# Anwendungsbericht/User Application Report

**Produkt/Product:**
penergetic p
Art. Nr: 4000
penergetic b
Art Nr: 3000

**Fachberater/Consultant:**
Alan Philips
Penergetic UK

**Anwender/User:**
19 Plots over 6 years
United Kingdom

**Datum/Date:**
2013-2019

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## Crop Trial Report Averages over 6 years

Penergetic UK was able to follow a farm in the United Kingdom for over 6 years (2013-2019) comparing each year's yield increase in penergetic treated plots compared to control plots. The following crops have been observed:

- 10 wheat plots have been monitored over 6 years. Used varieties: Gallant, Crusoe Group, Skyfall Milling Wheat, Graham and Zyatt.
- 6 plots of oil seed rape have been monitored over 6 years. Used varieties: Campass, Quartz, PT211, Holl316 and Elgar.
- 3 plots of oats have been monitored over 3 years. Used varieties: Gerald Winter Oats 1st year and 2nd year

### Methodology

For the purpose of these trials the only difference was the addition of penergetic products. All other inputs remained the same on both the trial plot and the control. Headlands were excluded to give a more accurate comparison.

## Treatments

The following 4 tables show the dosage and application rate of penergetic b and penergetic p for the trial crops.

### First 3 years (2013/2014, 2014/2015, 2015/2016)

| *Penergetic* | *Soil treatment* | *Foliar application* | *Remarks* |
|---|---|---|---|
| penergetic b<br>*art. nr. 3000* | 450g/ha | | Oil Seed Rape and Wheat |
| penergetic p<br>*for plants*<br>*art. nr. 4000* | | 3x 225g/ha | Oil Seed Rape |
| penergetic p<br>*for plants*<br>*art. nr. 4000* | | 4x 225g/ha | Wheat |

*Table 1: Treatment with penergetic during the first 3 years of trial*

### 2016/2017

| *Penergetic* | *Soil treatment* | *Foliar application* | *Remarks* |
|---|---|---|---|
| penergetic b<br>*art. nr. 3000* | 450g/ha | | Wheat, Oil Seed Rape and Oats |
| penergetic p<br>*art. nr. 4000* | | 1x 225g/ha<br>1x 150g/ha<br>1x 200g/ha<br>1x 100g/ha | Oil Seed Rape |
| penergetic p<br>*art. nr. 4000* | | 3x 200g/ha<br>1x 150g/ha | Wheat and Oats |

*Table 2: Treatment with penergetic in season 2016/2017*

### 2017/2018

| *Penergetic* | *Soil treatment* | *Foliar application* | *Remarks* |
|---|---|---|---|
| penergetic b<br>*art. nr. 3000* | 350g/ha | | Wheat, Oil Seed Rape and Oats |
| penergetic p<br>*art. nr. 4000* | | 1x 150g/ha<br>1x 200g/ha<br>1x 100g/ha | Oil Seed Rape |
| penergetic p<br>*art. nr. 4000* | | 2x 200g/ha<br>2x 150g/ha | Wheat and Oats |

*Table 3: Treatment with penergetic in season 2017/2018*

2018/2019

| *Penergetic* | *Soil treatment* | *Foliar application* | *Remarks* |
|---|---|---|---|
| penergetic b<br>*art. nr. 3000* | 100ml/ha | | Oil Seed Rape, Wheat and Oats in Autumn |
| penergetic p<br>*art. nr. 4000* | | 3x 200g/ha<br>1x 150g/ha | Oil Seed Rape |
| penergetic p<br>*art. nr. 4000* | | 2x 200g/ha<br>2x 150g/ha | Wheat |
| penergetic p<br>*art. nr. 4000* | | 2x 200g/ha<br>2x 150g/ha | Oats |

*Table 4: Treatment with penergetic in season 2018/2019*

## Results

Table 5-7 show the total extra grain, the average yield increase in kg/ha and the average yield increase in % of wheat, oil seed rape and oats (during the period of 3 resp. 6 years).

