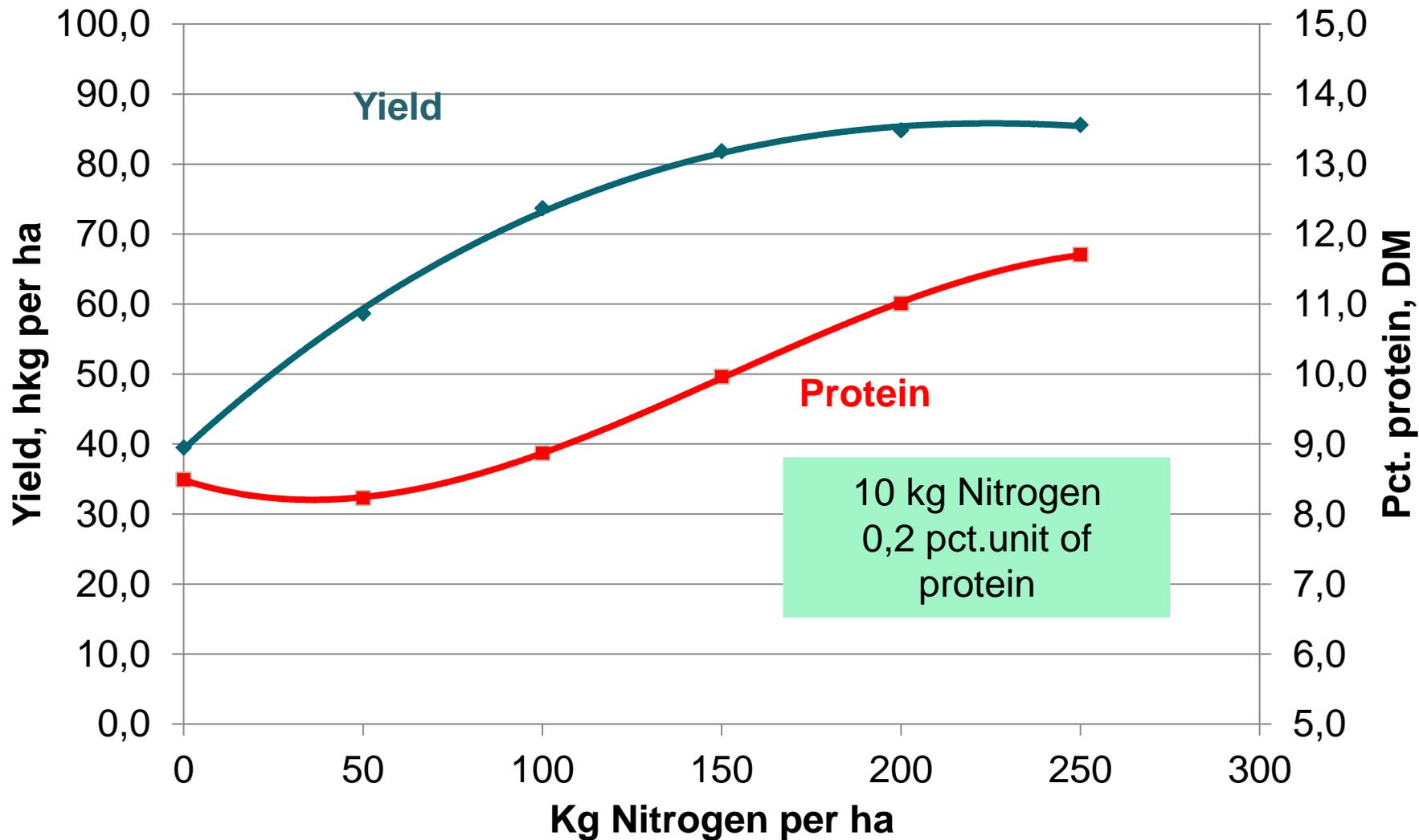


Besancon, the 14th of September

