

The Rotenburg (Wümme) County bioenergy cooperation and woody biomass potential

Dr Alexander Rosenberg

Lower Saxony Chamber of Agriculture

(Landwirtschaftskammer Niedersachsen)

Email: alexander.rosenberg@lwk-niedersachsen.de

Ulrike Jungemann

Rotenburg (Wümme) County

(Landkreis Rotenburg (Wümme))

email: ulrike.jungemann@lk-row.de

Topics (and authors)

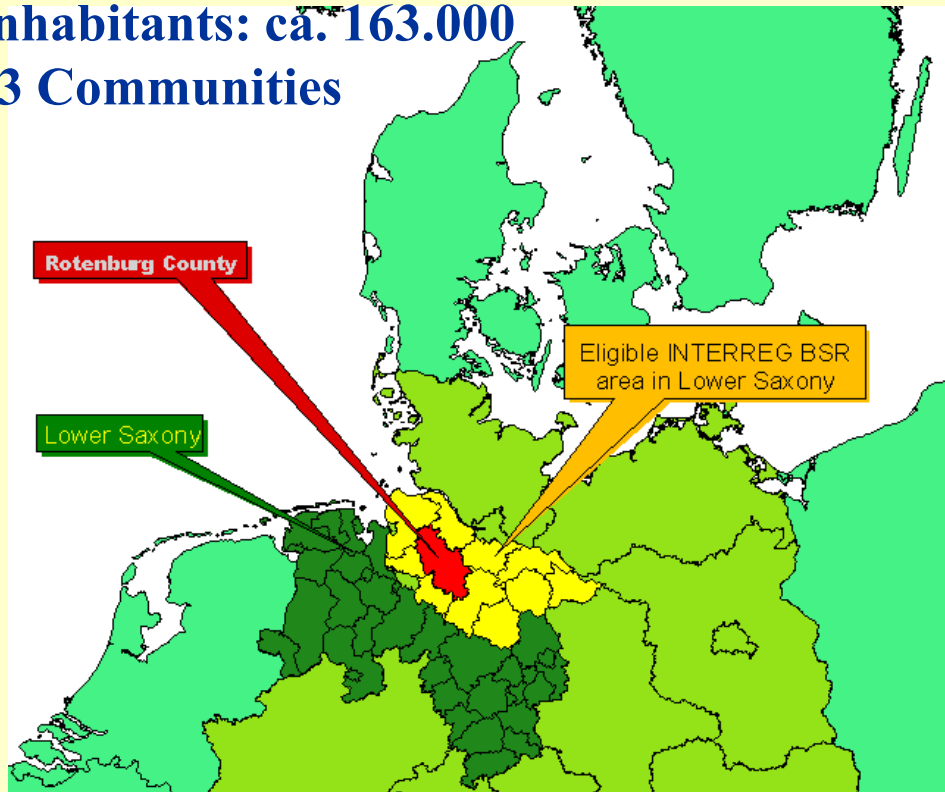
- The Rotenburg (Wümme) County bioenergy initiative (Ulrike Jungemann)
- Biogas and related options and challenges (Ulrike Jungemann)
- Wood-based energy resources from logging residues in private forests (Alexander Rosenberg)
- Woody biomass from hedgerow maintenance at roadside (Alexander Rosenberg)

Rotenburg (Wümme) County Demo-Region

Area: 2070 km²

Inhabitants: ca. 163.000

13 Communities

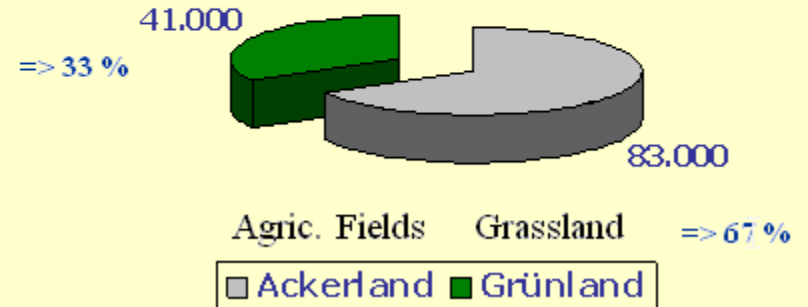
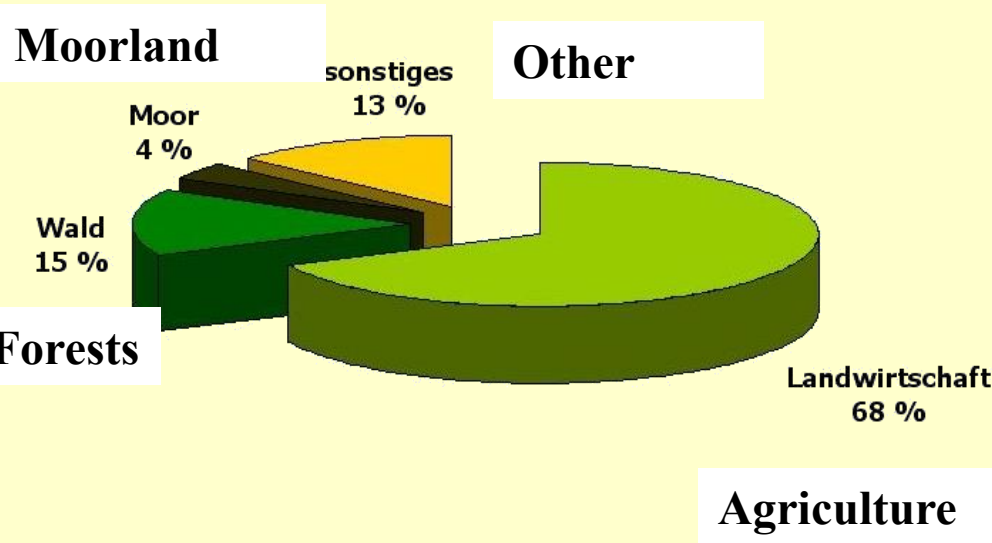


Lower Saxony Chamber of Agriculture in brief

- Self-governing public body
for farmers, fisheries, private forestry, horticulture
- Democratic construction, elected representatives on all levels
 - 2300 employees
 - Supervised and part-financed by the state
 - Extension service and advice
 - Research (agriculture, horticulture, food)
- Mandatory stakeholder in public planning and legislation
 - Administration of most agricultural
financial support schemes (national, EU)
 - Participation in EU-projects
(INTERREG A, B, C, LIFE, Leonardo, Twinning etc)
 - Appr 25 projects in previous IR period

Land-use distribution in Rotenburg (Wümme) County - 207.000 ha total area-

Agricultural Land-use in
Rotenburg (Wümme) County – ha -



2007: Foundation of the Innovation- and Cooperation Initiative for Bioenergie in Rotenburg (Wümme) County



Goals:

