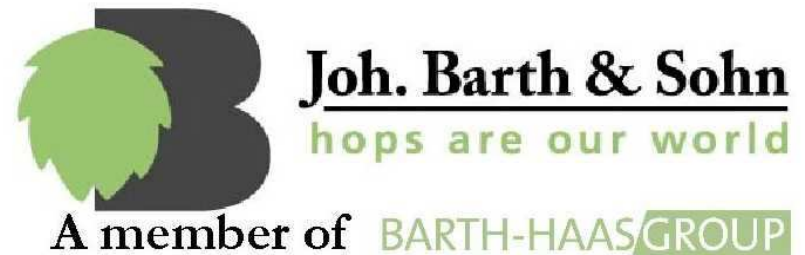


# BARTH-HAASGROUP



**Dr. Reinhold Kugel**  
Head of Product Safety and Quality Assurance

**Johann Braun**  
Head of Purchasing Germany

## **PENTAKEEP-S on Hops**

**Practical trials in Germany  
during crop 2007**

**Prague, December 08, 2007**

BARTH-HAASGROUP

# Agenda

---

- Organisation of Trials
- Results
- Conclusions

## How were the trials organised ?

---

- **Farmers were asked to select fields with the same variety and similar soil conditions each to compare treated and untreated fields**
- **Instruction of farmers and distribution of PENTAKEEP was managed by our purchasing staff**
- **Farmers used PENTAKEEP in combination with other pesticide applications**
- **Total number of applications ranged between 3 and 5 times with an average of 4.2**
- **After harvest the treated and untreated lots were weighed separately (which in some cases was not possible due to hailstorm damage etc.)**
- **Alpha analyses were made for all treated and untreated lots**

# Trial Data

---

- **Number of farmers participating:** 35
- **Total acreage:** 198.6 ha
  - **Acreage treated with PENTAKEEP:** 113.5 ha
  - **Acreage untreated:** 85.1 ha
- **Number of lots used for data evaluation:** 85
  - **Number of treated lots:** 43
  - **Number of untreated lots:** 42
- **First application:** between June 6 and June 20
- **Last application:** between July 28 and August 15
- **Application rate:** 0.5 kg / ha (approx. 0.05 %)
- **Method of alpha analysis:** EBC 7.4 (Toluol)