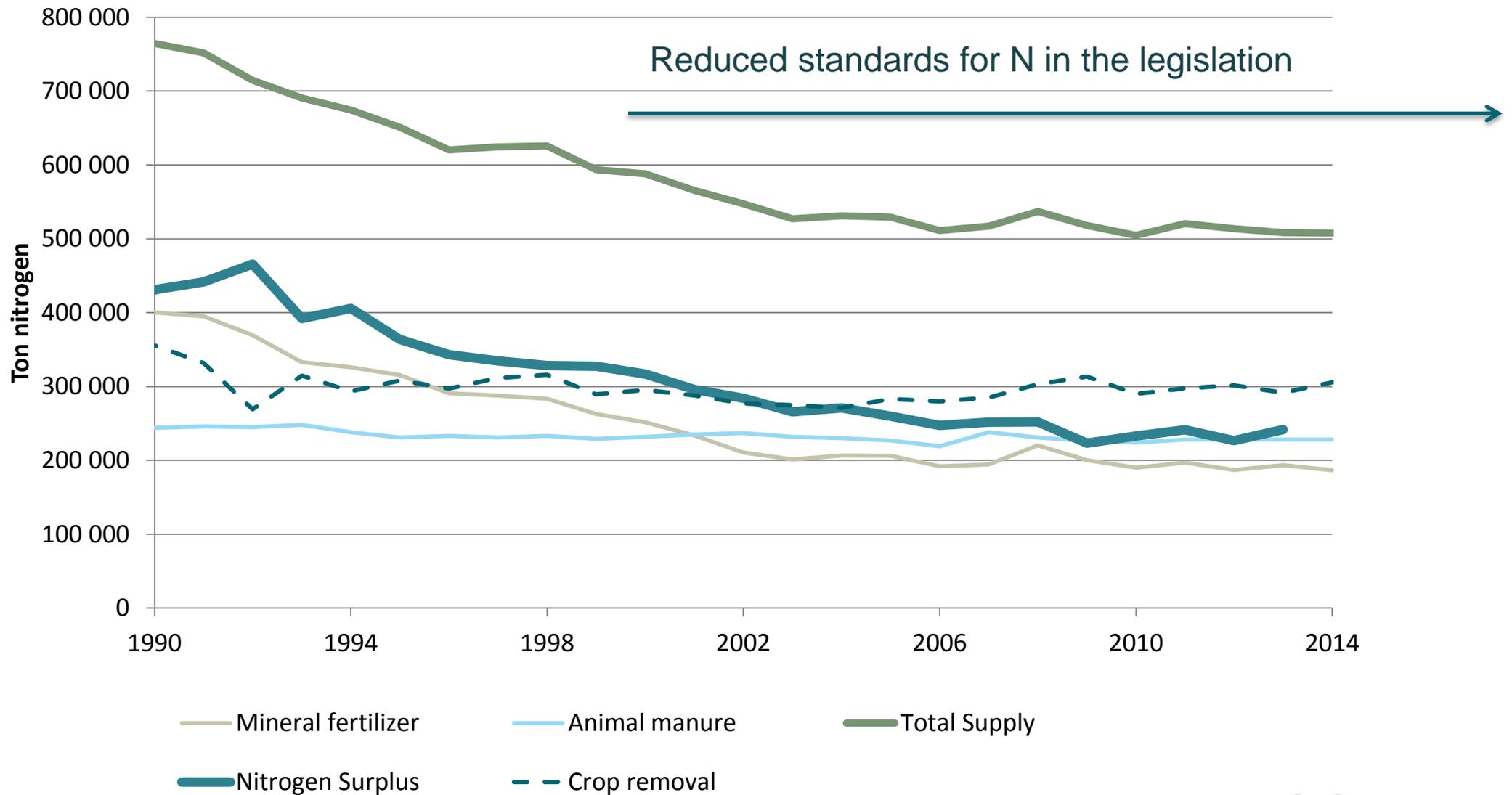
Chiefadviser Leif Knudsen, Crop & Environment