- ✓ strengthening of rural areas through goal-oriented development of bioenergy
- ✓ Generation of jobs and income opportunities in the region through creation of added-value chains
- ✓ Development of long-term perspectives for bioenergy utilisation
- ✓ Public relation work improving social acceptance of bioenergy

Informal planning

Information
Knowledge exchange
Communication among actors

Project work

Regional Wood energy concept
Biogas communities
In- and Output of Biogas plants
Heat concepts
Potential analyses

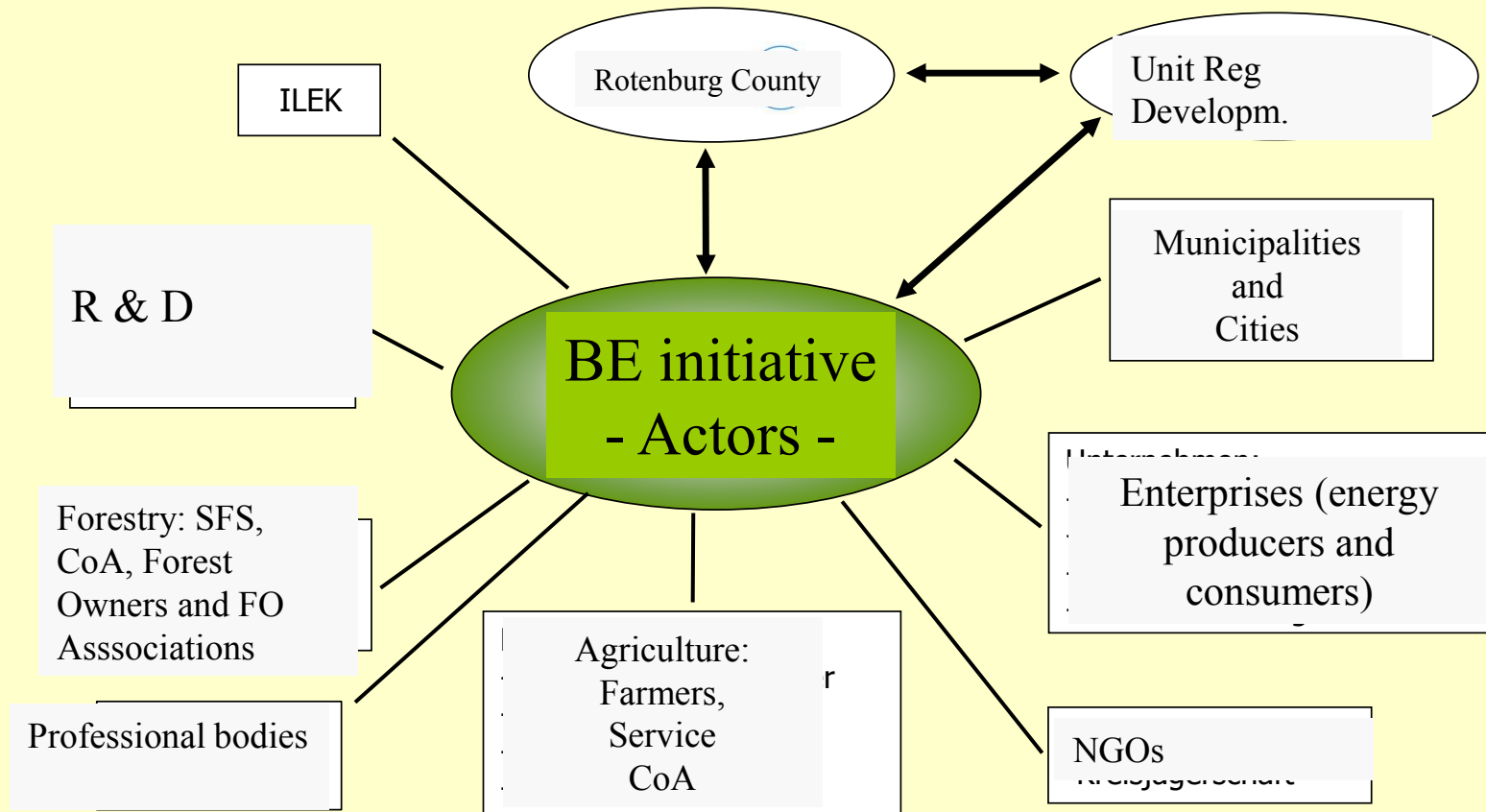
Bioenergie
Landkreis 
Rotenburg (Wümme)

Public relation
Project trade fairs
Professional conferences
Practical demonstrations

Formal planning

Spatial planning
Land development
Environmental - and water
protection legislation
...

Participating actors



Five project teams:

