

Variety research grasses in the Netherlands

How to improve grassland quality with variety research?

NDDB Fodder, September 2013, Jan Rinze van der Schoot



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WAGENINGEN **UR**

Presentation

- Grassland in the Netherlands
- Organisation VCU in the Netherlands
- Trials
- Variety List



Grassland in the Netherlands

(Source: CBS 2012)

- Area of grassland: 938.000 ha (\pm 50% of total)
 - Permanent grassland (>5 years): 75%
 - In rotation (less than 5 years): 25%
- Renewal grassland in the Netherlands (estimate)
 - Overseeding: \pm 5-10%
 - Resowing: \pm 35-40%
 - In rotation: \pm 45-50%



Important stakeholders

- Government
- Research
- Consultants
- Breeders
- Traders
- Farmers



Production and selling of grass seed

- Grass seed production in the Netherlands and EU
- Regulations
 - Controlled by NAK (Netherlands Inspection Service)
 - Quality control
 - Germination
 - Weeds
- Varieties and mixtures
 - Breeders and traders decide which mixtures
 - Depends on use of grassland



Organisation variety research (1)

- Application and addition of new varieties for:
 - DUS (passport)
 - VCU (driving licence)
 - Recommended List
- Research executed by:
 - NAK (Netherlands Inspection Service)
 - Wageningen UR / Livestock Research
 - WUR/PPO: Applied Plant Research (maize, cereals, turf grasses)



Organisation variety research (2)

- Breeders organised in Plantum (Dutch breeders organisation)
- Protocol (trials, observations, calculations)
- Committees
 - Technical committee (Research Protocol)
 - Commercial committee (Variety List)



Finance VCU research (Since 2002)

- to 1990: 85% funding by government / 15% breeders
- 1991-1997: less by government; more by farmers
- 1997-2001: 50% breeders / 50% farmers

Since 2002:

- Agents / breeders pay for new tested varieties
- Government doesn't contribute anymore
- Consumers / farmers don't contribute
 - They pay when buying seed
- Yearly budget ± € 200.000,-



Plant breeders' right / DUS

- Why important?
 - Protection for the breeders and users
 - Stimulating breeding
- DUS
 - New variety
 - Distinctness
 - Uniformity
 - Stability



- Value for Cultivation and Use
- Profit improvement for farmer
- Stimulation breeding
- Possibility of marketing (commercializing)
- Regulations: needed for addition to EU, National or recommended List
 - Sufficient VCU for EU and National List
 - Recommended List: limited selection of the best varieties

Research Protocol

- Species and varieties
- New and control varieties
- Trials and management
- Observations and measurements
- Yield
- Calculations
- Output



Wageningen UR / Livestock Research

- Independent institute
- Coordination research
- Sowing and maintaining trials
- Observations
- Analysis
- Reports and tables Variety List
- Advice committees



Species tested in VCU

- *Lolium perenne*; perennial ryegrass
- *Lolium multiflorum*; Italian ryegrass
- *Phleum pratense*: timothy
- *Festuca pratensis*; meadow fescue
- *Trifolium repens*; white clover

- Other interesting species:
 - Hybrids: hybrid ryegrass and festulolium
 - *Festuca arundinacea*; tall fescue
 - *Dactylis glomerata*; cock's-foot



Trials

- Grazing trials
 - Perennial ryegrass
- Cutting trials
 - All species
- Competition trials
 - timothy, meadow fescue, white clover
- Observation trials



Tested varieties

- New varieties are compared with Listed varieties
- About 20-30 new varieties of Lp every year
 - Type late and intermediate
- 8-10 control varieties in every trial
 - To compare new varieties with listed varieties



Testing scheme Perennial ryegrass

	year 1	year 2	year 3	year 4	year 5
<i>Grazing trials</i>					
Loc. 1 sand	sowing	+	+	+	
Loc. 2 sand		sowing	+	+	+
<i>Cutting trials</i>					
Loc. 3 sand	sowing	+	+	+	
Loc. 4 clay		sowing	+	+	+



Trial sites



Grazing trial



Cutting trial



Competition trial



Management trial fields

■ Grazing trials

- 5-7 cuts/year (4-5 grazing and 1-2 for silage)
- Grazing period with cattle for 4-5 days
- Fertilizer N: ± 260 kg/ha/yr

■ Cutting trials

- 5-6 cuts/year for silage
- Fertilizer N: ± 350 kg/ha/yr



Characters

- Yield (dry matter yield)
- No feeding value (digestibility or sugar) at this moment
- Winter hardiness
- Resistance to diseases
- Persistency
- Capacity to compete in mixtures



Yields Perennial ryegrass

- No measured yields in sowing year
- Yield per cut grazing trial
 - Grazing: \pm 1.5 ton dry matter per ha
 - Silage: \pm 3.5 ton dry matter per ha
 - Annual yield: 11-12 t/dm/yr
- Cutting trial
 - 1st and 2nd cut: 3.5-4.0 ton dry matter per ha
 - 3rd-5th cut: 2-3 ton dry matter per ha
 - Annual yield: 12-14 t/dm/yr



Persistency and crown rust



Differences is resistance to crown rust



Calculations observations and characters

- Every observation (average of the replications)
- Average of more observations in a year
- Average of several trial fields
- Overall average of observations in the last 8 years is used for the Variety List



Addition new varieties

- Positive DUS required
- Sufficient VCU
 - Minimum levels for persistency, winter hardiness and resistance crown rust
 - New varieties must be better than average of listed varieties
- Limited list (what means with addition of new better varieties, older worse varieties are deleted)



Recommended Grassmixtures (in %)

Specie	Perenn. r.gr.		Timothy	Mead.	Sm-St	White
	late	interm.		fescue	m.gr.	clover
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Mixture						
BG3	50	50				
BG4	36	36	28			
BG11	36	33	14	14	3	
BG12	50 t	50 t				
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BG1	32	32	24			12
BG5	33	23	14	14	3	13



Benefits of better varieties

- Higher yield
 - Higher production by equal fertilization
 - Average per year + 0.35%
 - Equal production by lower fertilization
- Improved persistency
 - Good, dense sward; less resowing required
 - Best conditions for yield and feeding quality
- Improved resistance tot diseases
 - Better feeding quality and higher intake by cattle



Questions for you:

- What is the use of grassland in India?
 - Permanent grassland or rotation with other crops?
 - Possibilities of resowing grassland?
- Differences in your country (climat)
- Important grass species?
- Important characters/diseases?
- Stakeholders?
- Are farmers and breeders organised?
- Grass breeding and seedproduction?
- Variety regulations (DUS and VCU)?



End

Thank you for your
attention



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