



EFFECT OF INTERCROPPING CHICKPEA WITH A COMPANION PLANT ON WEED CONTROL DURING EARLY GROWTH

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Introduction

Grain legumes are known to provide numerous services. However, they are seldom introduced in cropping systems due to the technical barriers associated with their cultivation.

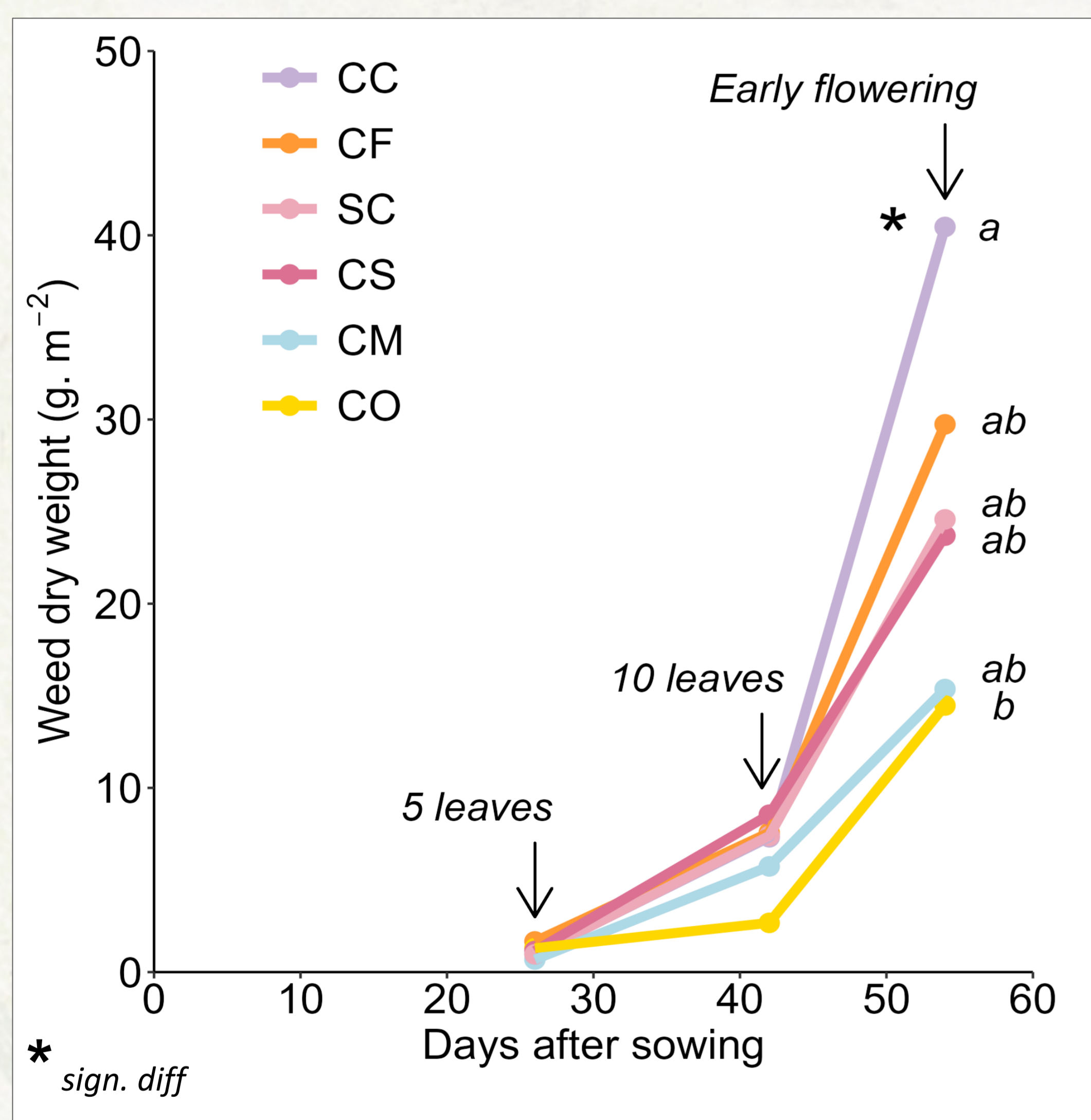
Chickpea (*Cicer arietinum*) competes poorly against weeds during early growth leading to low yields. Moreover, there are few references in Europe on this crop.

Intercropping is a lever to improve weed control (Corre-Hellou et al., 2011).

Does intercropping chickpea with a companion plant improve the competitive ability against weeds during early growth ?

Main results

1 Weed control



On the last sampling date, the intercrop chickpea/oat had significantly less weed biomass than the other treatments.

