



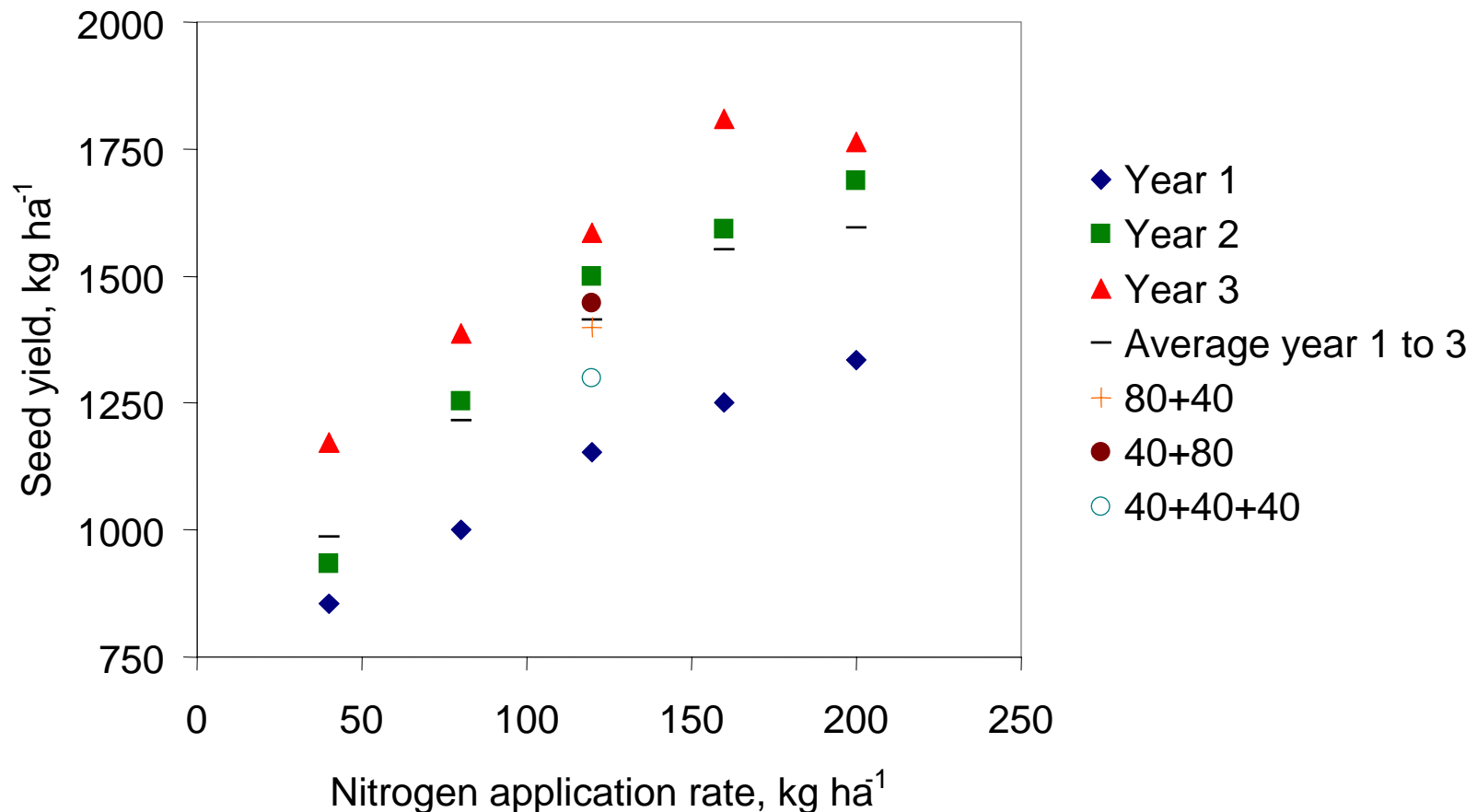
# IHSG Workshop 2005

## Session 1, Nitrogen fertilisation

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&  
*René Gislum*



## Tetra-ploide perennial ryegrass, first year seed harvest





## New technology to improve utilisation of applied nitrogen

### Spad-meter 502



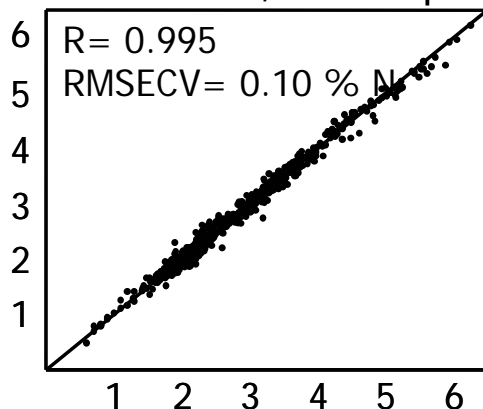
### Crop scan

460, 560, 610, 660,  
710, 810, 905, 950nm

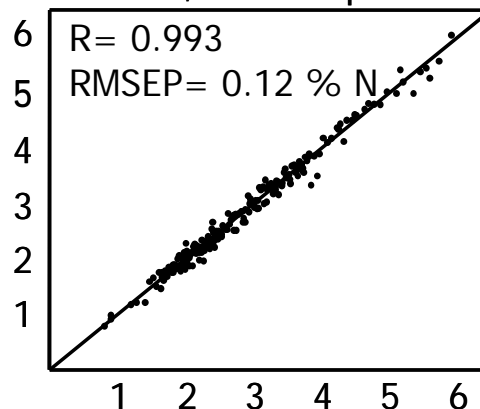


Predicted N concentration (%N)

Calibration set, 627 samples



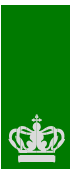
Test set, 210 samples



Measured N concentration (%N)

(Gislum et al. 2005, *Field Crops Research* vol 91, issue 2-3, 269-277)

Soil N methods



Correlation coefficients ( $R^2$ ) (Gislum et al. 2005, *Field Crops Research* vol 91, issue 1, 83-90)

	<b>534GDD</b> <b>April. 25</b> <i>Before elongation</i>		<b>816GDD</b> <b>May. 21</b> <i>Before heading</i>		<b>1369GDD</b> <b>June. 25</b>	
	<b>Yield</b>	<b>N status</b>	<b>Yield</b>	<b>N status</b>	<b>Yield</b>	<b>N status</b>
<b>NDVI</b>	0.46	0.41	0.88	0.85	0.74	0.56
<b>RVI</b>	0.46	0.44	0.86	0.85	0.73	0.57
<b>PNSI</b>	-0.46	-0.40	-0.88	-0.85	-0.74	-0.56
<b>PLSR</b>	0.52	0.48	0.86	0.81	0.71	0.29