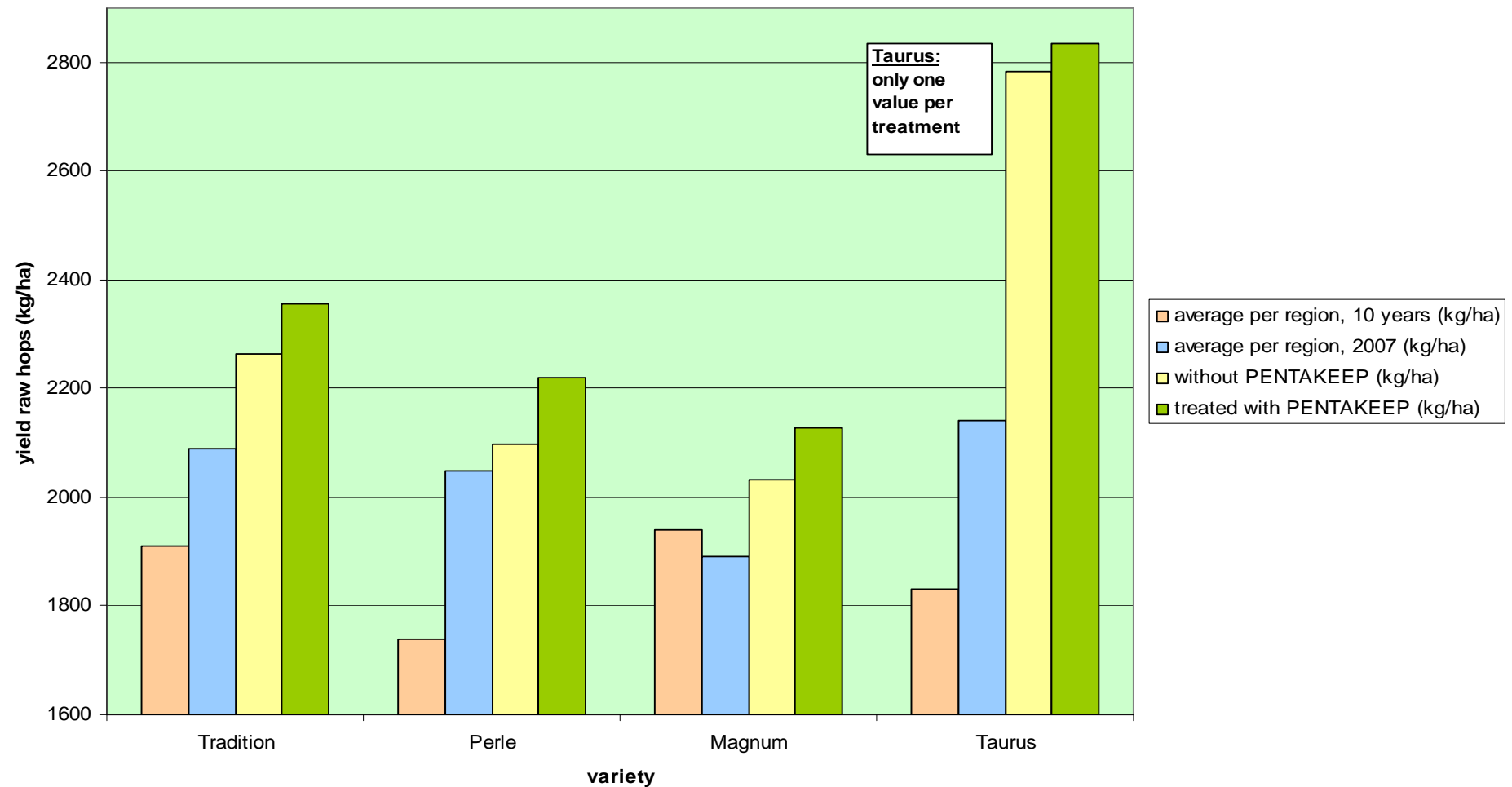
# Agenda

---

- Organisation of Trials
- Results
- Conclusions