Experimental design

Field experiment in Western France (2023, 2024) :

- Comparison of 5 chickpea-based intercropping systems with 1 sole chickpea (SC)

	∅	Oat	Faba bean	Mustard	Sudan grass	Clover
Chickpea	SC	CO	CF	CM	CS	CC

- Randomized complete block design with 8 replicates

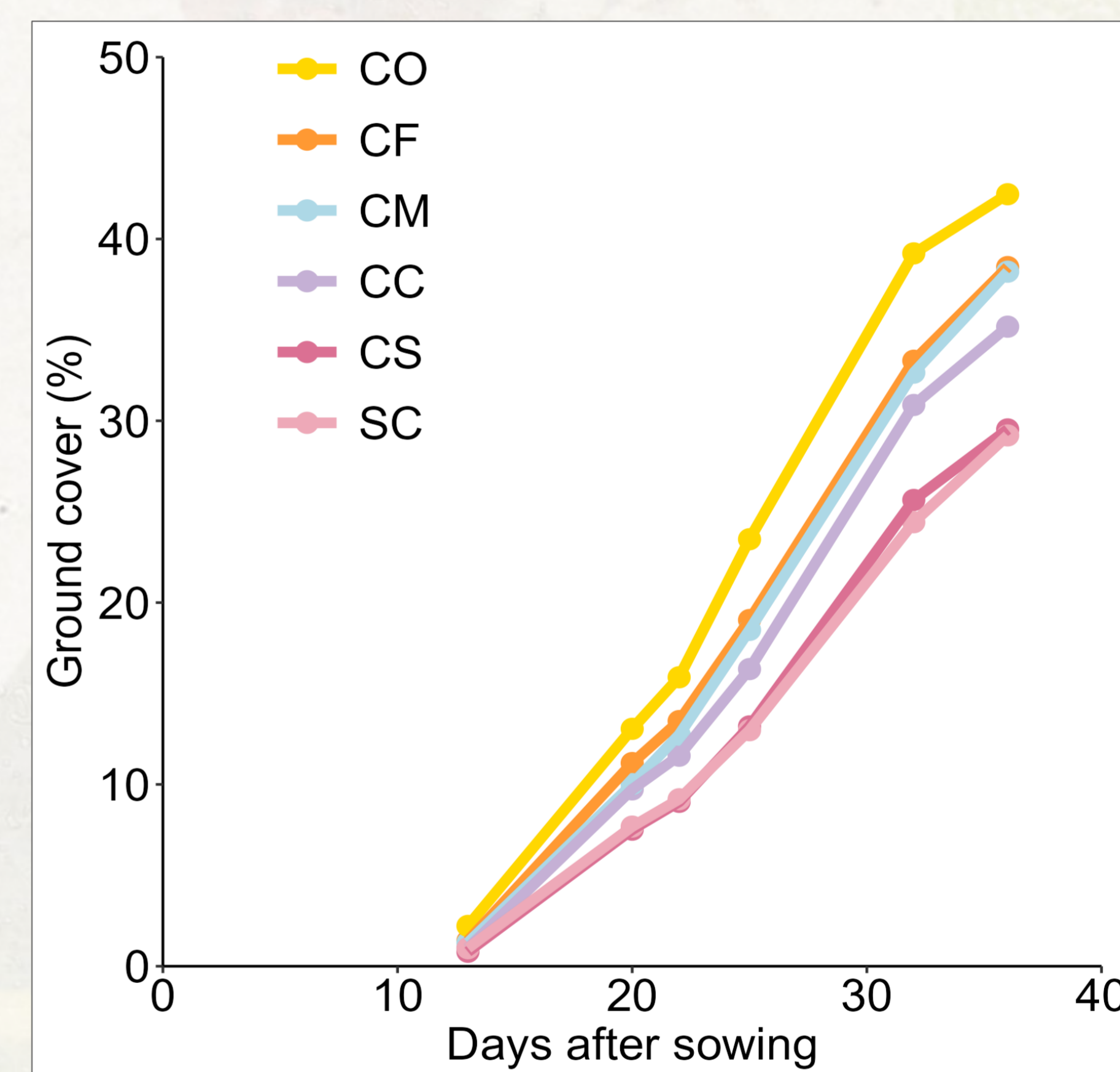


- Alternate rows
- Additive design (100:50)
- Measurements :
 - ground cover
 - accumulation of dry matter (3 sampling dates)

2 Ground cover

During chickpea's early growth:

- The intercrop chickpea/oat covered more efficiently the soil than the other treatments.
- The sole chickpea and the intercrop with sudan grass covered the least.



3 Crop biomass

On the two last sampling dates, the higher the biomass of the companion plant was, the lower the chickpea biomass was.

	Mean biomass (g.m ⁻²) 54 DAS	
	Chickpea	Companion plant
CS	216 ± 26	4 ± 3
SC	202 ± 43	-
CC	179 ± 44	19 ± 12
CF	158 ± 23	40 ± 16
CM	146 ± 22	58 ± 34
CO	79 ± 13	247 ± 52

Conclusion

Weed control is improved when chickpea is intercropped with oat, notably due to the cereal ability to increase overall biomass production compared to the sole crop during early growth (at the expense of chickpea's biomass production) and improve ground cover. Some intercrops have a high ground coverage and still have a high weed biomass, implying that ground cover isn't the only variable explaining weed control differences between treatments.

Reference Corre-Hellou et al. 2011. Field Crops Res., 122(3), 264-272.