Biogas communities

In- und Output of biogas plants

Heat grids and their profitability

Regional wood energy concept

Potential analysis of biomass

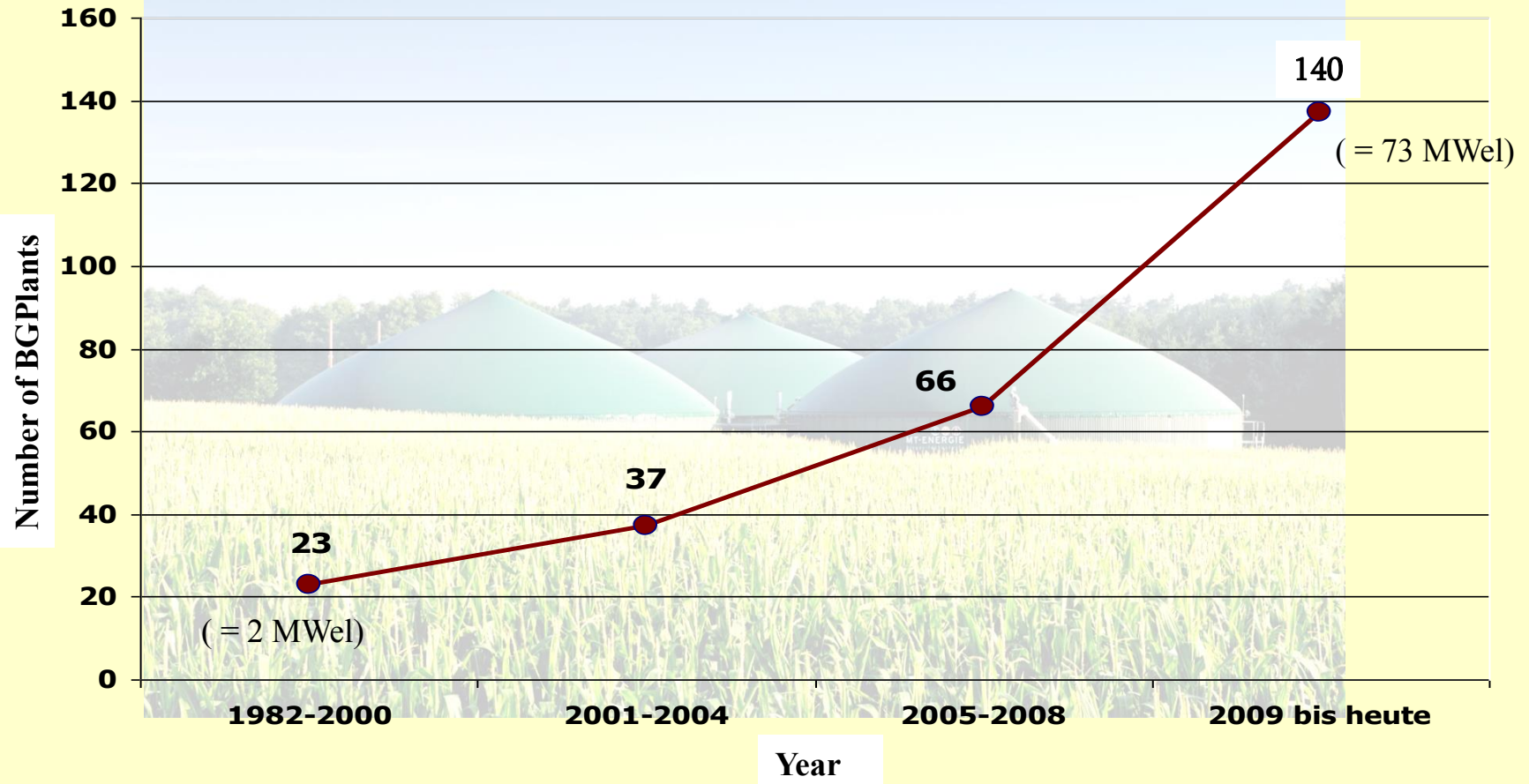


Agricultural structures in Rotenburg (Wümme) County are becoming increasingly formed by biogas production:

- low price for milk making farmers thinking about new income opportunities
- the German feeding-in tariffs for renewable energy
- 2nd source of income for farmers
- a biogas plant manufacturer in the region, being the starting point



Biogas plants in Rotenburg (Wümme) County



Sugar beet

- 2011 installation of a sugar beet terminal incl. cleaning
- Cooperation of eight biogas companies
- supply contract with sugar producer about 6.000 to sugar beets (2011)
- High gas yield in short time
- Long-term target:

Growing of sugar beet

In Rotenburg (Wümme) County

- 2013: > 850 ha Sugar beets



... alternative crops replacing maize, specifically for biogas plants

Silphium perfoliatum (cup plant)

- trial plots on different sites
- Advice through Chamber of Agriculture plant protection department
- The project being accompanied effecting the public



Grass crop utilisation

- Since 2009 gas yield trials from extensive and intensive grass harvesting in energy-specialised laboratory

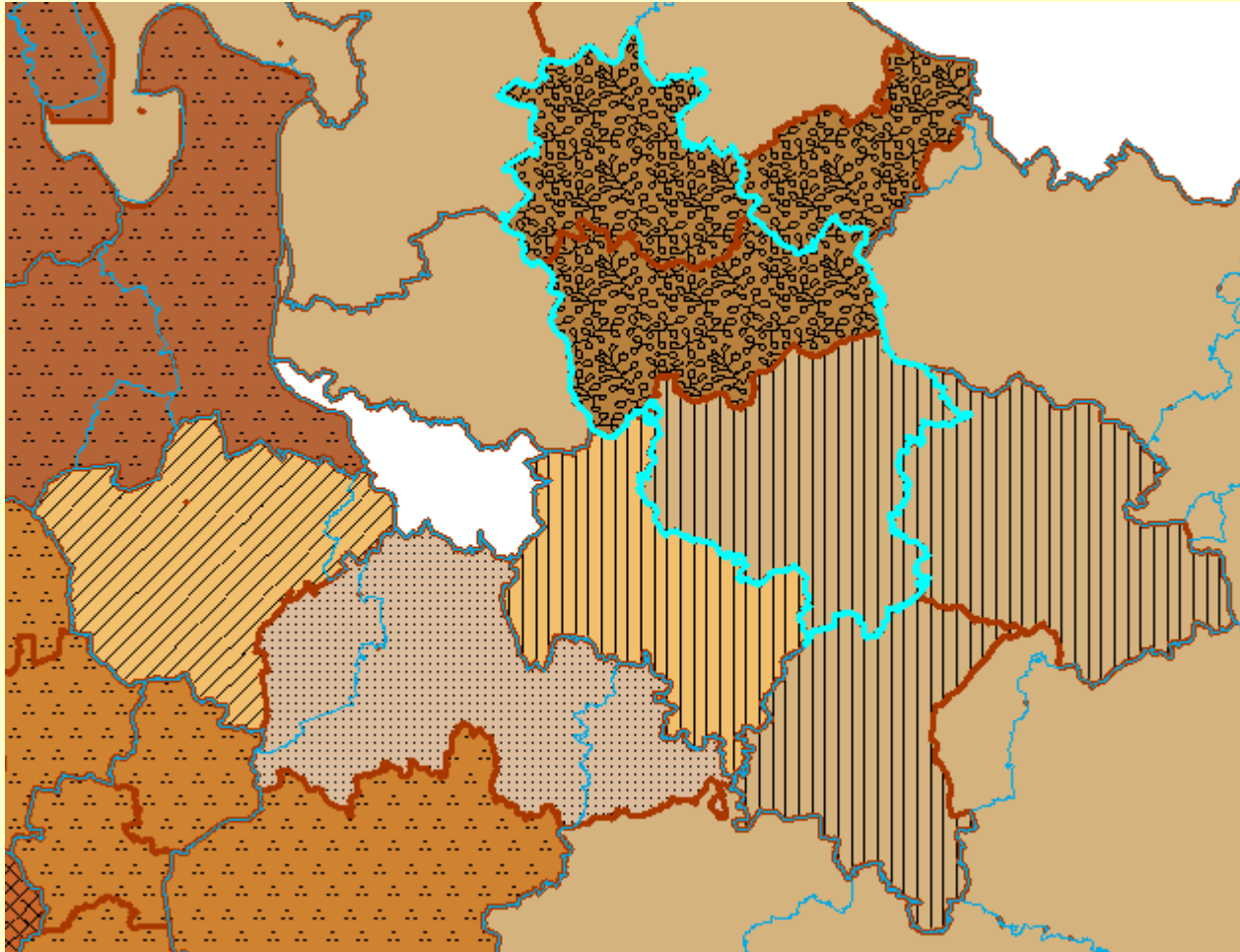


- **Wiesenrispe,**
- **Rotschwingel, G. Rispe,**
- **Straußgras, Quecke,**
- **Rispe, Trespe,**
- **Honiggras, Ampfer**

Different varieties

- **Country 2024**
- **Deutsches Weidelgras,**
- **Wiesensieschgras,**
- **Wiesenrispe**

Woody biomass in Rotenburg County: Regional actors (here: FOAs) are linked to those in neighbour regions



Nordheide-Heidmark Forest District (Chamber of Agriculture)

- ... In Rotenburg (Wümme) territory
- 3 Forest Owners' associations, 5 local CoA consultants
- Organised area approximately 27.000 ha; 13.000 Forest Owners;
- total area appr. 35.000 ha

Logging residues - more precise figures for prediction of tops and branch yield needed! – Some approaches in progress incl. nutrient impacts

FLISavFLIS

Din län i skogsbränsledjungeln

Här kan du beräkna mängden biobränsle du kan skörda i ditt bestånd. Du kan också se vilka ekonomiska effekter uttagen kan ge på lång sikt.