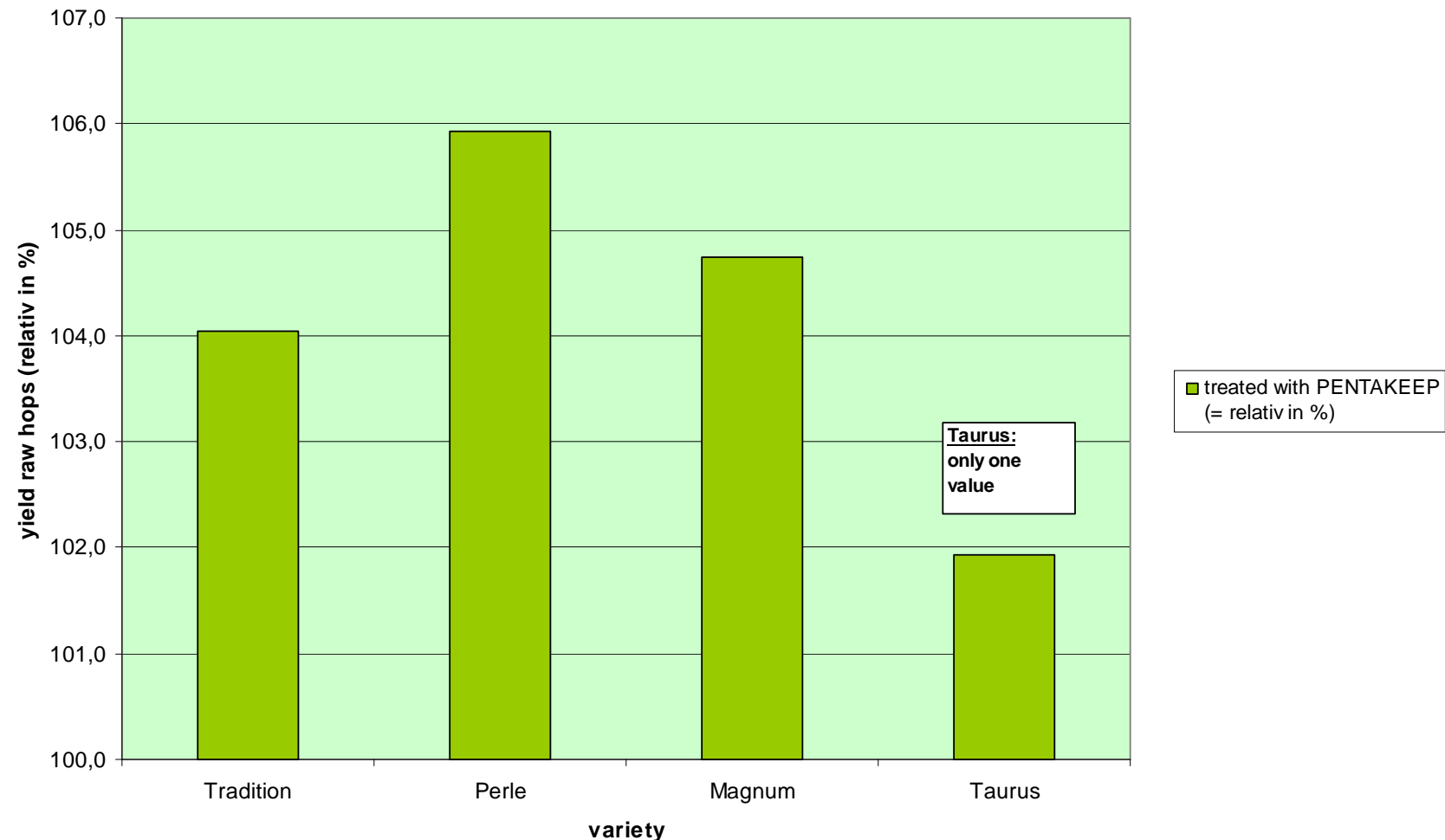
# Raw Hop Yield

PENTAKEEP-trial JBS 2007  
yield raw hops (kg/ha)



