



Entwicklungsprogramm  
für den ländlichen Raum  
im Freistaat Sachsen  
2014 - 2020

Europäischer Landwirtschaftsfonds für die Entwicklung des  
ländlichen Raums: Hier investiert Europa in die ländlichen Gebiete

# Testing innovative cultivation strategies on organic dairy farms in low mountain ranges

project duration: 2017 - 2020

## Results and discussion – oilseed rape

### **N<sub>min</sub> results**

The stocks of N<sub>min</sub> in autumn varied very largely in both years. The first two locations in autumn 2017 showed a total stock of N<sub>min</sub> in the soil of 70.6 kg/ha after red clover and 103.9 kg/ha after winter wheat. One year after only 27 kg/ha after red clover and 36 kg/ha after winter wheat were found at these locations. The poor results can be attributed to the non-optimal field conditions. Both of the locations in the trial 2018/2019 showed to be not suitable for winter oilseed rape cultivation because of the high weed pressure. The results after the winter period showed very clearly, that N<sub>min</sub>-soil-stock was even very low after a manure application (60 kg N/ha) and in conclusion a manure waiver would lead to very low yield of winter oilseed rape.

### **Field emergence and plant density**

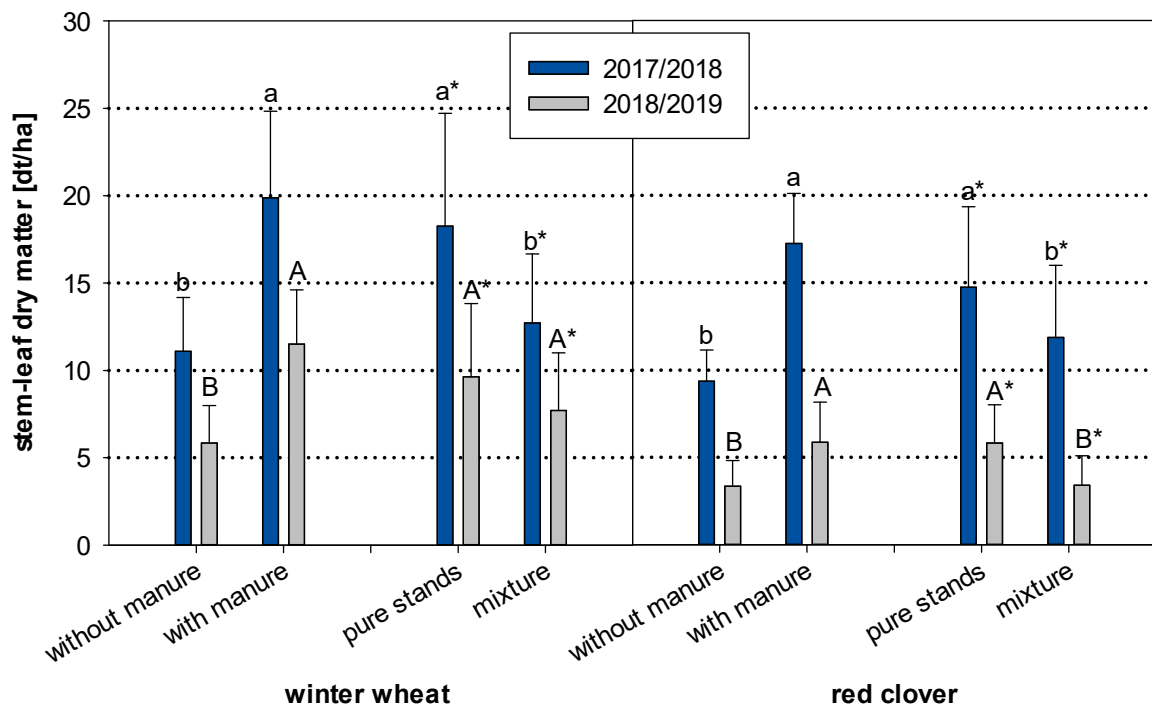
For the winter field peas of a total of 20 seeds/m<sup>2</sup> sown, only 6 seeds/m<sup>2</sup> had germinated for previous crop red clover and with cow manure application. The reason for the low emergence rate is similar as for the trials with grain legumes (see: chapter grain legumes).

The application of cow manure did not have a significant effect on the plant density after both previous crops in the first experimental year 2017/2018. But within the second trial 2018/2019 pure-stand-cultivation showed a higher density than the mixture-stand-cultivation with winter

field pea. Field emergence after red clover was lower than after winter wheat for both years. The soil was visibly dryer on the locations after red clover than on the locations after winter wheat, which can be explained with the higher water demand the red clover has in a difference of the winter wheat.