Välj typ av bestånd:



sluta/verkning



gallring



röjning-gallring



röjning

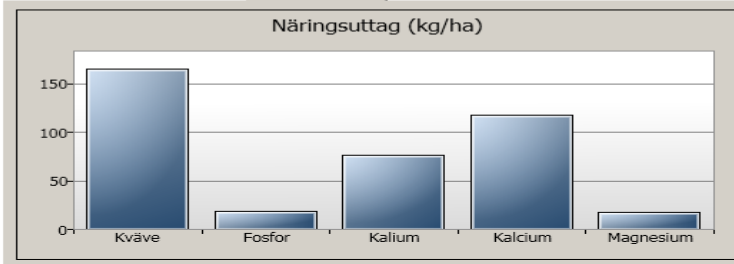
Resultat - Gallring

	kr/ton ts	kr/MWh	kr/m ³ s	kr/m ³ f	kr/ha
Break-even	172.4	35	27.6	76.6	8138.7

	ts ton/ha	MWh/ha	m ³ s/ha	m ³ f/ha
Mängd skördat skogsbränsle	47.2	232.3	295.1	106.2

	m ³ fub/ha
Mängd uttagbar massaved	45

Sammansättning biomassa Näringsuttag Resultat - detaljer



Läge i landet



Mellersta

Bördighet

Medel

Dominerande trädslag

Gran

Typbestånd

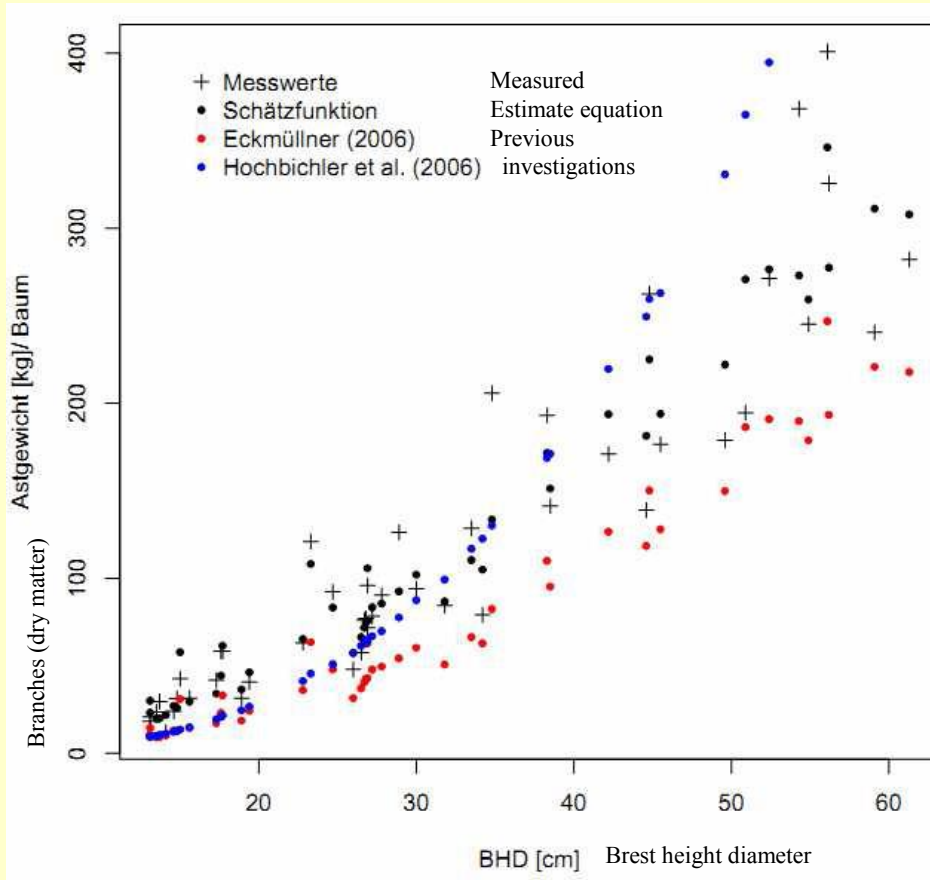
Så här ser det aktuella typbeståndet ut:

Ståndortsindex: G24
Ålder: 48 år
Stamantal: 1700 st/ha
Trädslagsblandning: Tall 0%, Gran 85%, Löv 15%
Grundyta: 26 m²/ha

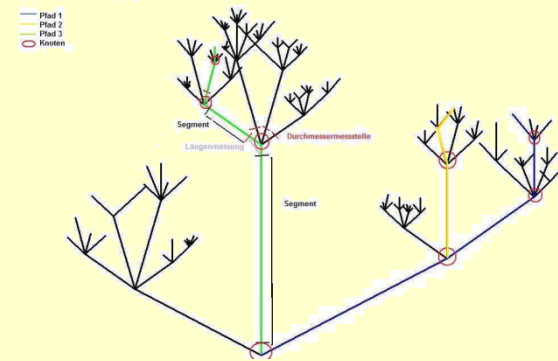


FLISavFLIS – a calculation program from SKOGFORSK Sweden

$$\hat{Y} = \exp(\alpha + \beta * \ln(BHD) - \phi * \ln(Höhe) + \gamma * \ln(1 - Kronenanteil))$$

