



Nature-based agricultural practices for healthier food and environment

The examples of
Agroforestry and Wildflower strips

Sidonie Artru & Séverin Hatt

Ludivine Lassois, Sarah Garré & Frédéric Francis





Landscape aesthetic

Windbreak

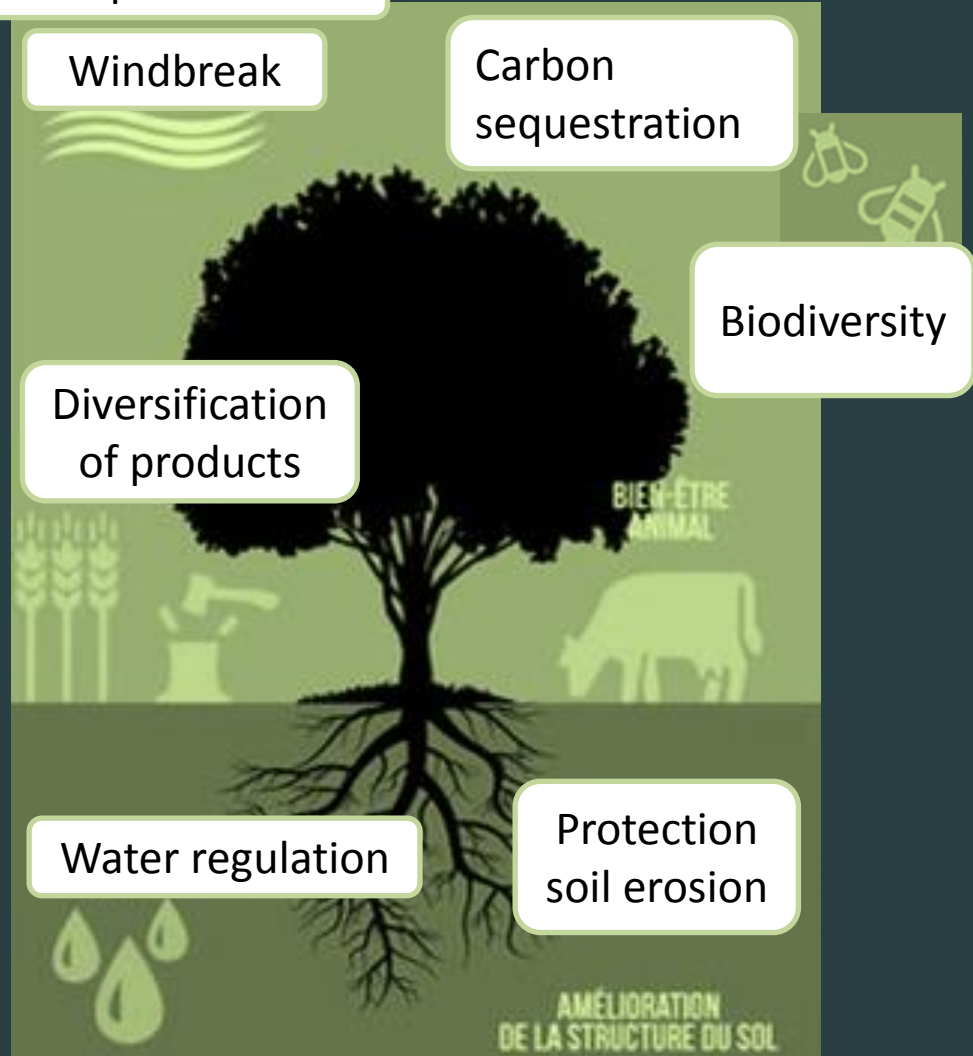
Carbon sequestration

Biodiversity

Diversification of products

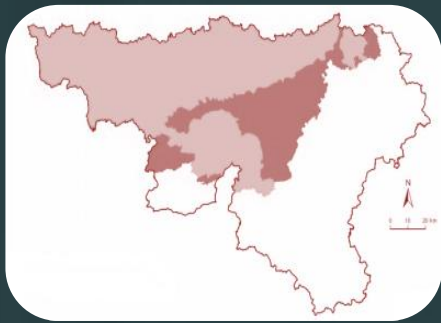
Water regulation

Protection soil erosion



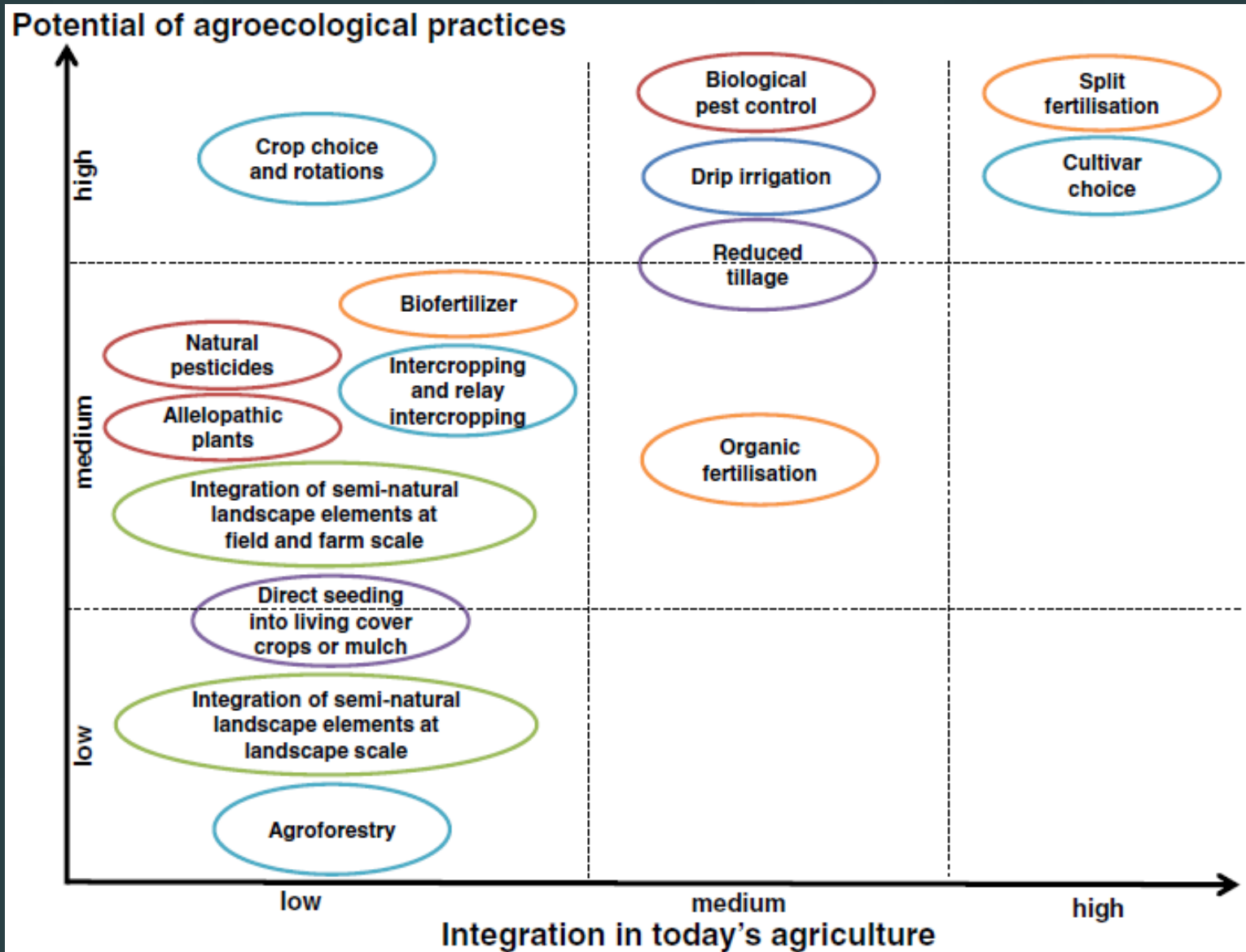
Tree: a tool for water quality and regulation

« Safety net hypothesis »



Popularity in Europe

within agroecological practices



Ongoing research: What about agroforestry productivity?







taz.de

31/08/2008

POLITIK ÖKO GESELLSCHAFT KULTUR SPORT BERLIN

M Planète

10/07/2013

PLANÈTE Paris Climat 2015 Le virus Ebola Énergies Biodiversité Ressources naturelles

Des résidus de pesticides dans les fraises vendues en France

Le Monde.fr | 10.07.2013 à 18h42 • Mis à jour le 11.07.2013 à 08h01 |

Par Paul Benkimoun

Greenpeace warnt vor Pestiziden

Zu viel Obst ungesund

mardi 12 mai 2015

La Libre.be

12/03/2015

Accueil Actu Sciences - Santé

Des résidus de pesticides dans près de la moitié des aliments européens

AFP Publié le jeudi 12 mars 2015 à 13h23 - Mis à jour le jeudi 12 mars 2015 à 13h24

17/07/2014

theguardian
Winner of the Pulitzer prize 2014

UK world politics sport football opinion culture business lifestyle fashion environment tech travel

all sections

home > environment climate change wildlife energy pollution

Pesticides

Over 60% of breads sold in the UK contain pesticide residues, tests show



Pesticides

Effets sur la santé

Expertise collective

Synthèse et recommandations

Instituts
thématiques



Inserm

Institut national
de la santé et de la recherche médicale

“Some epidemiological studies allowed to identify relations between the occurrence of some diseases and exposition to pesticides”

“Risings of significant risks for various pathologies have been linked to exposure to pesticides”

2013



Biological
pest control



Higher insect diversity
and abundance at field
margins and wood-lots
than into fields.