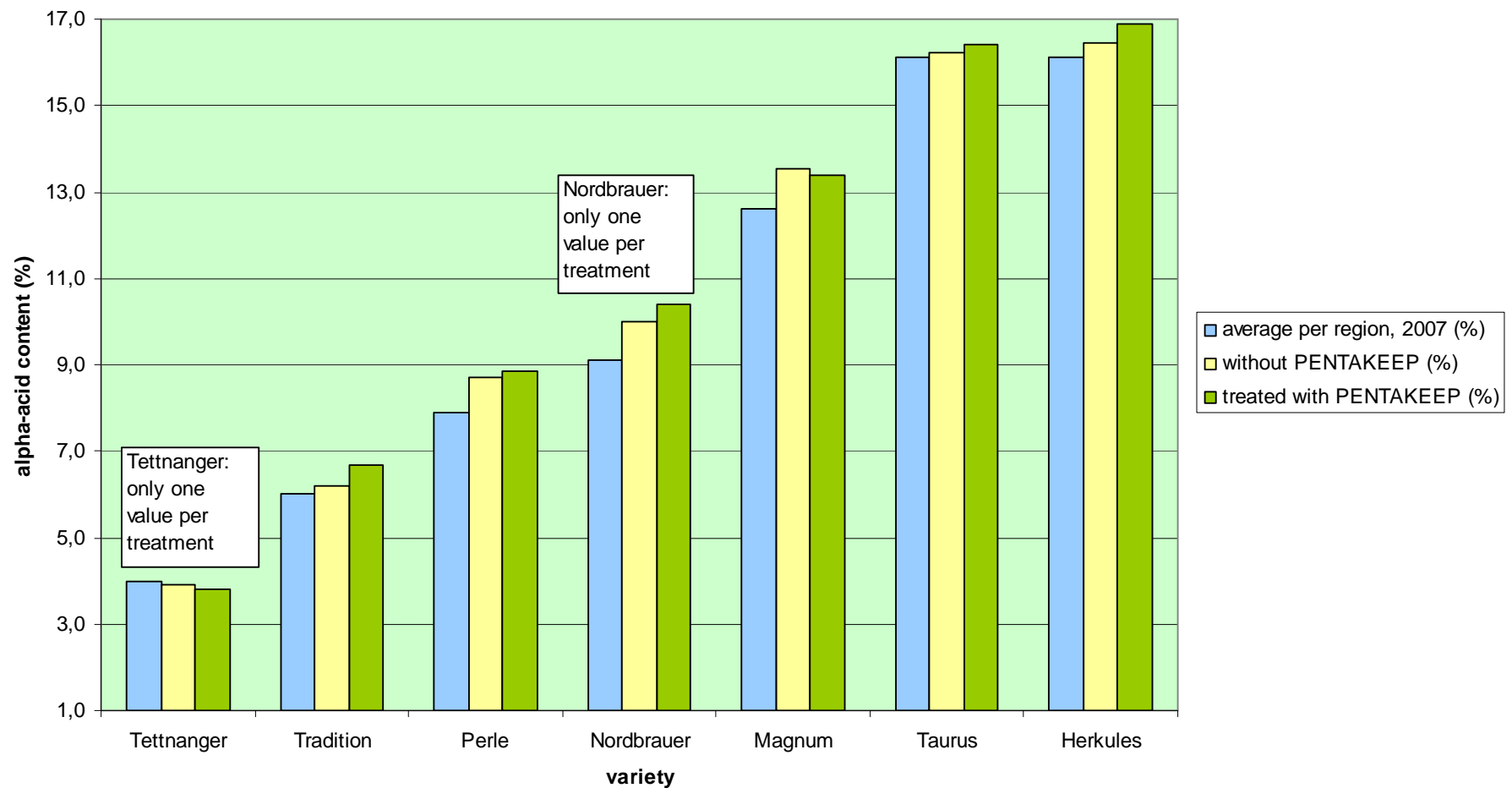
# Difference of Raw Hop Yield, Treated against Untreated

PENTAKEEP-trial JBS 2007  
change of raw hops yield (in %) by the use of PENTAKEEP