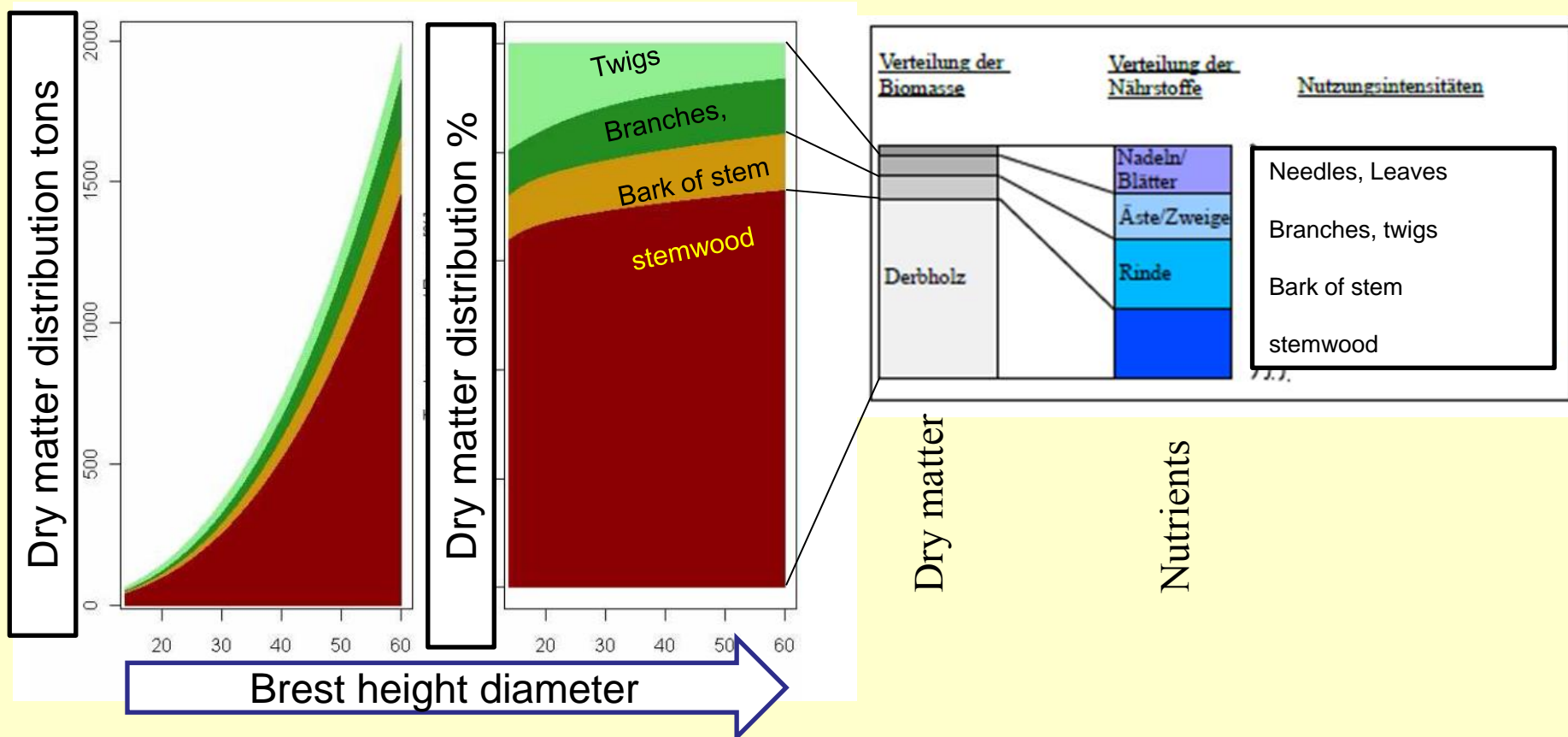


Deduction of estimate equations for tree compartments (here: Branches 1-7 cm for Norway Spruce)
(Rumpf, Nagel & Schmidt, NW German Forest Research, Göttingen 2012)



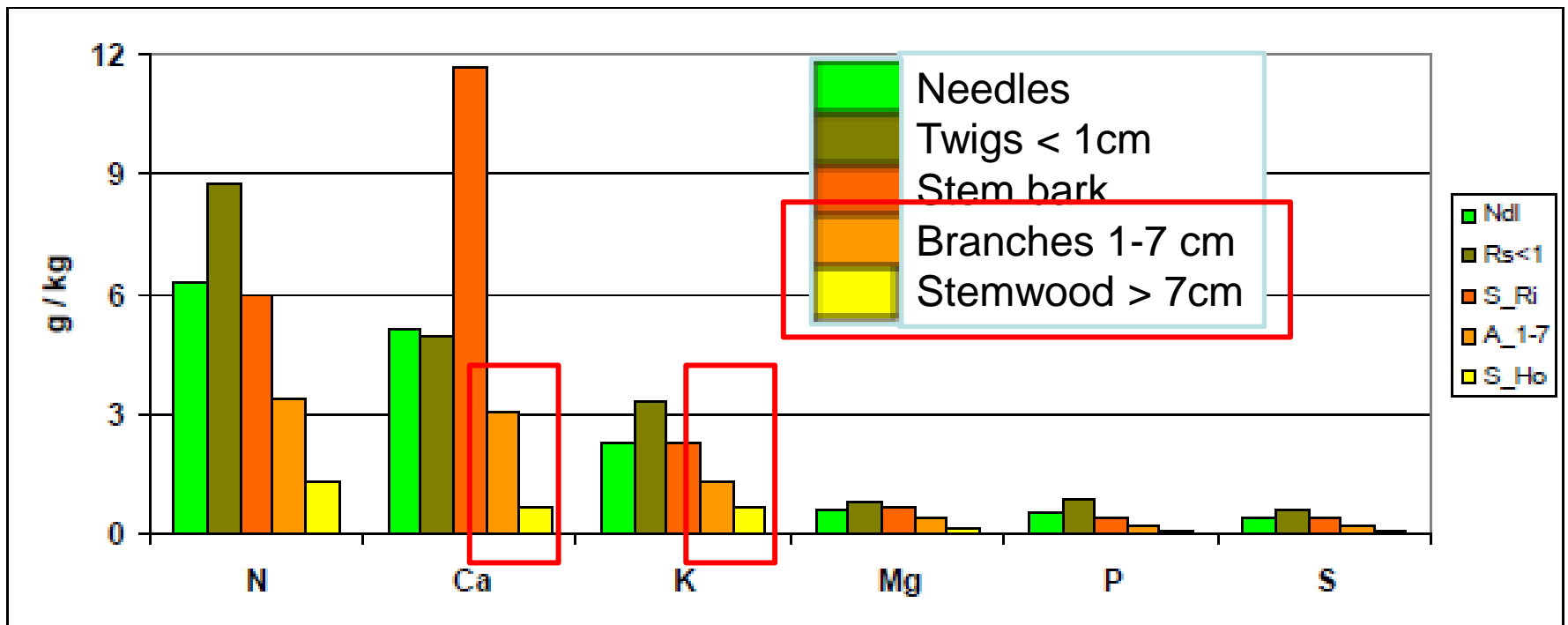
Comparison dry matter and nutrient share in tree compartments