THE RELATION BETWEEN NITROGEN AND PROTEIN IN CEREALS

Winter wheat 2011-2014, 53 trials. Precrop cereals

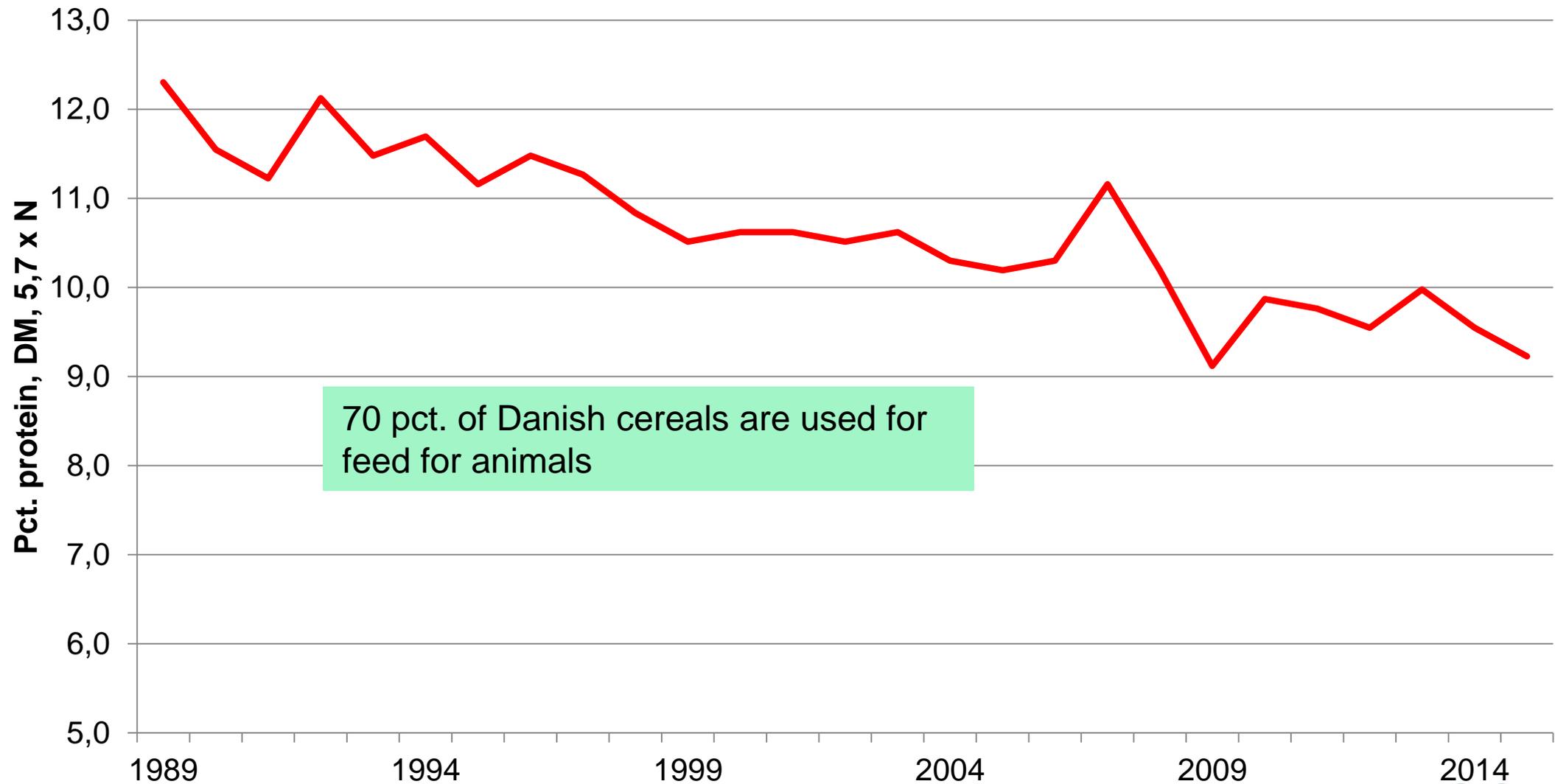


USE OF NITROGEN IN DANISH AGRICULTURE

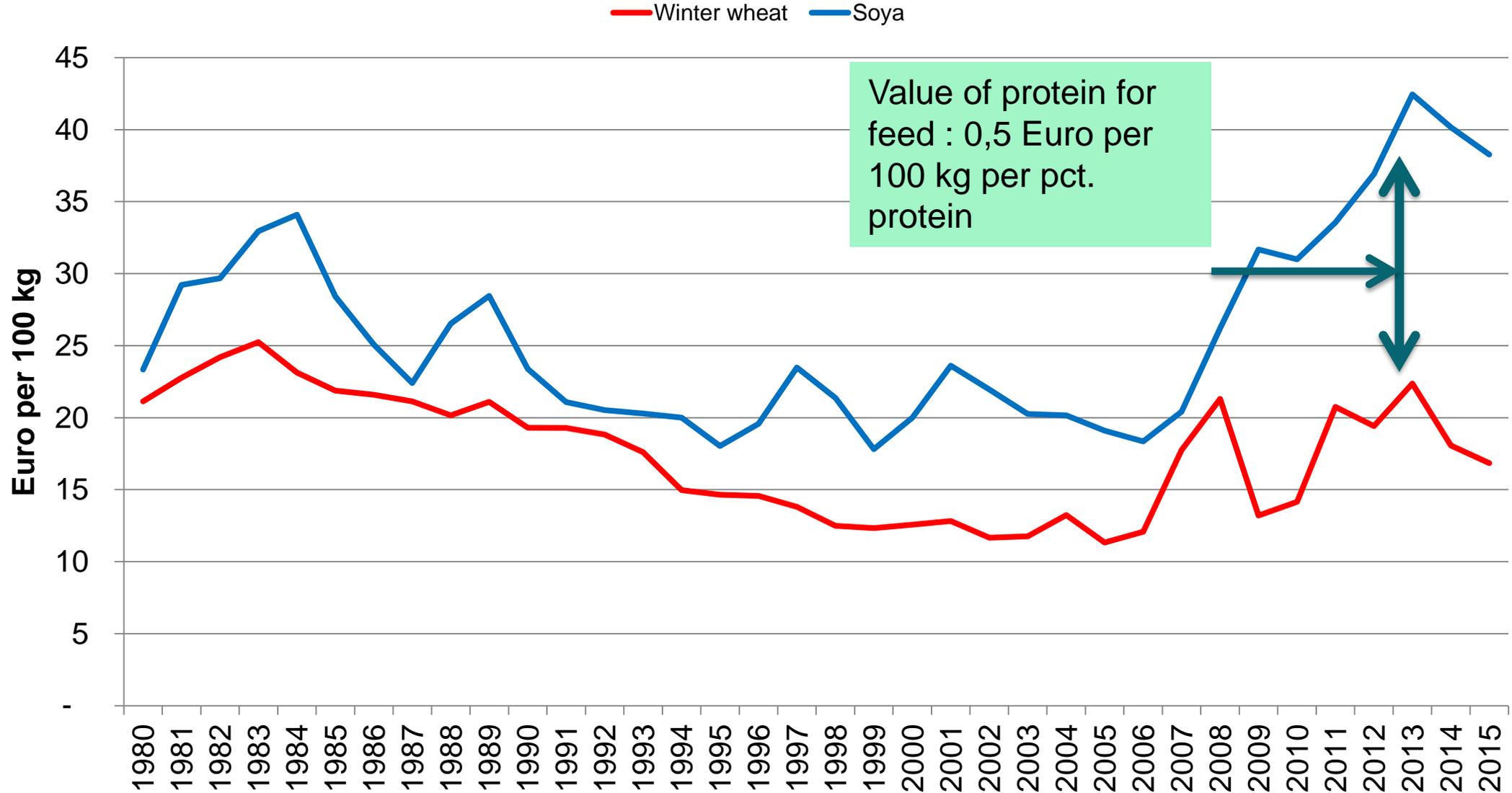