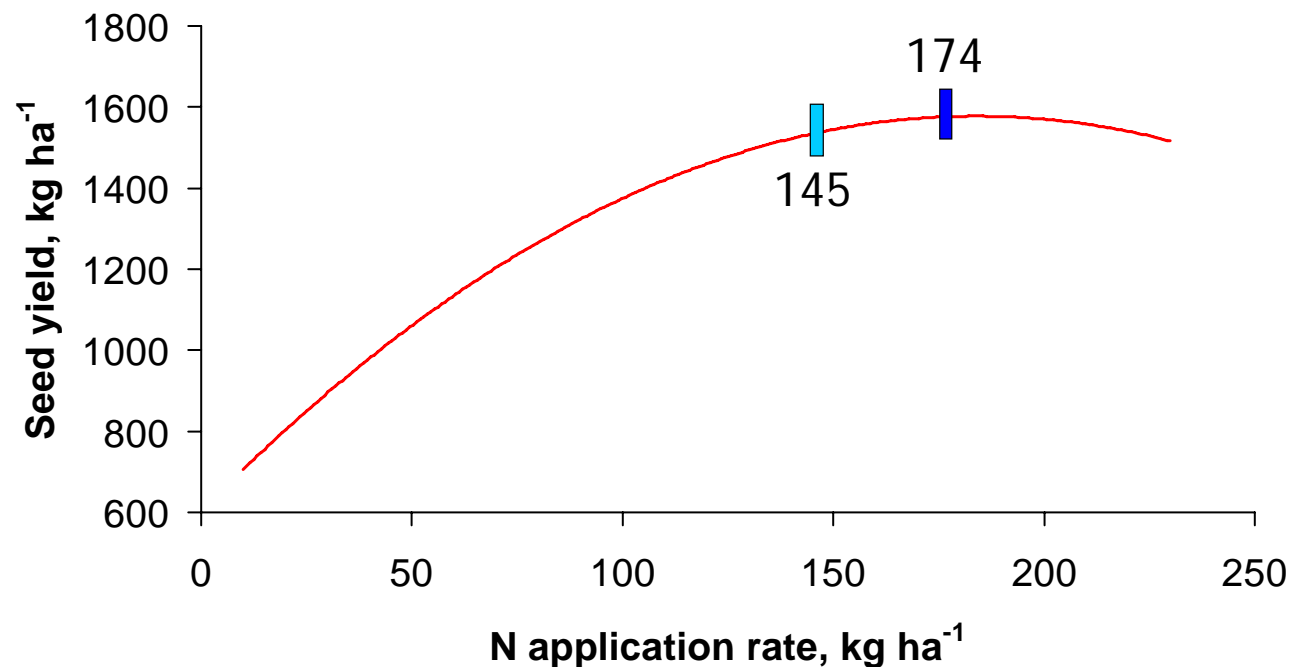


## Regulations in the use of N in Denmark

Maximum allowed N application rates per ha for each crop

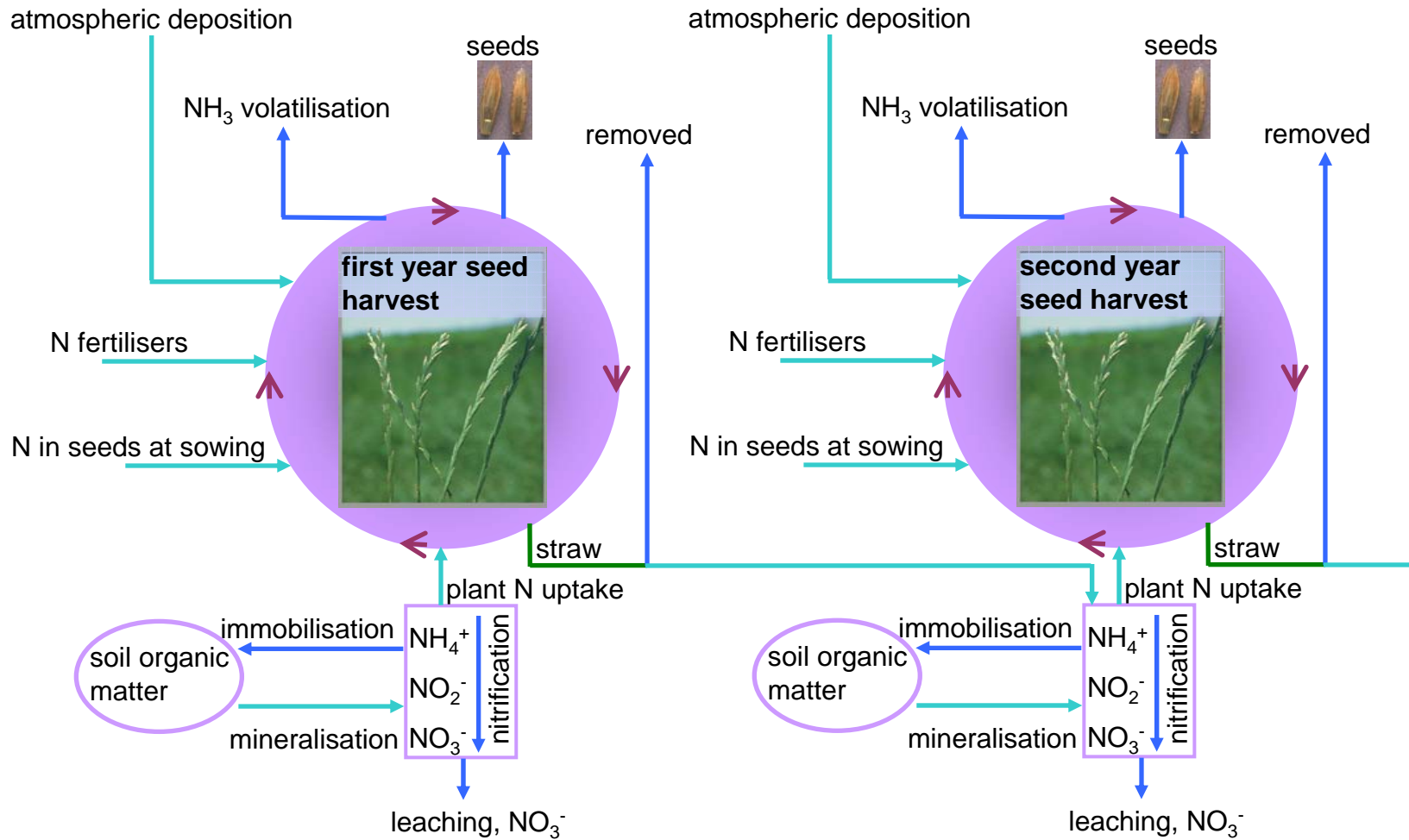
- based on the growing season and on farm levels

Approximately 10% below economical optimum





# N budget





How can we increase the utilization of N applied to herbage seed crops?

Autumn/spring application?

Single/spilt spring application?

How are optimum N calculated and which methods e.g. soil tests or canopy/leaf reflectance can be used to define optimum N application rate?

Are economical optimum N application rate dependent on N prices and seed prices?

Soil N method to predict spring N application rate

Canopy reflectance to estimate canopy N status and application in regard to reflectance results

Which regulations made by the authorities can be used in the future to regulate N to herbage seed crops and how can we get an influence on the regulations?

Regulations on the use of N at the farm level

Regulations in the use of N based on a N budget (input/output)

Delivery of N data to the authorities

Is it possible to coordinate a "world wide" N budget (N input and N output) in herbage seed production which will document the fate of N applied to herbage seed crops?

Relevance for practical N application strategy

Interaction between the use growth regulators and nitrogen

– Has the use of growth regulators an impact on the optimum nitrogen application rate?