Enhancing multifunctional benefits of cover crops – vegetables intercropping

(InterVeg)

CRA
CONSIGLIO PER LA RICERCA
E LA SPERIMENTAZIONE
IN AGRICOLTURA

Role and importance of cover crops in the organically managed agro-ecosystems

(Kristensen, 2011)

(Canali, 2009)

Cover crops are, in organic systems, a link between soil, crop, pest, nutrient and weed management

(After Barberi, 2002; modified)

Introduction of cover crops in arable and vegetable organic cropping systems

Two main strategies (not alternative):

1. the cover crop is cultivated - as sole crop - in the rotation, between the cropping cycles of the cash (*yielding*) crops
2. the cover crop is cultivated at the same time and at the same area of the cash crop (as *living mulch*)

InterVeg** is focused on **living mulch** in organic agro-ecosystems **for vegetable production

Differences between living mulch and intercropping (*sensu stricto*)

- Intercropping
  - two (or more) cash crops are cultivated simultaneously at the same area
  - full complementarities in the resource utilisation patterns

- Living mulch
  - a cash crop is cultivated simultaneously at the same area with a cover crop
  - the cover crop occupies the ecological niche(s) left available from the cash crop
  - most of system resources should remain available for the cash crop, then,
  - system management should aim at
    1. reducing competition between the cash and the cover crop
    2. optimizing the ecological services provided by the cover crop within the field/farm

(Theriault et al., 2009; Bath et al., 2008; Vanek, 2005; Cerruti et al., 2004; Swenson et al., 2004)

InterVeg research hypothesis and aims

The main ***hypothesis of the research*** is that the introduction and the proper management of living mulch in vegetable production systems (in comparison to the sole cropping systems) would allow:

- comparable yields
- higher produce quality
- lower environmental impact (i.e. reduction of potential risk of N leaching)
- higher profitability (i.e. reduction of costs due to off-farm input reduction)

The project is aimed to evaluate the effect (advantages and disadvantages) of introduction of living mulch in terms of:

- yield and produce quality
- weed management
- nutrient management (N, P and K, specifically) and their effect on crop growth
- pest/beneficial insect interactions
- not-renewable energy consumption
- production costs

InterVeg facts

The **InterVeg** project simultaneously covers three out of four research areas mentioned in the first thematic area (cropping: designing robust and productive systems at field, farm and landscape level) of the Ist Core Organic II call 2010

Interveg is synergic or complementary with other running research projects carried out at national level:

- **Orweeds** (IT) - agro-ecological, indirect methods for weed control in vegetable production organic systems
- **ValorBio** (IT) - exploitation of vegetables local genotypes for organic productions
- **SOSBio** (IT) - indicators for environmental assessment
- **VegQure** (DK) - intercropping in vegetable systems

InterVeg aims and approach are in line with the *eco-functional intensification principle* mentioned in the Strategic Research Agenda for organic food and farming of the Technological Platform “Organics” (Schmid *et al*., 2009)

InterVeg Consortium

Partners from 4 CORE countries

Institutions	People
Consiglio per la ricerca e la sperimentazione in agricoltura (2 Research Centers: RPS and ORA) - IT	Stefano Canali Fabio Tittarelli Gabriele Campanelli Corrado Ciaccia
Associazione Italiana Agricoltura Biologica (AIAB) - IT	Livia Ortolani Cristina Micheloni
Università di Bologna - IT	Giovanni Burgio
University of Kassel - DE	Peter von Fragstein und Niemsdorff
Aarhus University - DK	Hanne L. Kristensen
University of Maribor - SLO	Martina Bavec

