

Agricoltura e alimentazione nel 2050

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Camelina and Pea Intercropping For Weed Control In Organic Farming

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Introduction

A weed management strategy in the organic farming consists in increasing the competitiveness of the cultivated system. Intercropping can improve competitiveness thanks of the better use of resources by reducing their availability for weeds. Camelina (*Camelina Sativa L. Crantz*) is a promising oilseed crop with low input requirements. Its early vigorous growth could compensate for the low vegetative growth of peas, thus reducing weed emergence. A preliminary study was carried to assess the effect of camelina intercropped with pea on soil coverage and weed incidence in organic farming compared with pea sole-cropping.



Materials and Methods

Site	Experimental organic farm of the University of Bologna
Treatments	T1: pea sole-cropping T2: camelina sole-cropping T3: pea + camelina
Experimental Design	Randomized complete block design with four replications.
Sowing Date	26/10/2022
Technique	Sole cropping: row Intercropping: camelina was broadcasted after pea row seeding
Seeder	Mechanical cereal seeder Damax 17
Preceding crop	Winter wheat
Fertilization	NO
Surveys	
Soil coverage	Was recorded three times at 55, 98 and 128 DAS by using Canopeo app
Weed density	Counting the number of plants within an area of 0.04 m ² for three times for each plot at 98 DAS
Weed Control Efficacy	$WCE \% = (wc-wt)/wc \times 100$ wt = weed density in T3 wc = weed density in T1 and T2

Results

- After 98 DAS, soil coverage significantly differed among treatments, showing the highest values in the intercropping and in sole camelina (Fig 1A).
- The lowest weed density was in the intercropping (Fig 1B). The weed control efficiency of intercrops increased by 56% and 23% compared to sole pea and sole camelina, respectively.
- A negative linear correlation ($R = -0.30$, $P = 0.07$) was found between soil coverage and weed density at DAS 98.

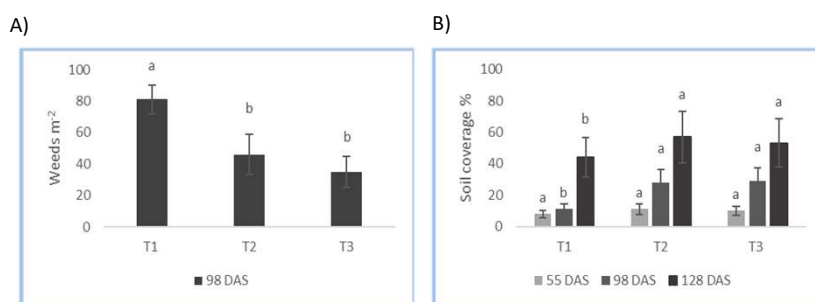


Fig. 1 A) Soil coverage %. B) Weed density (weed m⁻²). Vertical bars: standard error. Different letters: statistically different means for $P \leq 0.05$ (LSD test).

Conclusion

Camelina-pea intercropping resulted in an interesting herbicide-free alternative crop management enabling to increase soil coverage (camelina and pea every other row) while reducing weeds.



Pea + camelina intercropping



Pea sole-cropping