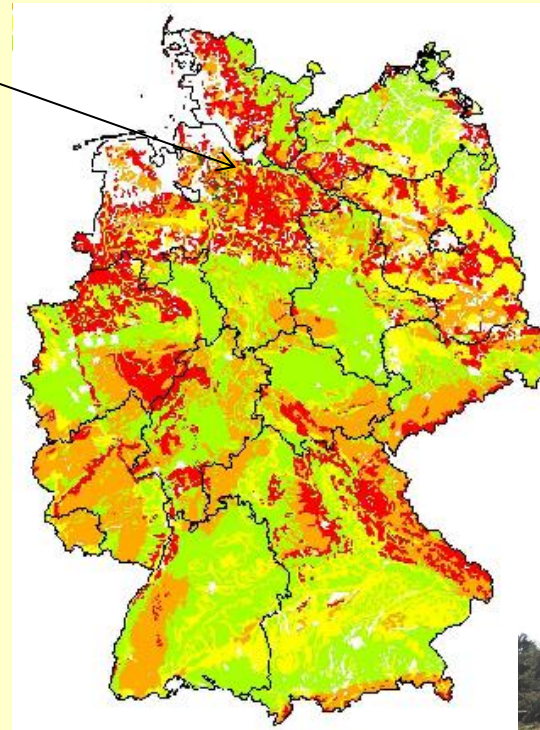
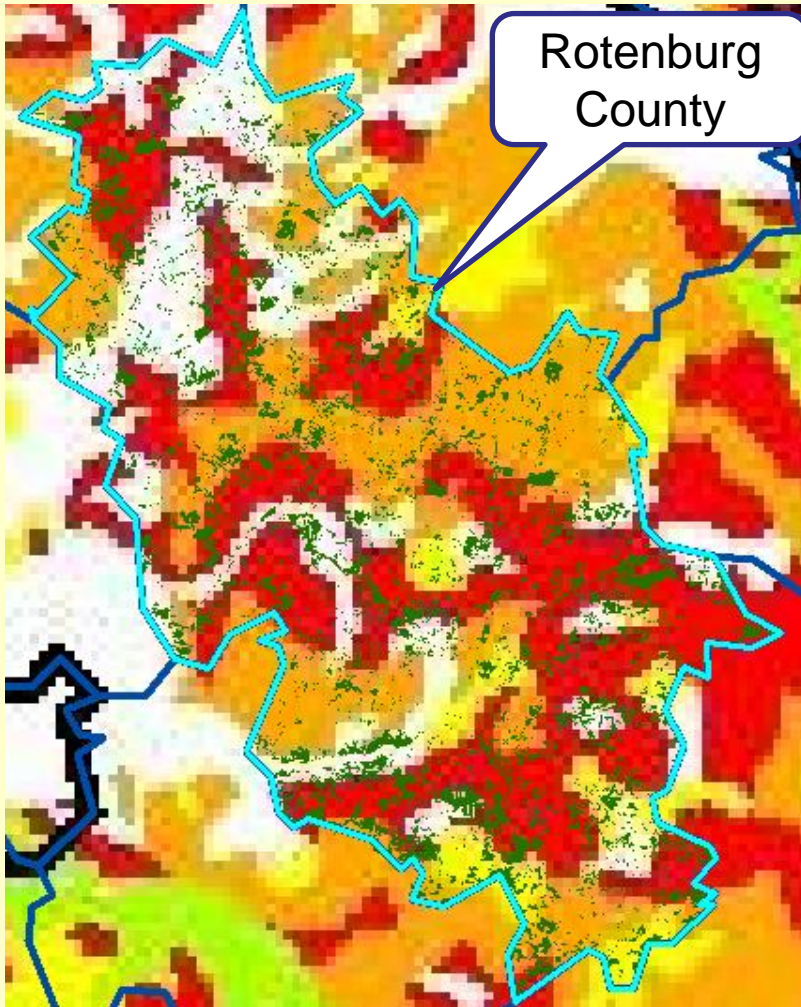
(Rumpf, Nagel & Schmidt, Göttingen 2012; Kolb & Göttlein, Munich, 2012)



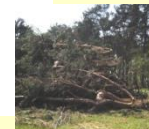
Nutrient distribution in tree compartments

(Rademacher, Schönfelder & Meiwes, Göttingen, 2012)





Classification of soils in Germany acc. to nutrient supply and related sustainable forest harvesting strategies
(Göttlein & Kolb, TU Munich, 2012)



