

A new cultivation system:

The variety “Lysidé” makes a more environment friendly cultivation system possible in spring oilseed rape.

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It is well known that pollen beetles (*Meligethes aeneus*) are more attracted by yellow than other colours. The spring oilseed rape variety “Lysidé” has almost white flowers and this makes it possible to use different flower colours for a more environment friendly cultivation system in spring oilseed rape. The system consists of a main crop, the white flowering variety “Lysidé”, and a yellow flowering variety as catch crop.

A large scale experiment with main crop and catch crop.

Based on the experience from former trials with different flower colours in spring oilseed rape an experiment was carried out on a 30 ha field on the island Lolland (Denmark) in 2009. Main crop was Lysidé mixed with 5 % “Hunter” (a yellow flowering variety). The field was surrounded by a catch crop: An 8 m border of the yellow flowering variety Hunter. There were no volunteers of oilseed rape in the field.



The picture shows the field on Lolland where the insect experiment was made.

The function of the yellow border is to catch pollen beetles and cabbage seed weevils. The function of the 5 % yellow flowering plants in the main crop is to be the second line of defence and catch the insects that fly over the yellow rampart.

Like normal cultivation practice the field was treated in the bud stage with Biscaya on June 5th against pollen beetles. During flowering (on June 23rd) a border treatment with Biscaya was made with an 18 m sprayer. The sprayer was closed for 10 m on both sides of the 4 marked counting paths, and so the influence of the border treatment on the number of insects counted was limited.

The number of pollen beetles and cabbage seed weevils was counted 7 times during flowering. In each counting point the number of insects in the main raceme from 10 plants was recorded. From north, south, east and west a marked counting path was made 110 m into the field with counting points as in tables 1 and 2. The very first flowers were blooming on June 14th. From June 17th until July 2nd the whole field was flowering. On July 4th practically no flowers could be seen in the field any longer. The weather was in general windy on the first 5 counting days and calm and hot on the 2 last counting days.

Results

A large number of data was collected and in the following the main results are shown. In table 1 the total counts from north + south + east + west for all 7 days are presented and in table 2 the average number of beetle per raceme from the counts is shown.

Table 1 and 2 show

- The largest number of pollen beetles are counted in the yellow border and the first point of counting (in the yellow flowers) in the main crop.
- There are roughly 4 times as many pollen beetles on the yellow flowers in the main crop compared to the white flowers in the main crop.
- There is roughly twice as many cabbage seed weevils in the yellow flowers in the main crop compared to the white flowers in the main crop.
- The threshold for spraying against pollen beetles is not exceeded in the white flowers (which form 95 % of the main crop) when the spraying threshold is set to 1.5 pollen beetle per main raceme.

Table 1. Total no of insects from all 4 paths and all 7 counting days

Each number is no of insects from main racemes from 280 plants				
Point of counting *)	Pollen beetles		Cabbage seed weevils	
	On yellow flowers	On white flowers	On yellow flowers	On white flowers
Catch crop 2 m	789		31	
Catch crop 6 m	574		39	
Main crop 2 m	840	204	39	20
Main crop 10 m	499	149	25	14
Main crop 25 m	392	90	32	12
Main crop 50 m	267	90	19	4
Main crop 100 m	232	67	13	8
Main crop totally:	2230	600	128	58

*) m inside the catch crop (border) and m inside the main crop

Table 2. No of insects per main raceme (average of 4 paths and 7 counting days)

Point of counting	Each number is mean no of insects per main raceme			
	Pollen beetles		Cabbage seed weevils	
	On yellow flowers	On white flowers	On yellow flowers	On white flowers
Catch crop 2 m	2,8**		0,1	
Catch crop 6 m	2,1**		0,1	
Main crop 2 m	3,0**	0,7	0,1	0,1
Main crop 10 m	1,8**	0,5	0,1	0,1
Main crop 25 m	1,4	0,3	0,1	0,0
Main crop 50 m	1,0	0,3	0,1	0,0
Main crop 100 m	0,8	0,2	0,0	0,0

** threshold for insect treatment exceeded (more than 1.5 pollen beetle per main raceme)

This trial became very successful since - based on the counts for the period - there was no need for insect treatments during flowering. Also the border treatment on June 23rd was not really necessary if one can accept a lower yield in the yellow border. To conclude: A very limited use of insecticides under Danish conditions.

It is our hope that more trials with catch- and main crop will be made in the years to come. Most likely the system can be improved, for instance it should work better if the yellow catch crop starts flowering earlier than the white main crop.

All things considered this new cultivation system offers 6 important advantages:

- a more environment friendly way of growing oilseed rape
- less risk that the insects develop resistance to the insecticides
- less expenditures on insecticides
- time gain, less work with spraying
- less risk for residuals from insecticides in the oil and meal
- makes organic rape seed cultivation less risky



The picture to the left shows the border (catch crop) and the main crop (Lysidé). However the 5 % yellow plants in the main crop cannot be seen on this picture.