The effect of ensiling on variety rank of maize silage

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Organic matter digestibility

Variety rank
Belgian forage maize trials

- Compare agronomic performances of new varieties with reference varieties
- Quality measurements are reported for unensiled varieties
  → Variety rank based on unensiled material

Quality differences between ensiled and unensiled (=fresh) material have been reported.

Is the relative variety rank altered?
Experimental design

- 8 varieties
- 6 harvest dates

<table>
<thead>
<tr>
<th>Early</th>
<th>Late</th>
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<tbody>
<tr>
<td>Banguy</td>
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<tr>
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<tr>
<td>LG30.224</td>
<td>Mas 17E</td>
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<tr>
<td>Ronaldinio</td>
<td>NK Falkone</td>
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</tbody>
</table>

Dry matter content (%) vs Harvest date

- Early
- Late
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After 20 weeks
Volatile components disappear during drying process

- Volatile fatty acids (lactic acid, acetic acid, propionic acid, butyric acid), ammoniac, ethanol
- Specific volatilization factor → correction factor (CF)

Example: CF = 1.037
DM = 30 * 1.037 = 31.1%
NDF = 50 / 1.037 = 48.2 %
IVTD = (70 + 3.7) / 1.037 = 71.1%
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*** p<0.001, ** p<0.01, * p<0.05

HD: Harvest date
DM: Dry matter content
CP: Crude protein
OMD: Organic matter digestibility
DNDF: Cell wall digestibility
### Effect of variety, harvest date and ensiling

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* p<0.05, ** p<0.01, *** p<0.001

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Dry matter content (%) vs Harvest date

- Fresh
- Ensiled

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- Starch
- NDF
- Cell wall digestibility
- Organic matter digestibility

Variety rank

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STARCH

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jolien.swanckaert@ilvo.vlaanderen.be

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DNDF

<table>
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Organic matter digestibility (%)

Fresh

Ensiled

Ensiling

Variety

HD

Ensiling*Variety

Ensiling*HD

Variety*HD

Ensiling*Variety*HD

*** p<0.001, ** p<0.01, * p<0.05
Effects on variety rank

 Variety*Ensiling interaction → Variety rank changes

Table 1: Harvest dates with a stable variety rank

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<tr>
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Thank you