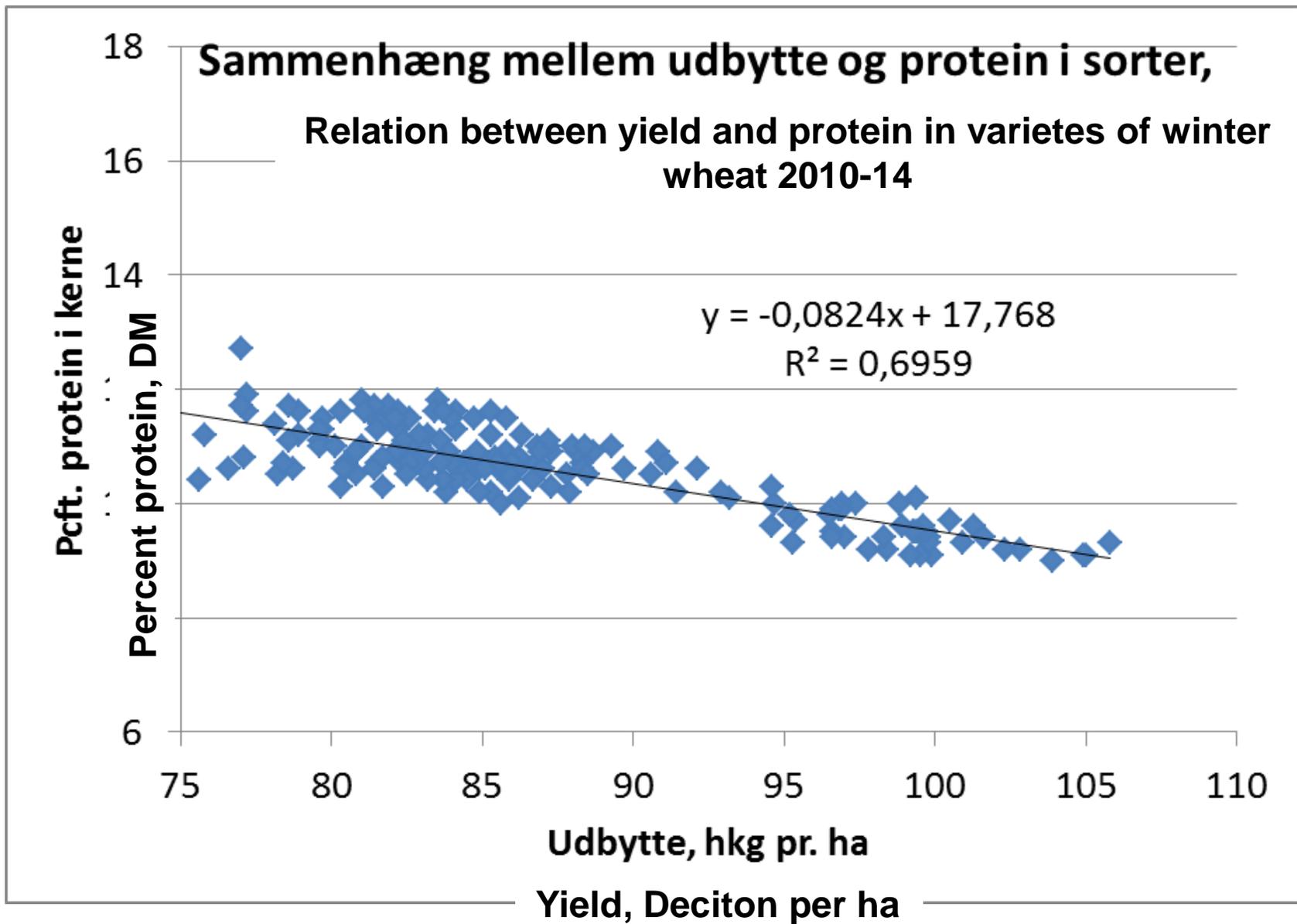
Period	N-quotas
1994	N-quotas based on optimal N-rates, minimum demands for utilization of N in manure
1999	N-quota 10 pct. lower than optimal N-rates. Quota fixed on a national level
1999-2003	Increasing demands for utilization of N-in animal manure. Stricter control
2016-2017	Back to optimal N-rates (N-rates increasing 25 percent
2018-	Efforts to reduce N-leaching must be implemented – back again?