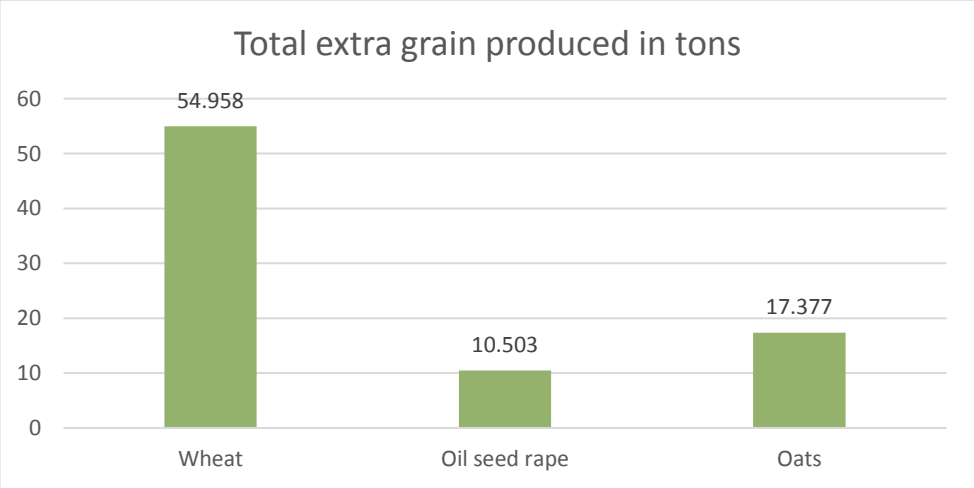


*Table 5: Total extra grain produced in tons with penergetic*

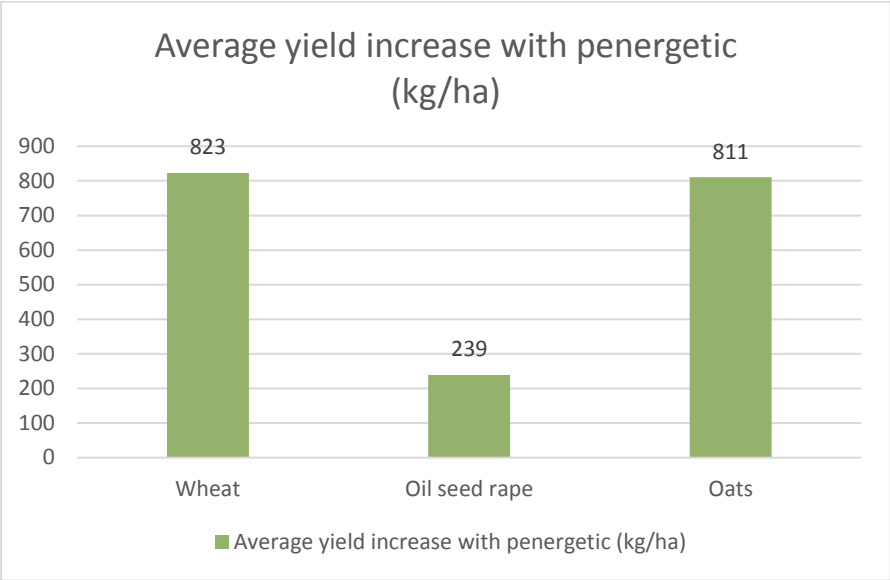


*Table 6: Average yield increase with penergetic in kg/ha*

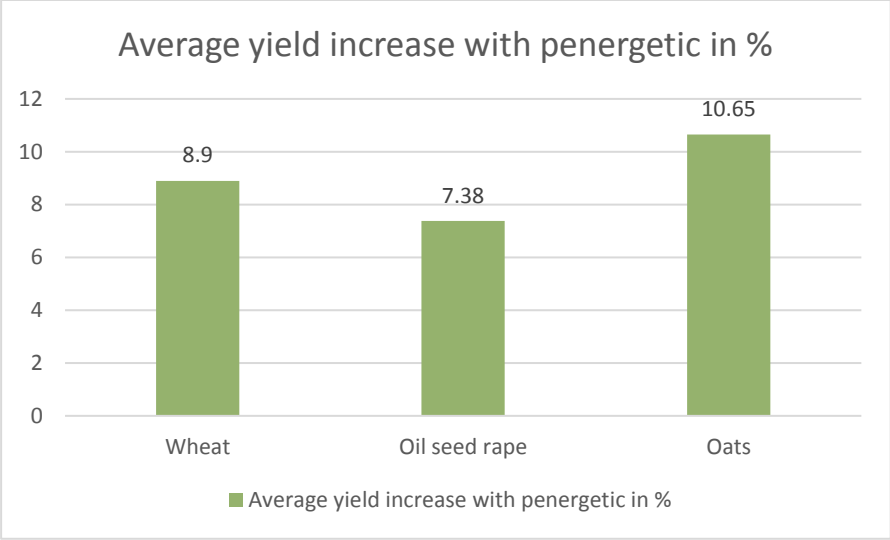


*Table 7: Average yield increase with penergetic in %*

The results show a general increase in yield for all crops in this trial with the use of penergetic b and penergetic p.

## Wheat results

Table 8 and 9 show the difference in yield increase of wheat treated with penergetic versus the control during the 6-year trial.

