On-line decision support tool for ammonia emission from field-applied slurry

N.J. Hutchings, Iver Thysen

University of Aarhus, Denmark

Sven Sommer

University of Southern Denmark
ALFAM model

- Statistical model, based on measured NH$_3$ emissions from range of European countries
- Based on Michelis-Menten equation
Michelis-Menten

Cumulative volatilization, $N$

$N = N_{\text{max}}$

$N = \frac{1}{2}N_{\text{max}}$

Mean loss rate = slope

$t = K_m$

Time, $t$
ALFAM model

- Statistical model, based on measured NH$_3$ emissions from range of European countries
- Based on Michelis-Menten equation
- $N_{\text{max}}$ and $k_m$ dependent on slurry characteristics + weather.
Implementation

- **PlantelInfo**
  - On-line advisory service for Danish farmers

- **Application details entered by farmer**
  - Manure type, composition and amount
  - Application method
  - Incorporation time

- **Current + predicted weather obtained from Danish meteorological service**
Ammoniakfordampning ved udbringning af gylle

Valgt

Ammoniakfordampning, kg N pr. ha

Selvveje viser for hver dag hvor meget ammoniak der fordampes. Dette gælder de uger, hvor gylle er udbredt.

Temperatur (°C)

Vindhastighed (m/s)

Beregnes fra vejrdatal.
Conclusion

- Educational
  - Advisors like it
- Does it change farmers’ choice of application date?
  - No independent evidence
Slurry season

Nitrates legislation  Slurry  Crop development
Conclusion

- Educational
  - Advisors like it
- Does it change farmers’ choice of application date?
  - No independent evidence
- Farmers have limited choice about timing