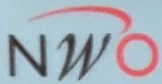


Agricultural landscapes and pollination services in oilseed rape (*Brassica napus* L.)



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Pollination by insects is an important ecosystem service for many agricultural crops. Agricultural landscapes support pollinator communities by providing suitable nesting habitats and floral food sources. However, little is known about the relationship between landscape composition, the abundance and diversity of pollinator communities, and crop pollination.

Research questions:

- i) How does pollination by insects influence yield in oilseed rape?
- ii) How important are wild pollinators for pollination?
- iii) How does landscape context influence wild pollinator communities?

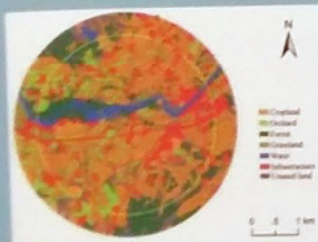


Oilseed rape fields in the study region

Methods



Study area 18 oilseed rape fields in different landscape settings in Jiangxi Province, China



GIS for land use mapping



Treatments Pollinator exclusion (closed cage) and access (open access cage)

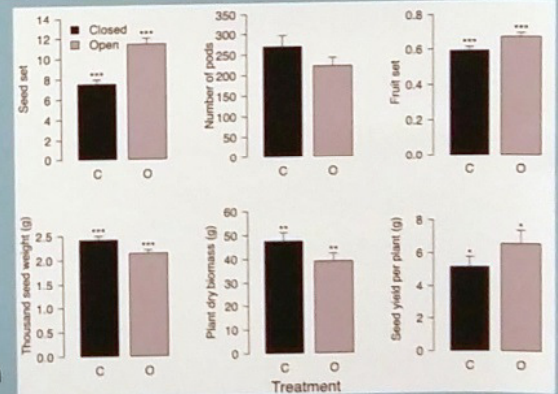


Pollinator sampling pan traps

Results



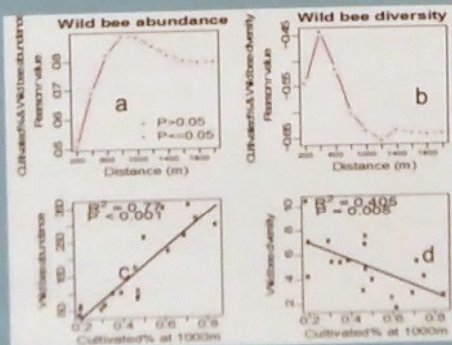
Pollinator access Pollinator exclusion



Yield parameters in pollinator exclusion (C) and access (O) treatments

Generalized linear mixed effect model showing a positive relationship between abundance and richness of wild pollinators and oilseed rape yield

Response variable	Explanatory variable	Estimated parameter	SE	z	Sig
Plant yield	Wild pollinator abundance March	0.004	0.001	2.71	**
	Wild pollinator richness April	0.092	0.033	2.81	**
	Biomass	0.031	0.006	5.20	***
	Plant shoot	0.794	0.117	6.81	***



Pearson correlation coefficients of abundance and diversity (Shannon diversity index) wild bee and proportion cultivated land at spatial scales ranging from 200 to 2000m (a and b), and their respective correlations at 1000m (c and d).

Conclusions

- i) Exclusion of pollinators reduced yield by 29%, on average
- ii) Wild bee abundance and diversity was positively correlated with yield
- iii) Crop dominated landscapes supported an abundant, but relatively species-poor pollinator community