

# Cultural practices might enhance red-legged partridge presence –

## a fine-scale field study in a viticulture region of southern France

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The maintenance of sustainable red-legged partridge *Alectoris rufa* populations is partly related to the knowledge of appropriate management. Whereas positive effects of open habitats on spring presence is well known, few information exists on finer habitat scale e.g. on plant species preference.

Red-legged partridge is potentially more attracted by some plant species than others to feed, rest, hide from predators. We tested the frequency of use of common seed-bearing and leguminous plants in viticulture plots over 4 years.



Species	1995		1996		1997		1998	
	N	P	N	P	N	P	N	P
Alfalfa °	1	100	1	100	-	-	1	100
Clover °	3	67	3	67	3	0	4	75
Darnel #	1	100	1	100	1	0	3	67
<b>Fescue #</b>	<b>4</b>	<b>75</b>	<b>3</b>	<b>33</b>	<b>3</b>	<b>100</b>	<b>2</b>	<b>100</b>
Oat #	2	100	2	50	2	0	2	50
<b>Vetch °</b>	<b>5</b>	<b>100</b>	<b>4</b>	<b>25</b>	<b>6</b>	<b>0</b>	<b>3</b>	<b>33</b>
Wheat #	2	100	2	50	2	0	3	67

**Tab.1:** Comparison among seedings and later observed plants in plots. Given is the number of plots where plant species was seeded (N) and (P) the plot/year percentage with upgrown species observed. **In red:** Outstanding values. Re-seeding was observed in 1998. One plot could be seeded with more than one plant species. Dactyl was excluded (N years inferior).

Field work took place, accompanied by volunteer farmers on 17 plots (1994 to 1998), recently cleared and cultivated with seed bearing# and leguminous plants°. Re-seeding took place only in 1997/1998. All plots were subjected to yearly faunal survey and vegetation transects (April-June), corresponding to crucial periods for population maintenance (breeding, foraging).

The vegetation composition was measured in a 4m<sup>2</sup> transect zone, (5 lines, 100 sample points). The red-legged partridge presence in surveyed plots was estimated via the compilation of direct and indirect presence indices (feathers, faeces).

The Bayesian approach (Kuo and Malik, 1998)<sup>1</sup> handles with small datasets and shows the probabilities of each variable (Tab.2) to influence red-legged partridge presence. Fescue attained highest value (76%) and Dactyl 14% (Tab.2). The plot replicate number was insufficient in some plants, and bad spontaneous seed grow back was observed for some species over the study years (Tab.1).

Therefore, these results may lead to discuss on a compromise among graminean plants mainly consumed by partridges during spring for their nutritive value and cover, and those plants, robust enough to grow back spontaneously the following years under water-deficit conditions. Further studies have to increase plot number per plant species and consider seasonal use.

Seed type	Probability
<b>Fescue #</b>	<b>75.6</b>
<b>Dactyl #</b>	<b>14.4</b>
Oat #	4.8
Vine	4.5
Clover°	2.7
Wheat #	1.6
Darnel #	1.5
Alfalfa °	1.2
Vetch °	1.0
Gramineous #	0.0
Leguminous °	0.0

**Tab.2:** Probabilities explaining the variables generated by a MCMC (Markov chain)<sup>1</sup>.

<sup>1</sup> Markov chain Monte Carlo » (MCMC) with analyses of convergence by Gelman and Rubin diagnostic (1992).