### Nitrogen delivery in the autumn period

The results of the biomass-samples in autumn were similar for the dry matter yield after all preceding crops. In both cases the application of cow manure resulted in a significant higher stem-leaf yield. In regard of stands the pure-stand-cultivation resulted in much higher dry matter-yields (exception: after winter wheat 2018/2019)



Stem-leaf dry matter yield [dt/ha] of winter oilseed rape obtained in November. Two-factorial ANOVA, no significant interactions. Different letters indicate significant difference at 0.05

After winter wheat and in the first trial the nitrogen-content was significant higher in the autumn period for the variant with cow manure application. The N-content in the stem was higher after red clover as previous crop for the first year and higher after winter wheat for the second year. These controversial results can be explained with the low emergence after red clover in autumn 2018 due to a longer drought period.



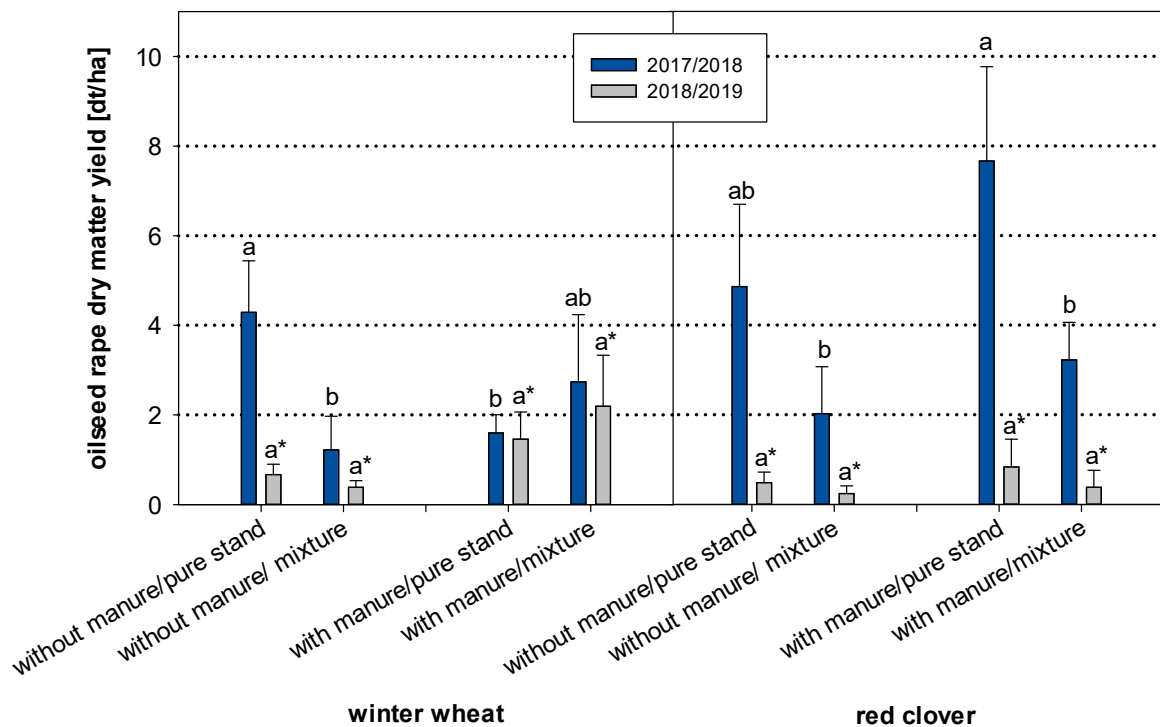
Development of an oilseed rape plant in November (2018, Rebersreuth) cultivated after red clover



Development of an oilseed rape plant in November (2018, Triebel/Vogtland) cultivated after winter wheat

## Dry matter seed yield [dt/ha] and oil yield [dt/ha]

The winter oilseed rape dry matter samples registered significant differences only after the first experimental year, where the pure stand without manure application obtained the highest yield, significantly higher than the pure stand with manure. The opposite results showed the variants cultivated after red clover, with pure stand with manure application being significantly higher than both mixture variants. The second experimental year revealed very low dry matter yield due to adverse weather conditions (long drought period). However, the pure stand oilseed rape with manure after red clover cultivation registered again the highest yield, although the results were not significant.



Oilseed rape dry matter [dt/ha] after threshing and previous crops winter wheat and red clover for trials 2018 and 2019. One-factorial ANOVA due to significant interactions. Different letters indicate significant difference at 0.05

### References:

Rose, L. (2016): Einfluss der Rein- und Gemengesaat von Sommererbse und Schmalblättriger Lupine auf Korn- und Proteinertrag im ökologischen Landbau. Bachelorarbeit. Hochschule für Technik und Wirtschaft Dresden, Dresden