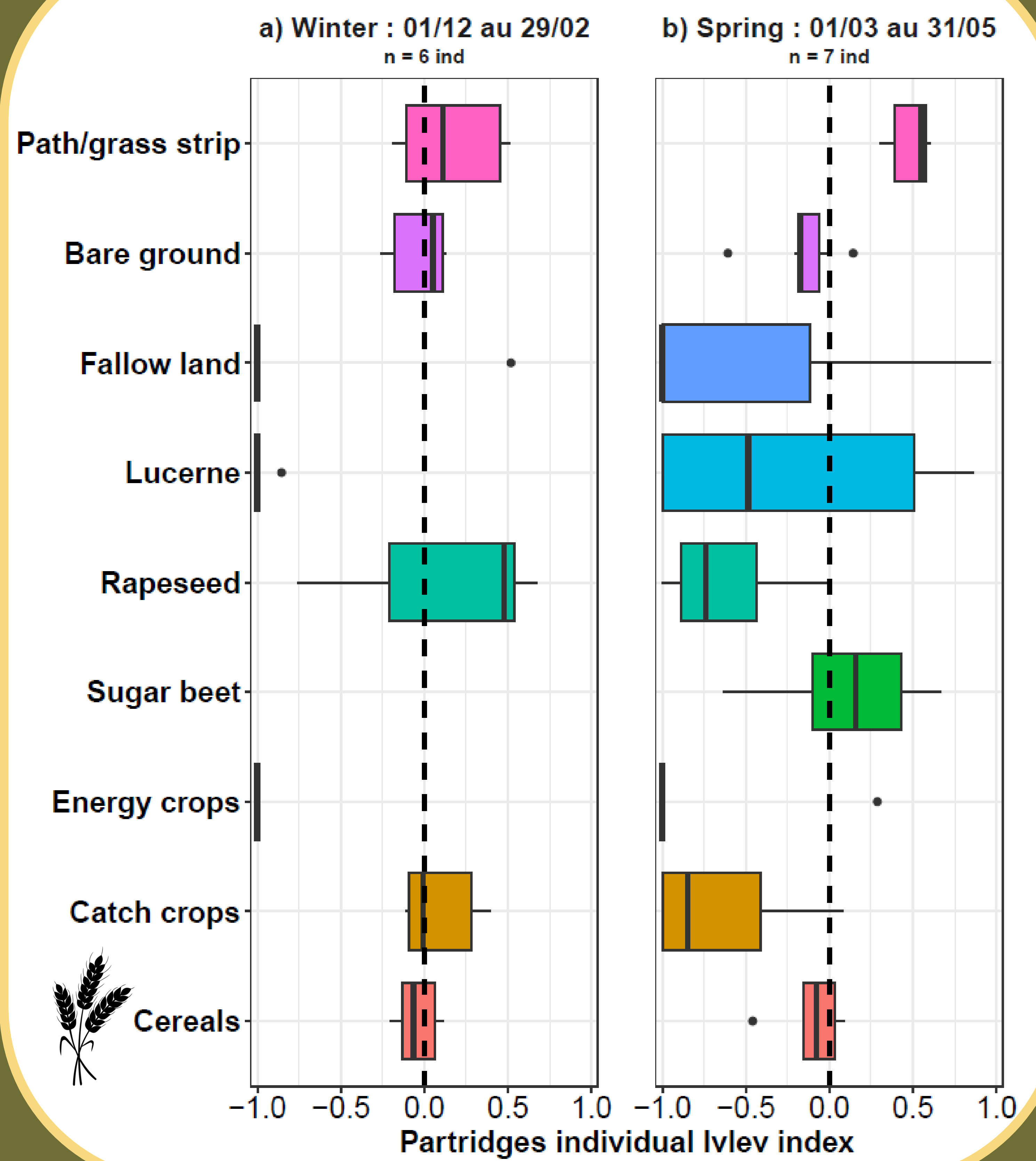
2- For each period : Calculation of Ivlev Electivity index^[2]