→ Semi-natural habitats

Colignon *et al.* 2002



Alternative food

Nectar

Pollen

Preys

Shelter

Less disturbed

Less spraid

Species diversified

Field margin vegetation enhances biological control and crop damage suppression from multiple pests in organic tomato fields

Mario V. Balzan* & Anna-Camilla Moonen

Institute of Life Sciences, Scuola Superiore Sant'Anna, Via S. Cecilia, 3, Pisa 56127, Italy

Accepted: 26 September 2013

Agriculture, Ecosystems and Environment 129 (2009) 310–314



ELSEVIER

Contents lists available at ScienceDirect

Agriculture, Ecosystems and Environment

Journal homepage: www.elsevier.com/locate/agee



Impact of wildflower strips on biological control of cabbage lepidopterans

L. Pfiffner^{a,*}, H. Luka^{a,c}, C. Schlatter^a, A. Juen^b, M. Traugott^b

^aResearch Institute of Organic Agriculture, Ackerstraße, 5070 Frick, Switzerland

^bUniversity of Innsbruck, Institute of Ecology, Mountain Agriculture Research Unit, Technikerstrasse 25, 6020 Innsbruck, Austria

^cUniversity of Basel, Department of Environmental Sciences, Institute of Biogeography, St. Johanns-Vorstadt 10, CH-4056 Basel, Switzerland

ARTICLE INFO

Article history:

Received 23 June 2008

Received in revised form 3 October 2008

Accepted 6 October 2008

Available online 14 November 2008

Keywords:

Conservation biological control

Parasitoids

Diagnostic PCR

Habitat manipulation

Mamestra brassicae

Pieris rapae

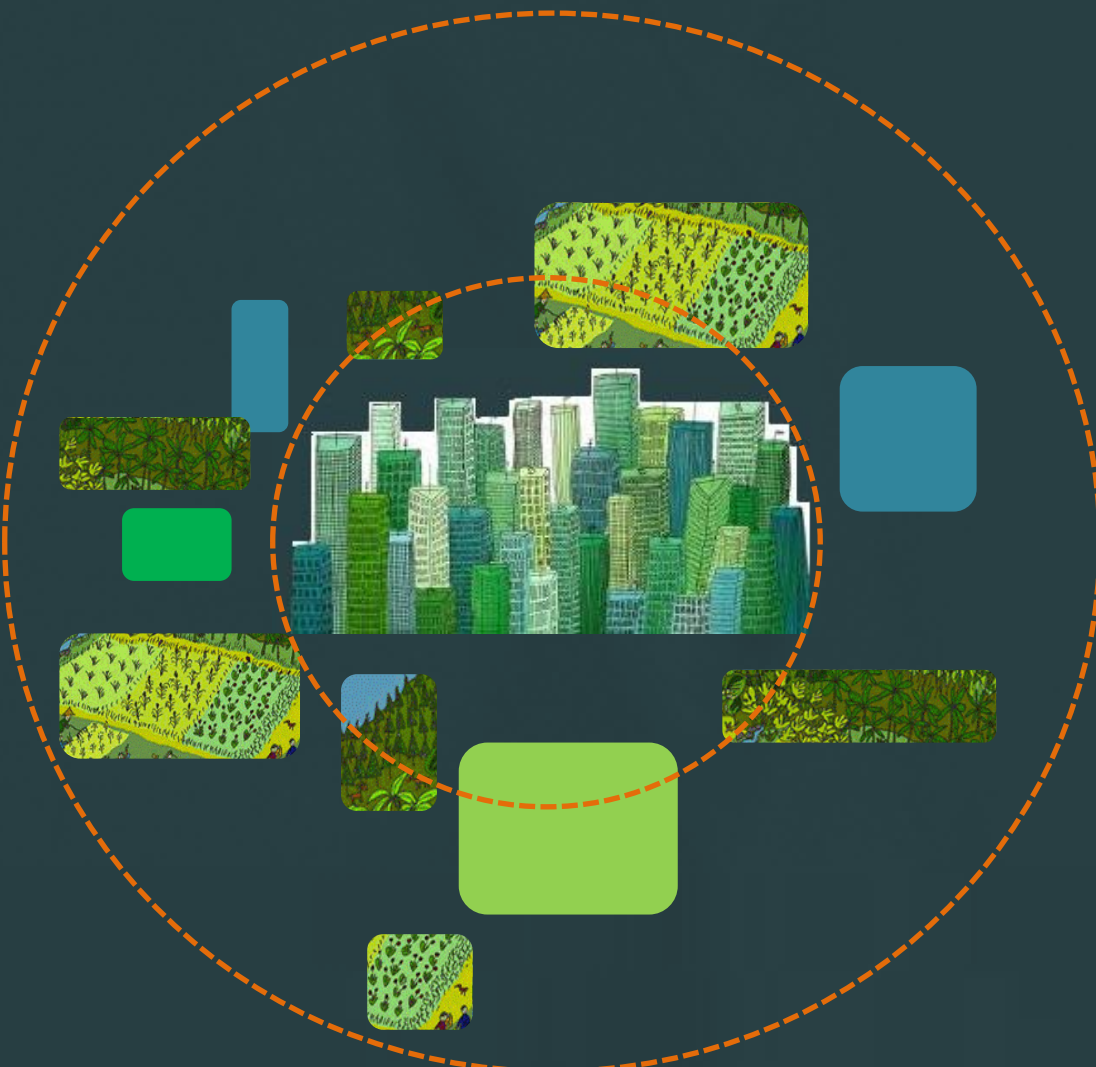
ABSTRACT

In a 2-year experiment we investigated whether wildflower strips can be used to enhance the control of cabbage moth, *Mamestra brassicae* L., and cabbage white butterfly, *Pieris rapae* L. At two sites, including six organically cultivated fields, *M. brassicae* egg parasitism and predation rates were determined along with an assessment of larval parasitism rates in *M. brassicae* and *P. rapae* using a DNA-based approach. Within each field, plots with and without wildflower strips were sampled and a grid design of 3 m × 3 m was used to analyze the spatial pattern of parasitism. The provision of wildflower strips provided an idiosyncratic effect on the control of lepidopterans: parasitism rates in *M. brassicae* eggs and larvae were not affected, whereas parasitism rates of larval *P. rapae* were significantly enhanced by the wildflower strips at one of the two sites. Moreover, at one site predation rates on *M. brassicae* eggs were significantly enhanced by the wildflower strips. Statistical analysis showed no distinct spatial patterns in parasitism rates. These results demonstrate that the provision of wildflower strips does not necessarily enhance biological control of lepidopteran cabbage pests and suggest that site-specific environmental factors strongly affect the impact of wildflower strips.

« These results demonstrate that the provision of wildflower strips does not necessarily enhance biological control of lepidopteran cabbage pests »

Ongoing research: What about optimizing flower mixes ?





Now, let's discuss!

Sidonie.artru@ulg.ac.be

Severin.hatt@ulg.ac.be



References

<http://taz.de/!22332/>

http://www.lemonde.fr/planete/article/2013/07/10/des-residus-de-pesticides-dans-les-fraises-vendues-en-france_3445768_3244.html

<http://www.theguardian.com/environment/2014/jul/17/pesticide-residue-breads-uk-crops>

<http://m.lalibre.be/actu/sciences-sante/des-residus-de-pesticides-dans-pres-de-la-moitie-des-aliments-europeens-5501842535707e3e93d8416c>

Baldi I., Institut national de la santé et de la recherche médicale (France), & Centre d'expertise collective. (2013). Pesticides: effets sur la santé. INSERM, Institut national de la santé et de la recherche médicale, Paris.

Colignon P., Gaspar C., Haubruge E., & Francis F. (2002). Impact of close habitat on the entomological diversity and abundance in carrot open fields. *Med. Fac. Landbouw. Univ. Gent*, 67 (3), p. 481–486.

Balzan M. V., & Moonen A.-C. (2014). Field margin vegetation enhances biological control and crop damage suppression from multiple pests in organic tomato fields. *Entomologia Experimentalis et Applicata*, 150 (1), p. 45–65.

Pfiffner L., Luka H., Schlatter C., Juen A., & Traugott M. (2009). Impact of wildflower strips on biological control of cabbage lepidopterans. *Agriculture, Ecosystems & Environment*, 129 (1–3), p. 310–314.

Wezel A. et al., 2013. Agroecological practices for sustainable agriculture. A review. *Agronomy for Sustainable Development*, 33 (2), p. 187–206.