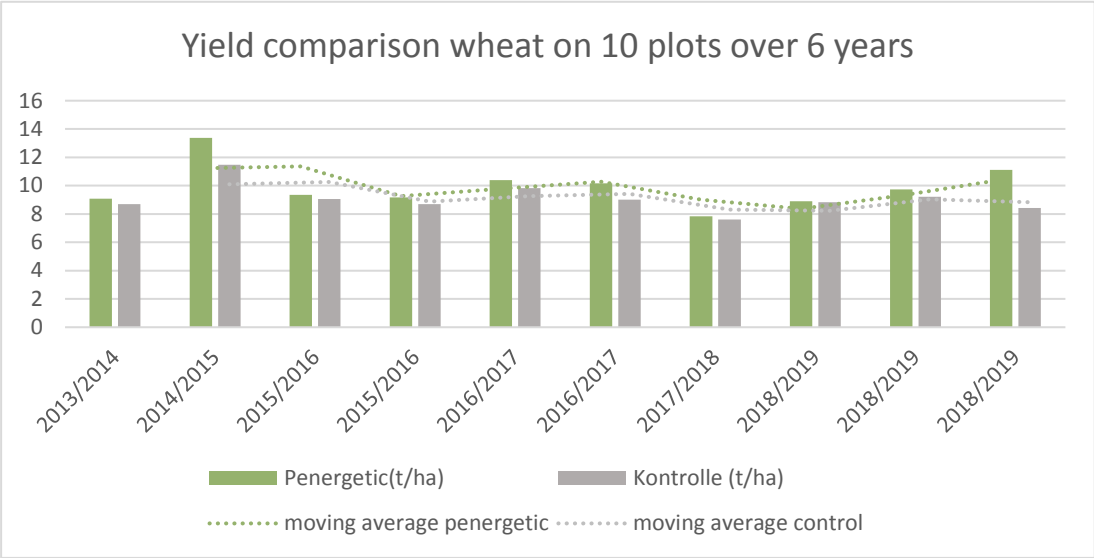


*Table 8: Yield comparison wheat on 10 plots over 6 years*

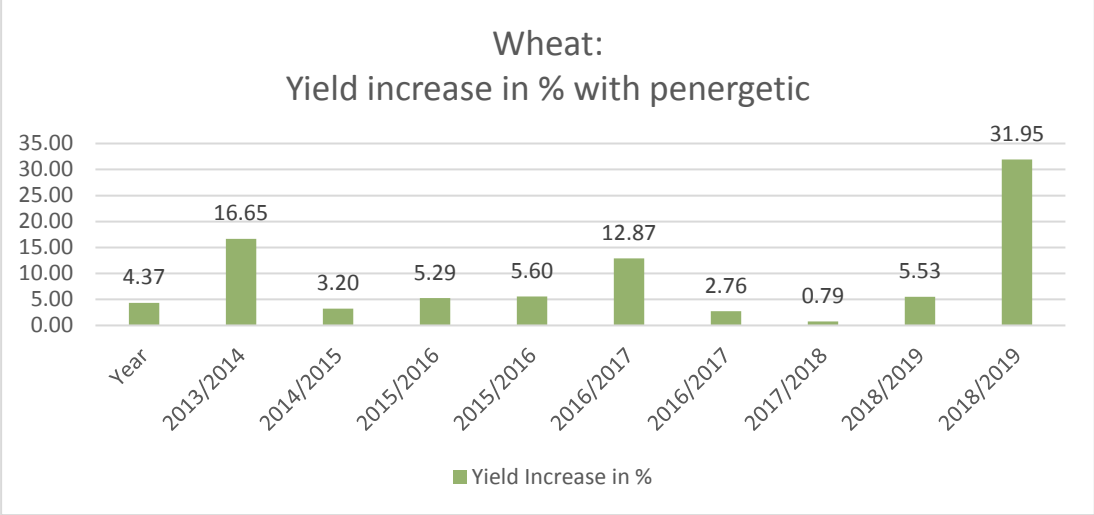


*Table 9: Wheat yield increase in % with penergetic*

The results show an obvious increase in wheat yield of the penergetic treated plot, compared to the control (in the period of 6 years, increase of min. 0.79% - max. 31.95%).

## Oil seed rape results

Tables 10 and 11 show the difference in yield increase between oil seed rape treated with penergetic and the control during the 6-year trial.