$$E = \frac{p_i - p}{p_i + p}$$

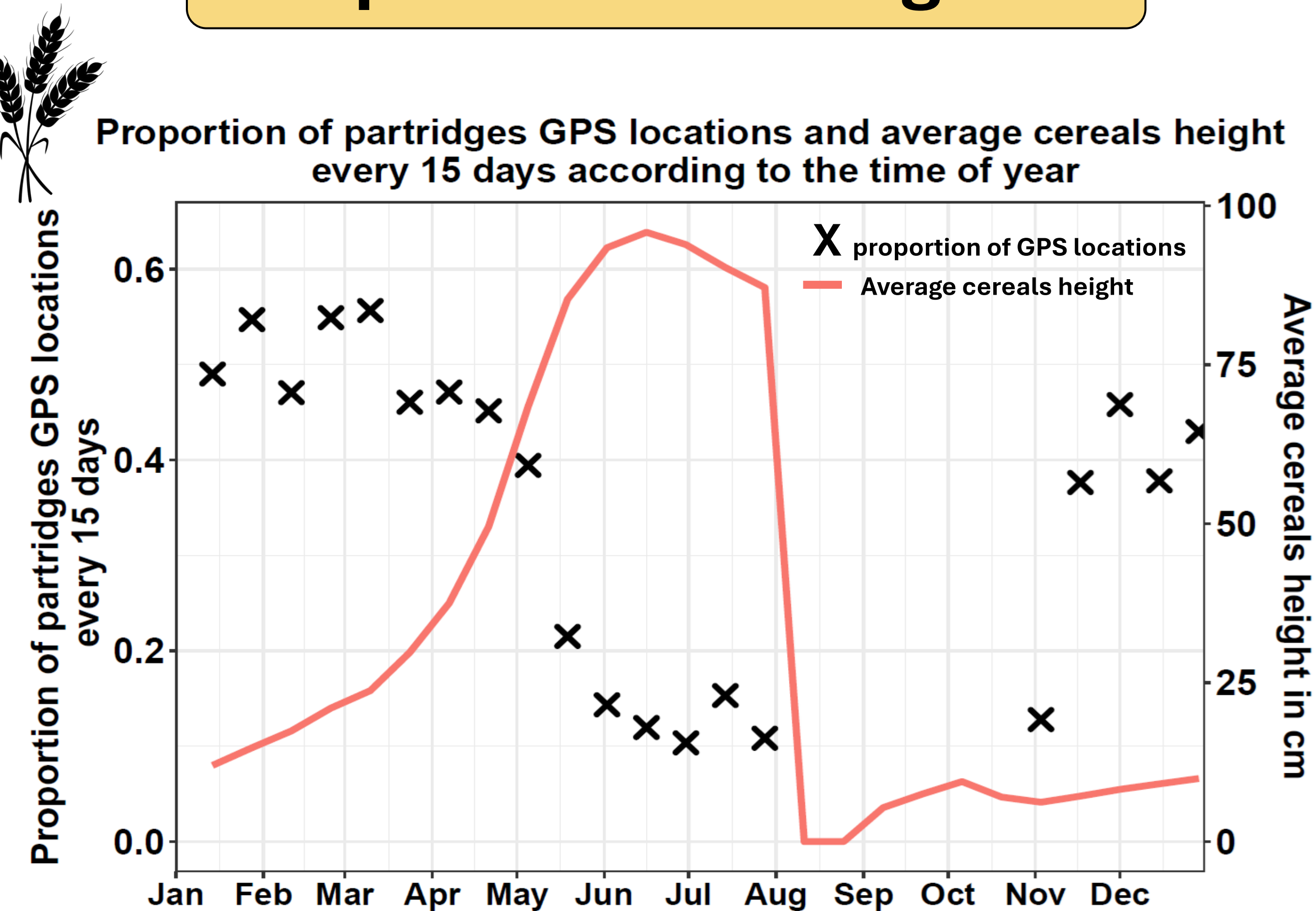
p_i : Proportion of partridge GPS point in a habitat for individual i
 p : Proportion of random point for the same habitat

➔ Index from -1 to 1
 Value of -1 : strong avoidance
 Value of 1 : strong preference

Results



Importance of height ?



Chi-square test on two height categories : Low (0-50 cm) High (50-100 cm) ➔ $\chi^2 = 10279$ df=1, **p-value=2,2.10⁻¹⁶**

First conclusions

- Partridge don't seem to use winter energy crops in any season.
- They use crops differently depending on the season, probably due to the change in crop height.
- The greater use of paths in spring could be explained by the greater height of crops or by the greater food availability in grass strip.
- Energy crops are higher than classic crops, which may explain why winter energy crops are not selected.

References

- [1] Kranstauber, B., Kays, R., LaPoint, S. D., Wikelski, M., & Safi, K. (2012). A dynamic Brownian bridge movement model to estimate utilization distributions for heterogeneous animal movement. *Journal of Animal Ecology*, 81(4), 738-746. <https://doi.org/10.1111/j.1365-2656.2012.01955.x>
- [2] Gautrelet, M., Gerard, J.-F., Helder, R., Fournier, P., Fournier-Chambrillon, C., Hubert, P., Isère-Laoué, E., Capitaine, L., Dupuy, M., Dispan De Floran, L., Alleman, C., & Devos, A. (2024). First look on the home range, movement, and habitat selection of the invasive Northern raccoon (*Procyon lotor*) in France through two contrasted populations. *European Journal of Wildlife Research*, 70(1), 7. <https://doi.org/10.1007/s10344-023-01756-1>