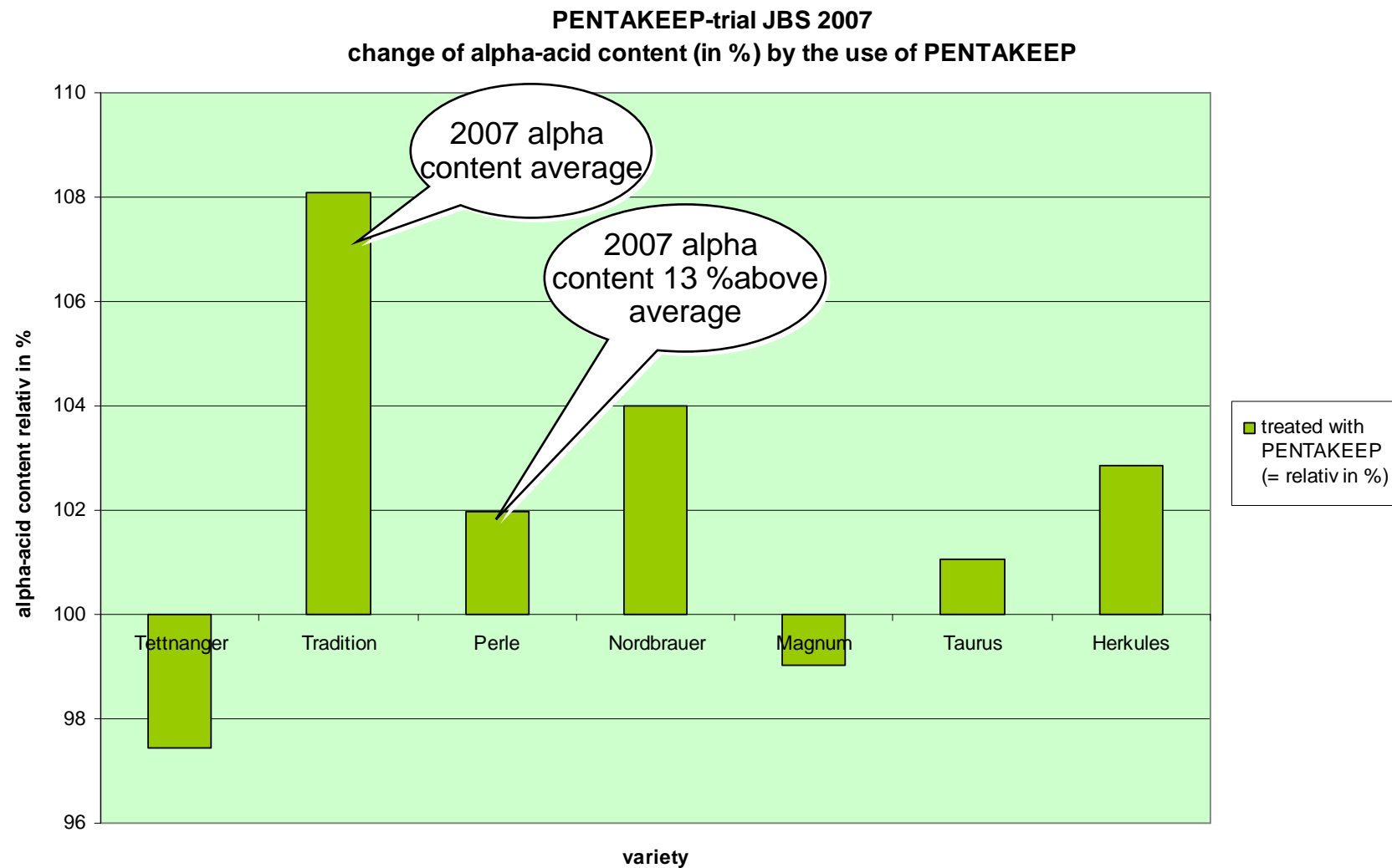


# Alpha Acid Content

PENTAKEEP-trial JBS 2007  
alpha-acid content (in %)