PROTEIN IN DANISH WHEAT FOR FEED



Relation between price on cereal and soya gives the proteinvalue

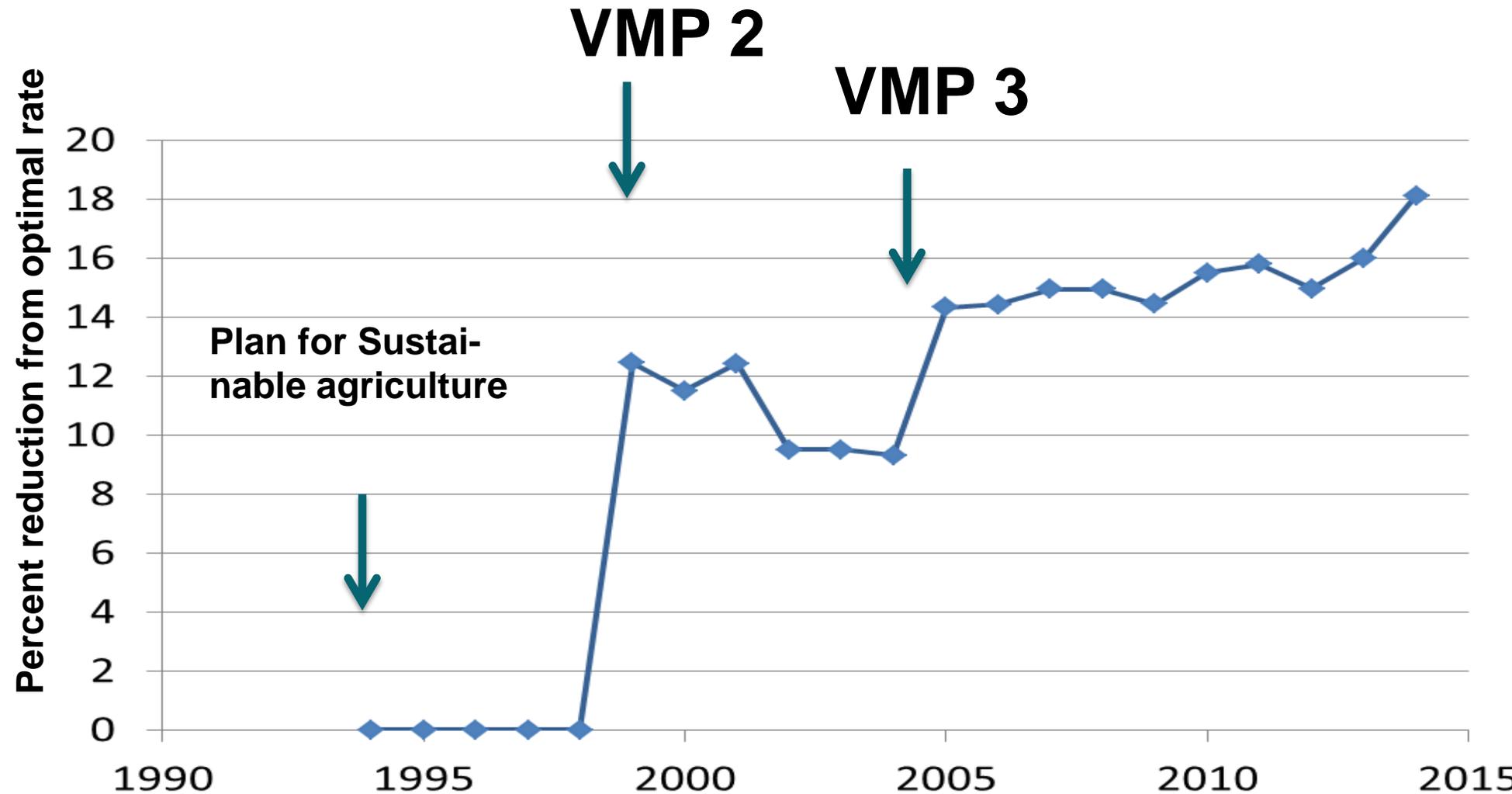




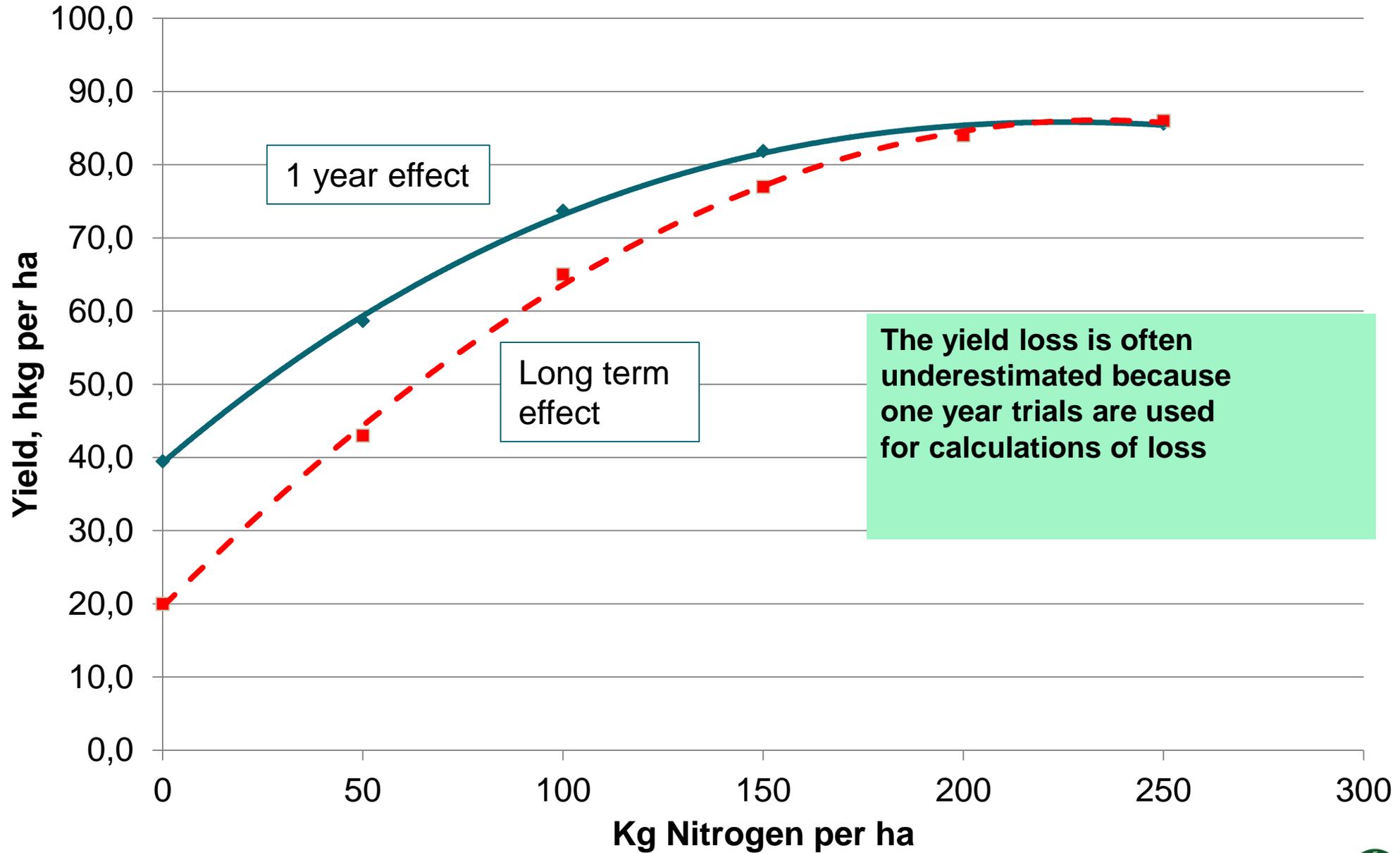
WHAT DO DECIDE THE PROTEIN CONTENT?

Factor	Same yield level	Acceptance of a lower yield level
Nitrogen rate	*****	
Timing of nitrogen application (same rate of nitrogen)	**	*****
Varieties (same rate of nitrogen)	*	*****

IS REDUCTION OF NITROGEN RATES BELOW THE NEED AN EFFECTIVE EFFORT TO REDUCE N-LEACHING?



First year and long term effect of reducing nitrogen level



THE RISK OF SUBOPTIMAL N-LEVELS

- Long term effect is underestimated
- Reduction and the value of protein is underestimated
- N-demand is increasing with increasing yields

In Denmark with calculate that reducing N-standards from 200 to 160 kg N per hectar have reduced yield 6-7 deciton per ha and 1,0-1,5 percent protein – loss of income of 100-140 Euro per ha

EFFORTS TO REDUCE N-LEACHING

- Crop nitrogen uptake autumn and winter crucial
 - Use of catch crops
 - Early established winter cereals
 - Crops with long growing season (sugar beets, grass...)
- Nitrogen amount adjusted to actual demand in the field
- Wetlands, mini-reservoirs to remove N in drainage water