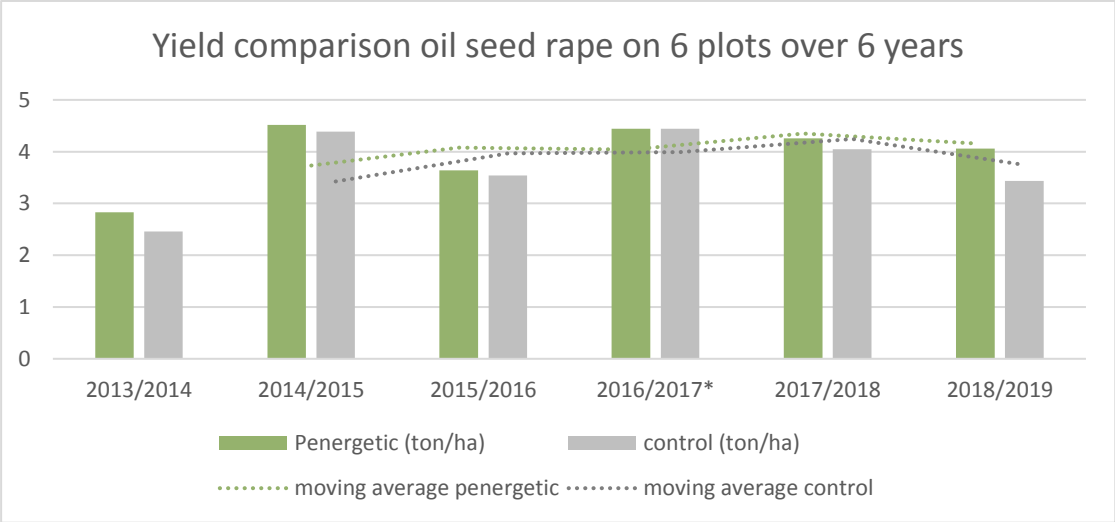


*Table 10: Yield comparison oil seed rape on 6 plots over 6 years*

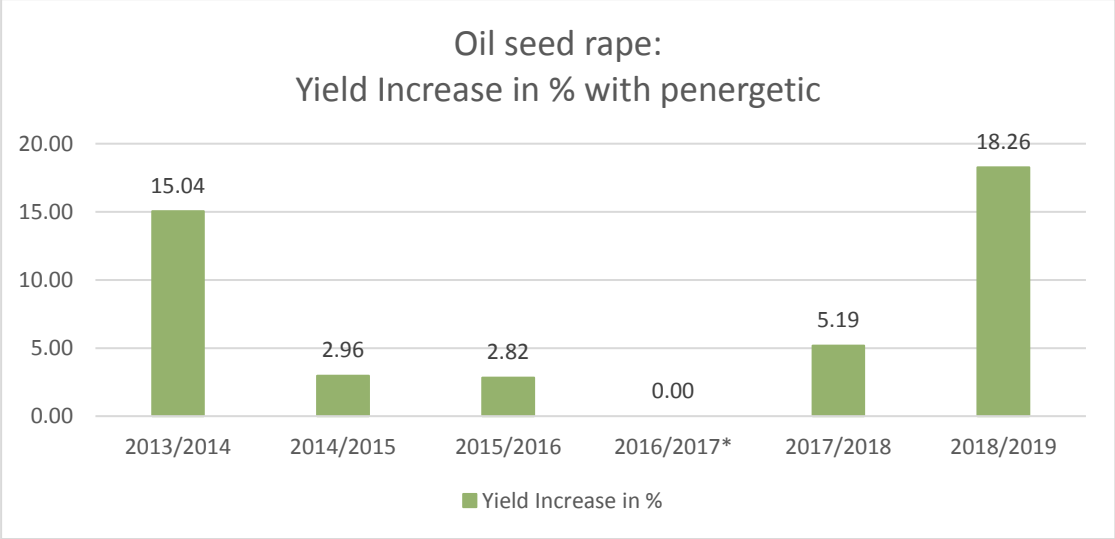


*Table 11: Oil seed rape yield increase in % with penergetic*

The results show an obvious increase of oil seed rape yield of the penergetic treated plot, compared to the control (in the period of 6 years, increase of min. 0.0%* - max. 18.26%).

**Due to very difficult weather conditions in 2017 it was not possible to obtain samples that could be reliably used as a comparison. The control plot was harvested on 15th August and a small part of the Penergetic plot on 16th August, the remainder was not harvested until 27th August following a period of prolonged rain showers. The yields per hectare listed above refer only to the part of the Penergetic plot harvested on 16th August.*

## Oats results

Tables 12 and 13 show the difference in yield increase of oats treated with penergetic and the control during the 3-year trial.