- Very critical
- Critical
- Sufficient
- Good

no	no
no	limited
limited	yes
yes	yes



Rotenburg (Wümme) County in cooperation with

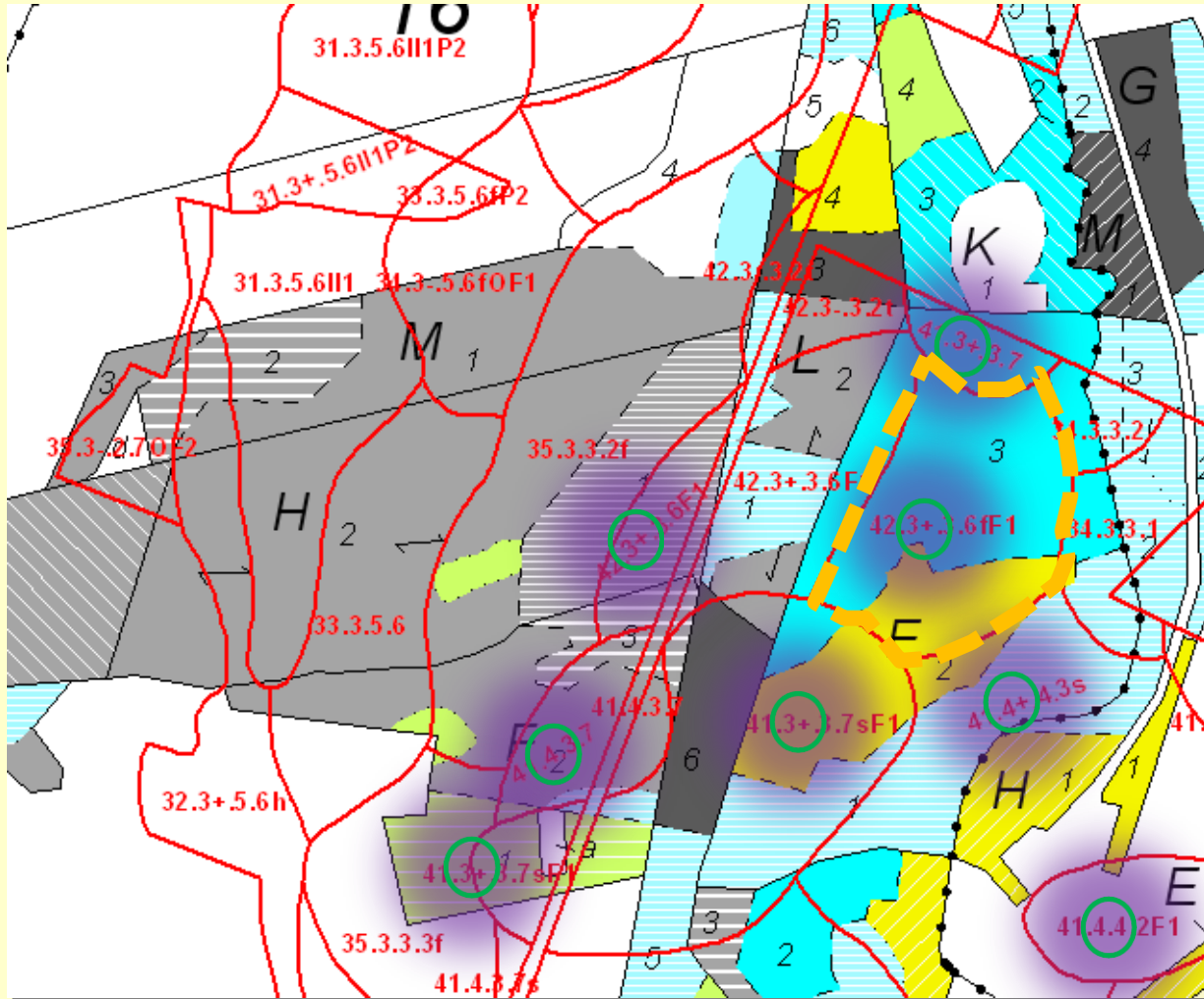
Chamber of Agriculture Lower Saxony

Recent joint activity:

Regional conference
on whole tree
utilisation

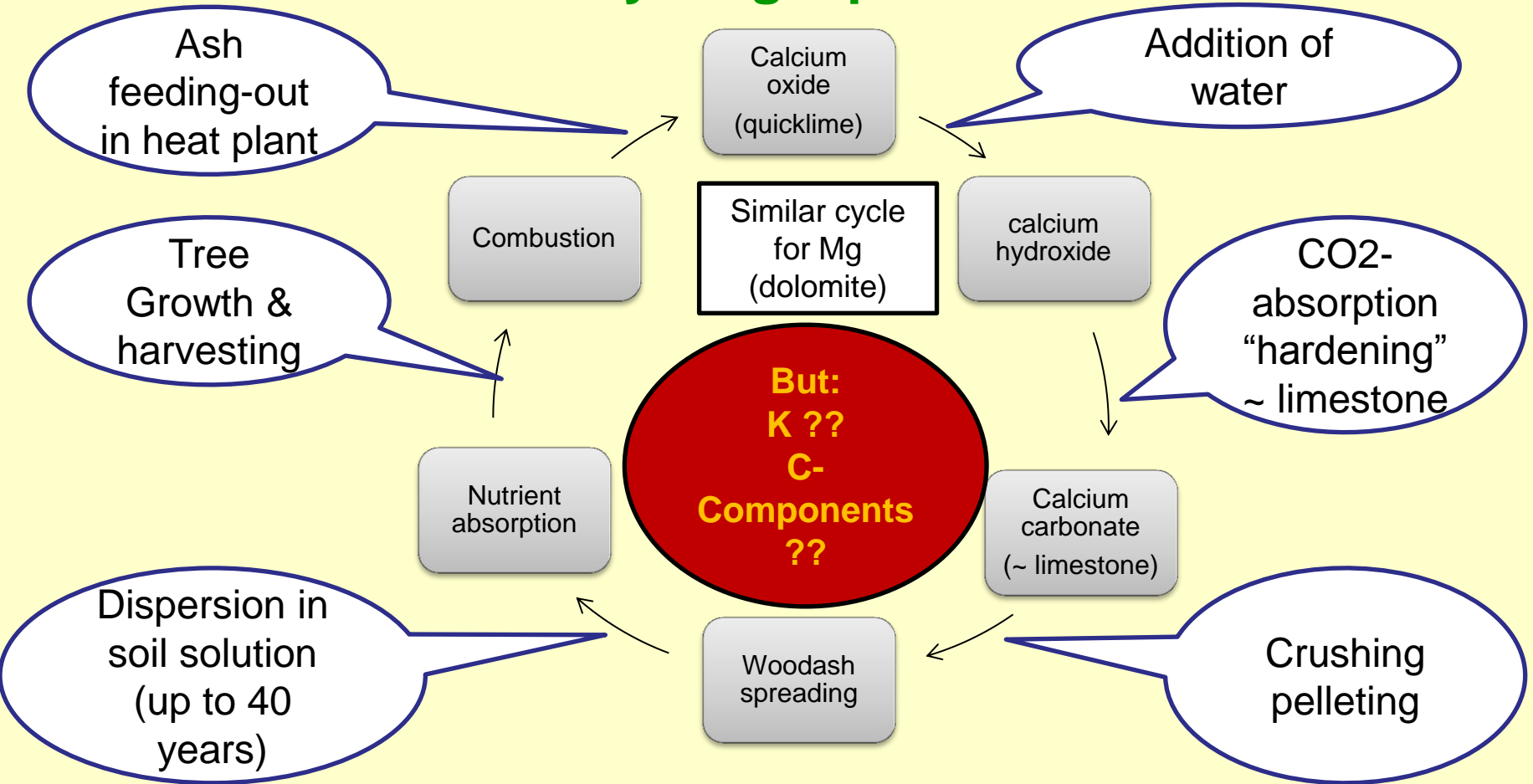
(28 february 2013)





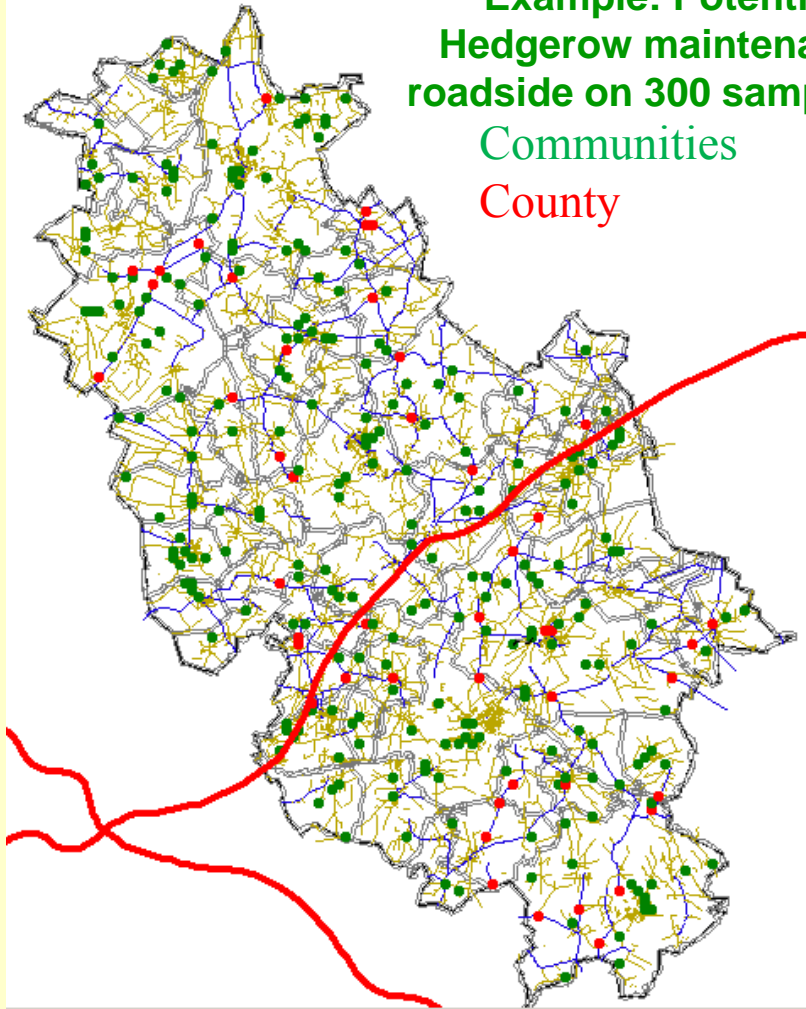
**The goal:
Sustainable
woodenergy
supply
considering
stand & site
properties
and ash
recycling
options**