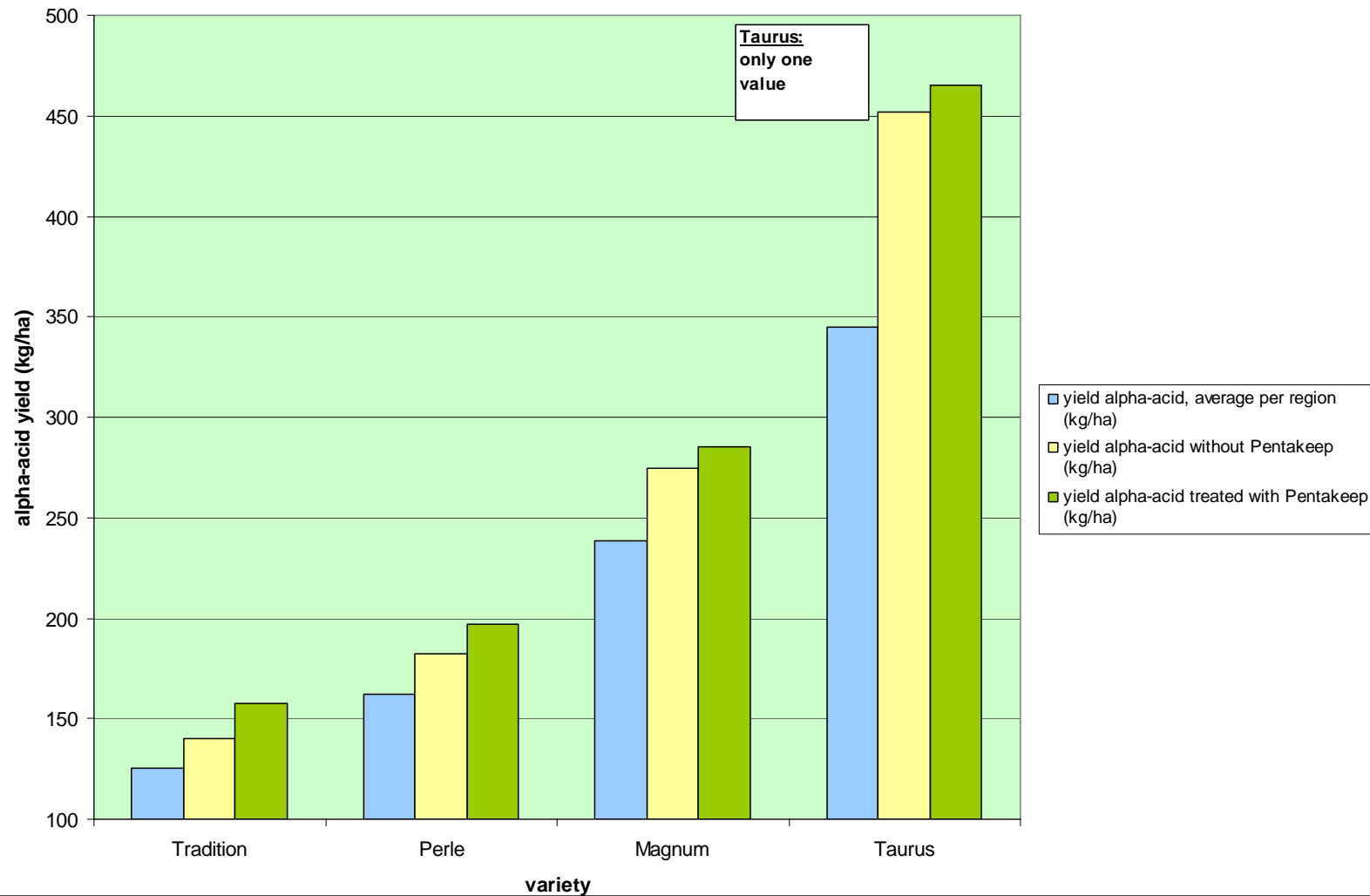


## Difference of Alpha Acid Content, Treated against Untreated

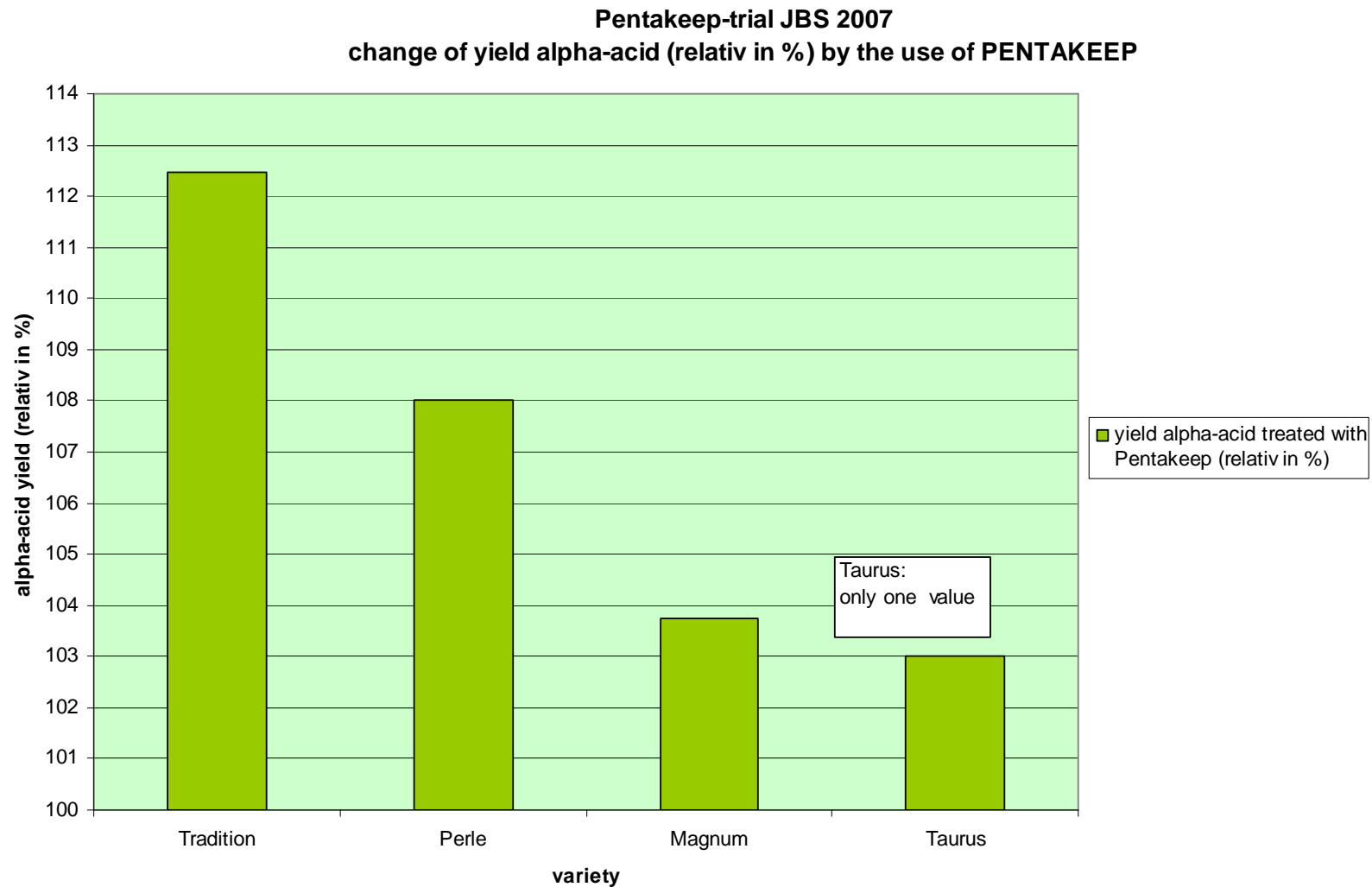


# Yield of Alpha Acid in kg/ha

PENTAKEEP-trial JBS 2007  
yield alpha-acid (kg/ha)



## Difference of Alpha Acid Yield, Treated against Untreated



# Agenda

---

- Organisation of Trials
- Results
- Conclusions

# Conclusions

---

- **There was a clear tendency of yield and alpha increases in almost all varieties**
- **PENTAKEEP seems to be more effective under unfavourable circumstances, i.e. the possible yield and alpha increase by applying PENTAKEEP is lower when the growing conditions are better**
- **No correlation was found between the number of applications and corresponding yield which was mainly due to the insufficient data base**
- **If the yield and alpha increase determined by these trials can be realised the application of PENTAKEEP will be economical in most cases**
- **Example: Yield increase of HHT by 5 %**
  - **= 2.000 kg \* 5 %\* € 4,00 = € 400**