

## Management of cover crops following a mild winter: trials IRBAB

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### Cover crop : legislation in Flanders (2014)



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- ▣ General rule: drilling cover crop allowed till 15/10 and no incorporation in soil before 01/02 (exceptions: heavy soils drilling till 01/09 and no incorporation before 15/10, loamy soils drilling till 01/09 and no incorporation before 15/12)
- ▣ Subsidy cover crop: 100€/ha based on a total number of hectares for subsidies (in reality = around 40€/ha)
- ▣ 23 cover crops allowed (all need a seed certification).  
Most used: mustard, ray-grass and rye
- ▣ Mixing with leguminous allowed (50% in seed weight)
- ▣ Organic fertilization allowed:  
till 01/09 for slurry  
till 14/11 for farmyard manure
- ▣ Fertilization (mineral or organic) after a main crop:  
possible till 31/07 if a crop is drilled  
from 31/07 to 31/08 if a cover crop is drilled (limited to 60 kg N/ha if organic and 30 kg N/ha if mineral)
- ▣ Special rules in soils susceptible for erosion (obligation of no-ploughing)

## Cover crop : legislation in Wallonia (2014)



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- ▣ CIPAN : “Culture Intermédiaire Piège à Nitrates”
- ▣ In vulnerable zone (quite all the arable crop area in Wallonia): Obligation on 90% of the farm area where crops have been harvested before 01/09 and will be followed by a spring crop (sugar beet, potato, maize, spring barley, flax, pea,...)
- ▣ Destruction allowed from 15/11, or from 01/01 if environmental premium system (“primes MAE – Mesures Agro Environementales”) or field slope > 10%
- ▣ Obligation (drilling before 01/09) after leguminous crop harvested before 01/08 and followed by wheat (destruction from 01/10)
- ▣ Obligation when fertilization (on stubble) with organic matter (cattle manure, pig slurry, poultry manure...) between 01/07 and 15/09 (all Wallonia)
- ▣ Must be drilled before 15/09 (mustard, oil radish, oat, ray-grass, rye,...mixed or not)
- ▣ Mixing with leguminous (vetch, alfalfa,...) allowed (50/50 seed weight) (not for MAE)
- ▣ Grazing (no destruction) can (not for MAE), Mowing can
- ▣ Mineral fertilization by sowing can (not recommended) (not for MAE)
- ▣ Chemical destruction when flowering not allowed

## Cover crop : management in 2014: NO frost winter !

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- ▣ No frost destruction = high soil humidity level = later field accessibility !
- ▣ **Chemical destruction :**
  - RoundUp + oil or authorized adjuvant at least 2-3 weeks before sugar beet drilling
  - Flowering mustard : RoundUp (4 l/ha) + pyraflufen (THUNDERBOLD) (4 l/ha)
  - After sunset, when honeybees are back in beehive (warm weather at early March !)
- ▣ **Mechanical destruction:**
  - Ploughing – mashing – mowing – cutting - ...
  - All what possible with the available equipment at the farm
  - Risk of soil compaction !
  - Labour intensive and higher supplementary cost !

## Cover crop : 2014 : mechanical destruction !

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Ploughing in February, regrowth in March



Mashing in February



Cutting in March, but too late for sugar beet drilling

## Cover crop : 2014 : mechanical destruction !

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Stubble cleaning + direct seed bed preparation in March (one or two passages)



Mashing + direct incorporation of crushed mustard with rotating harrow in March

## Cover crop : 2014 : mechanical destruction in well developed cover crop! (farmer system)

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Combination rotating harrow synchrospire Franquet (backside tractor)



NivelSem + counterweight of 200 - 400 kg in front (in front of tractor)

Additional discs placed on a frame between tractor and drill Accord Monopill also with cutting discs



## IRBAB 2014: sugar beet early sowing trial

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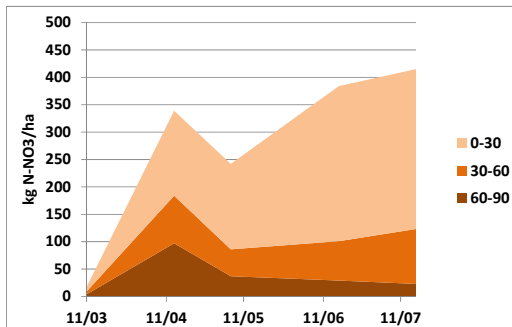


20/02 : Chemical destruction  
 28/02 : Mechanical destruction by mashing  
 05/03 : Seed bed preparation with kombi : rotating harrow + heavy Packers roll + cereal drilling machine equipment  
 10/03 : idem + sugar beet drilling with precision drill with disc  
 ±15/09 : observation of % forked roots at harvesting time ?

## Cover crop : 2014 : soil N-profile evolution

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- ▣ Very quick and high evolution (between March and April !) of soil N-profile in some field where cover crop has been destroyed very late
- ▣ Due to stimulation of natural soil mineralization by:
  - higher soil temperature after winter without frost ?
  - higher soil humidity ?
  - fresh incorporated (root) biomass ?



Soil N-profile evolution (kg N-NO<sub>3</sub>/ha) for 0-90 cm on bare plot

N mineral fertilizer included :

03/04/2014 : 160 kg N/ha

No organic matter

Mustard destroyed : 18/03/2014

Sugar beet drilling : 04/04/2014