

Sectoral Impacts on Biodiversity and Ecosystem Services

The impacts of growing bioenergy crops on pollinators and pollination services in Ireland

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Pollinators & Pollination



Threats to pollination



Pollinators and bioenergy crops



Research Questions

- 1. What are the impacts of bioenergy crops in comparison to crops they replace?
 - Pollinator species richness and abundance
 - Community composition
 - Nest searching bumblebees
- 2. What are the impacts on plant-pollinator networks?
- 3. Bumblebee colony densities in oilseed rape and landscape
- 4. Oilseed rape and pollination services

1. Impacts of bioenergy crops in comparison to crops they replace



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Stanley & Stout (submitted)

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1. Conclusions & Recommendations

- Differential responses of pollinator groups to small scale growth of energy crops, no effect or +ve effect
- Diversity of crop types at small scale is important
- Field margins are very important for nesting and flower resources
- This study = replacement of other crops
 - Replacement of SN habitat would be different



3. Bumblebee colonies & oilseed rape



Stanley, Knight & Stout (in prep.)

3. Bumblebee nests & oilseed rape









Stanley, Knight & Stout (in prep.)

3. Bumblebee nests & oilseed rape



Stanley, Knight & Stout (in prep.)

3. Conclusions and Recommendations

- Oilseed rape provides forage for large numbers of BB colonies
- Landscape context important for some species
- Implications for pesticide application (Whitehorn et al., 2012, Science)
- Sustainable production of Oilseed rape



4. Oilseed rape and pollination services

- Mass flowering oilseed rape can affect pollination of native plant species
 - Reduced pollination (Holzschuh et el., 2011)
 - No difference or increased pollination (Cussans et al., 2010)



4. Results and Conclusions

- 82% carried oilseed rape pollen
- 15% only visited oilseed rape
- 11% native plant stigmas had OS pollen
- Interference with pollination services unlikely due to stigma clogging
- OS used by a large number of insects





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