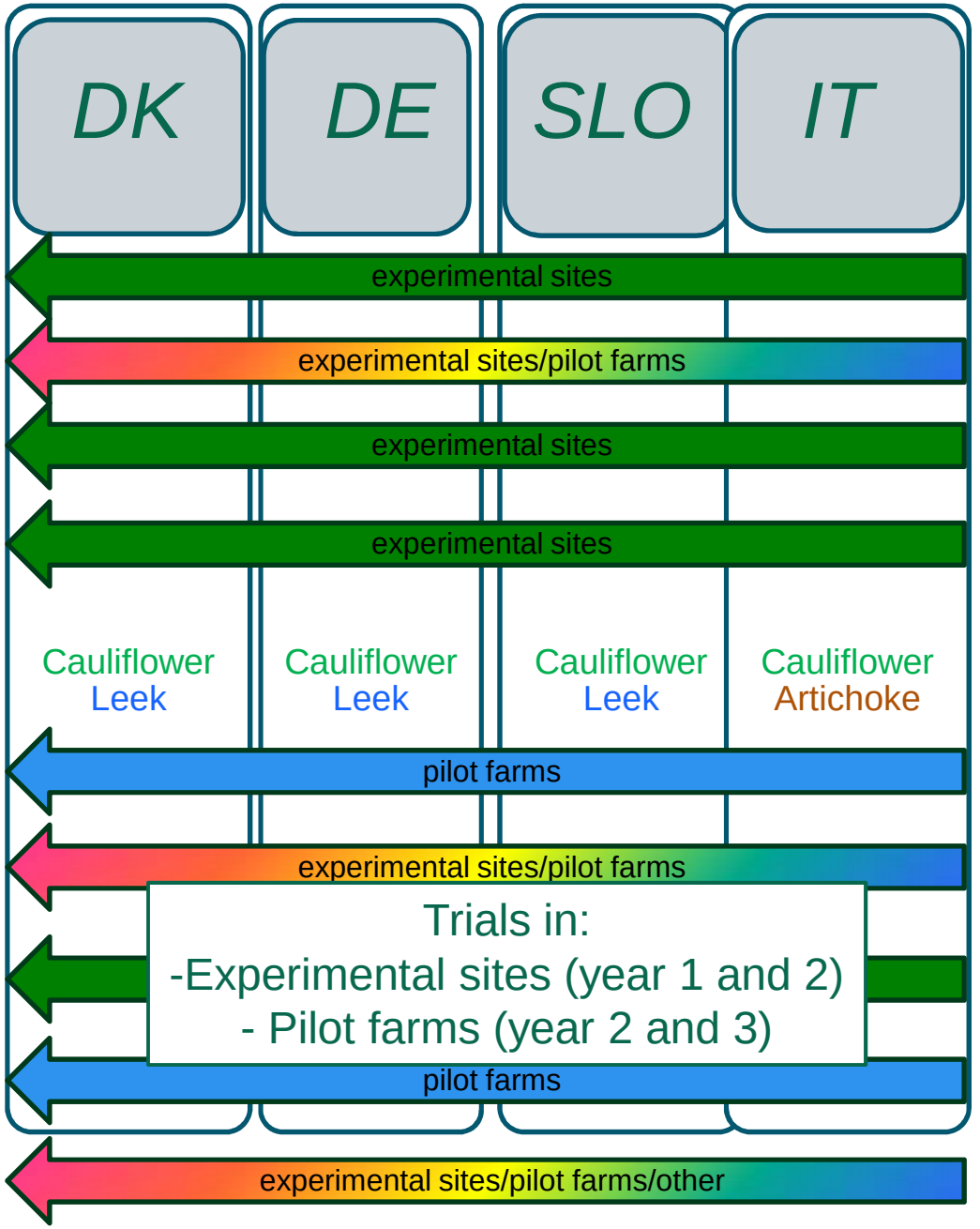
InterVeg Activities

6 WPs

WP	Title	Leader
1	Coordination	Stefano Canali
2	Experimental sites establishment, management and harvest quality evaluation	Hanne L. Kristensen
3	Reduction of off-farm inputs for fertility management	Fabio Tittarelli
4	Functional biodiversity and beneficial insect population management	Giovanni Burgio
5	Weed management and energy saving	Stefano Canali
6	Stakeholders involvement and dissemination	Livia Ortolani

WP	T	Study area
2	2	Yield and yield quality
2	3	Benefits and costs assessment
3	1	N, P, K availability assessment
3	2	N leaching potential risk
4		Pests/beneficial insects management
5	2	Energy saving quantification
5	1	Weed management and competition assessment
6	1	Stakeholders involvement
6	2	Dissemination

Field trials (T 2.1)



InterVeg, so far

1. Activities officially started on the 5th of September
2. The kick off meeting was held on last September @ CRA-ORA (Monsamplo, AP - IT)

CRA

CORE organic II

INTERVEG Project

Kick off meeting, 14-16 September 2011

CRA – ORA, Monsampolo del Tronto (AP)

Agenda

Meeting aims

The transnational research project "Enhancing multifunctional benefits of cover crops – vegetables intercropping" (InterVeg), selected for funding in the ERA-NET Core Organic II frame, will officially start on the 5th of September 2011.

A three-days kick off meeting, which will be held at CRA-ORA in Monsampolo del Tronto (AP, Italy), on the

3. IT experimental sites activities (cauliflower and artichoke) are running
4. DE, DK and SLO experimental sites activities (cauliflower and leek) will start in 4/5 months
5. Press release sent out in all of the 4 involved Countries
6. WP4 – WP5 joint workshop planned on Feb. 2012, in Maribor (SLO)
7. Other ongoing activities (first semester action plan)

InterVeg Kick off

CRA-ORA, Monsampolo del Tronto (IT)

14 Sept 2011