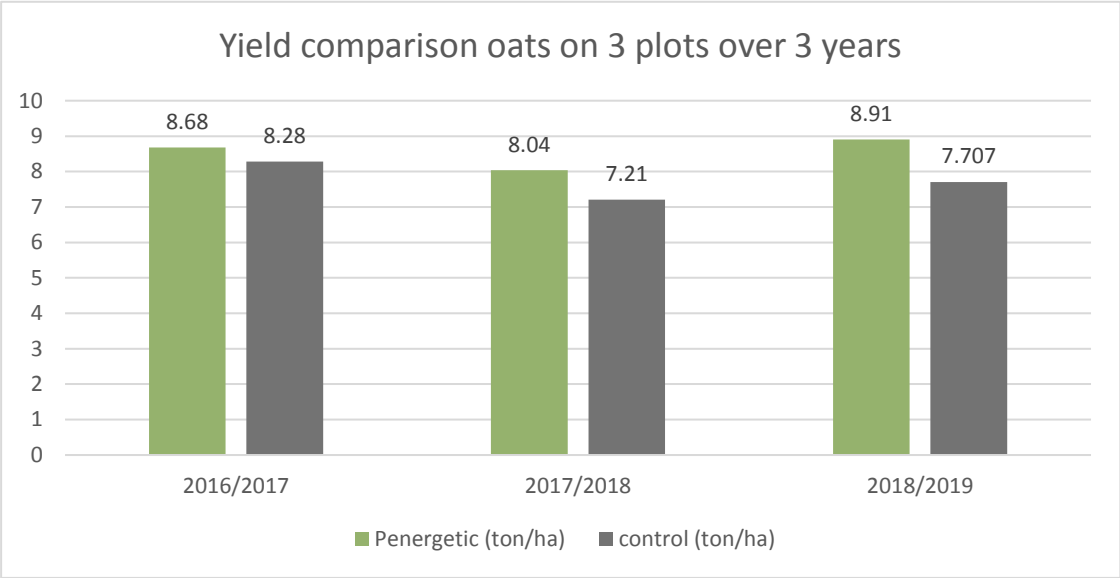


*Table 12: Yield comparison oats on 3 plots over 3 years*

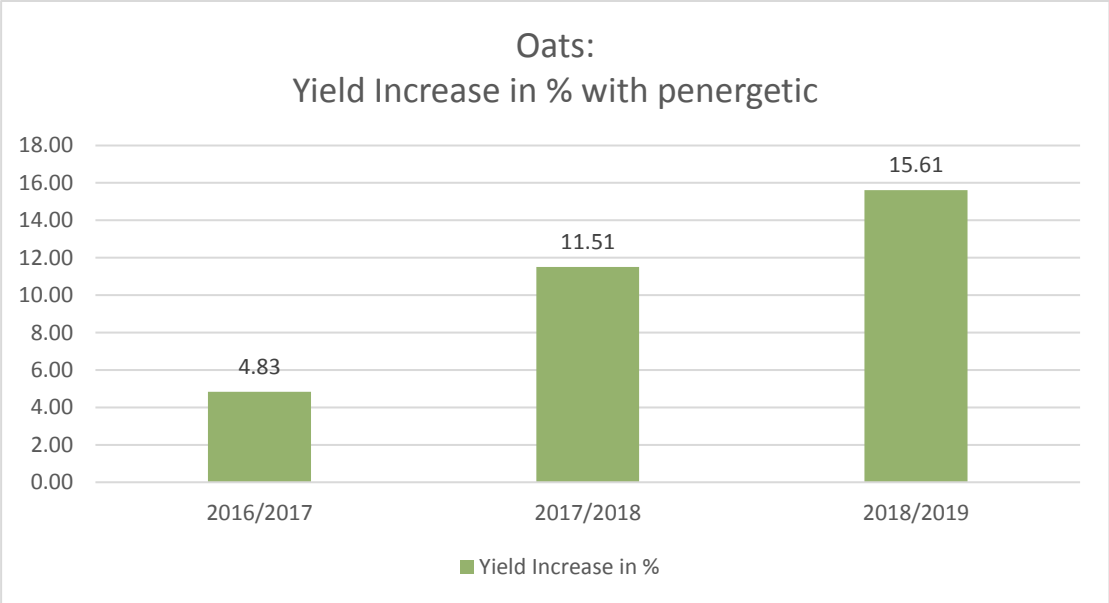


*Table 13: Oats yield Increase in % with penergetic*

The results show an obvious increase in oats yield of the penergetic treated plot compared to the control (in the period of 3 years, increase of min. 4.83% - max. 15.61%).

The following tables show the summary of the results of the tested crops during the trial time.

**Wheat**

| | |
|---|---|
| Average plot size | 6.727 ha |
| Average yield increase in Penergetic plots compared to control plots: | 823kg/ha |
| Highest yield increase per ha | 2690kg |
| Lowest yield increase per ha | 70kg |
| Total extra grain produced over six-year period | 54.958 tons |

**Oil Seed Rape**

| | |
|---|---|
| Average plot size | 5.84 ha |
| Average yield increase in Penergetic plots compared to control plots: | 239kg/ha |
| Highest yield increase per ha | 370kg |
| Lowest yield increase per ha | 0kg* |
| Total extra grain produced over six-year period | 10.503 tons |

*Slug damage to Penergetic Plot 2017

**Oats**

| | |
|---|---|
| Average plot size | 7.3 ha |
| Average yield increase in Penergetic plots compared to control plots: | 811kg/ha |
| Highest yield increase per ha | 1203kg |
| Lowest yield increase per ha | 400kg |
| Total extra grain produced over three-year period | 17.377 tons |

## Summary / Conclusion

The 6-year trial in the United Kingdom shows an overall yield increase of all tested crops with the use of penergetic b and penergetic p. The maximum yield increase was achieved in wheat with an approximative increase of +31.95% (table 9), the minimum yield increase can also be seen in wheat of about +0.79% (table 9). The 0.0% increase of oil seed rape in the year 2017 are excluded due to non-representative results.

## Images from the trial

*Figure 1: winter oil seed rape, left control, right penergetic treated; 2017*

## Impressions from 2017