Woodash recycling – problem solution?

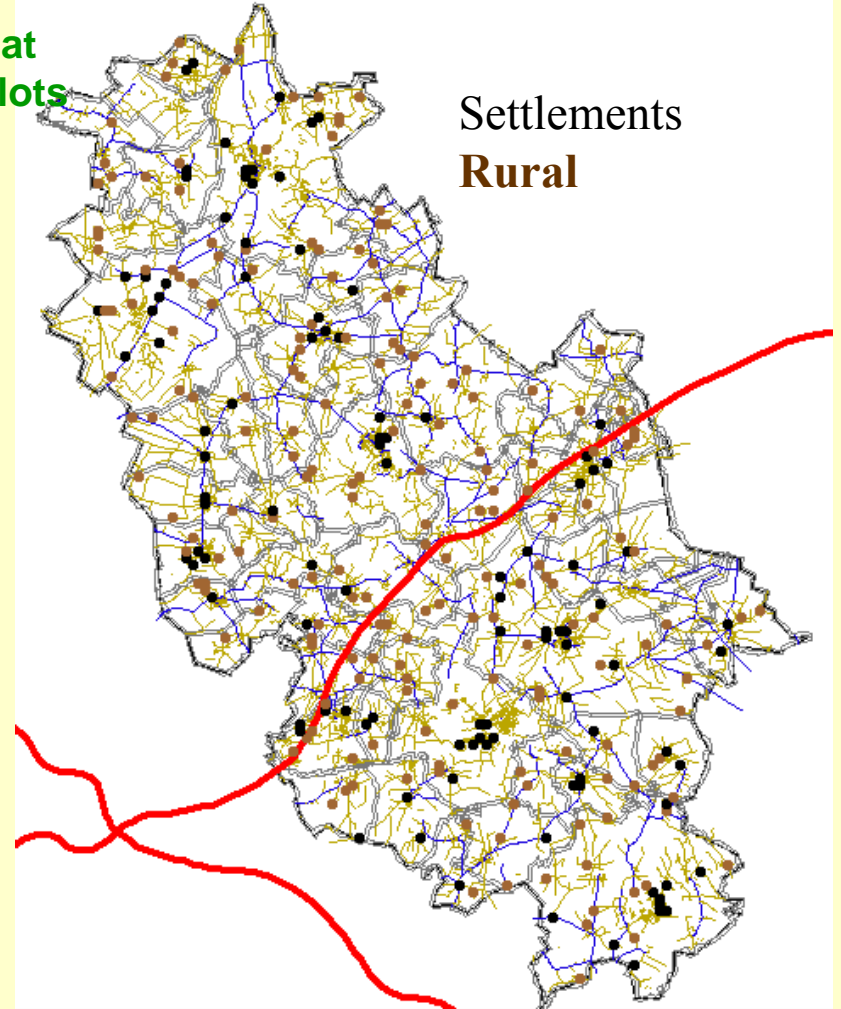


Example: Potential of
Hedgerow maintenance at
roadside on 300 sample plots

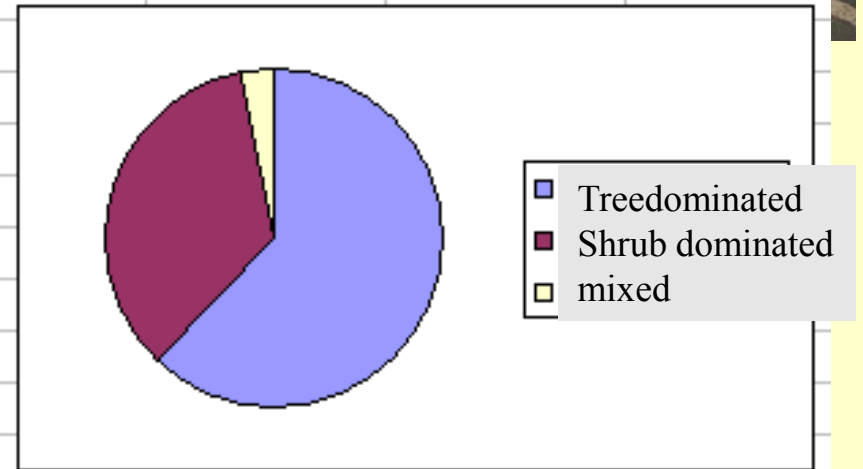
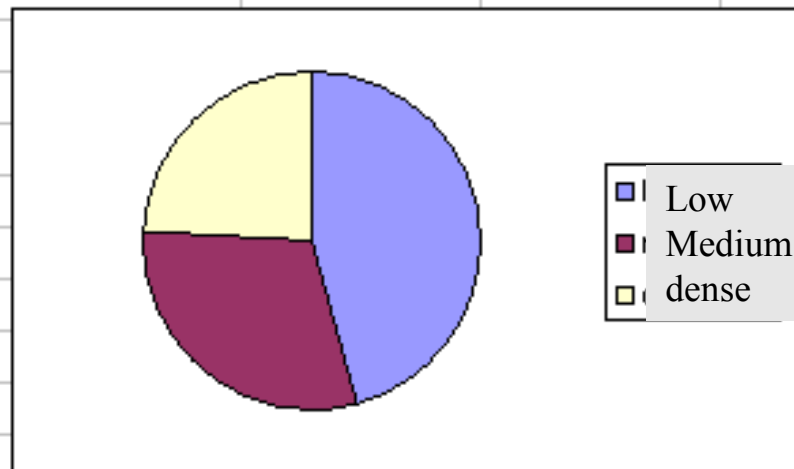
Communities
County



Settlements
Rural



Item	km	
Community	2910	
County	988	3898
Rural	2543	
Settlements	1355	

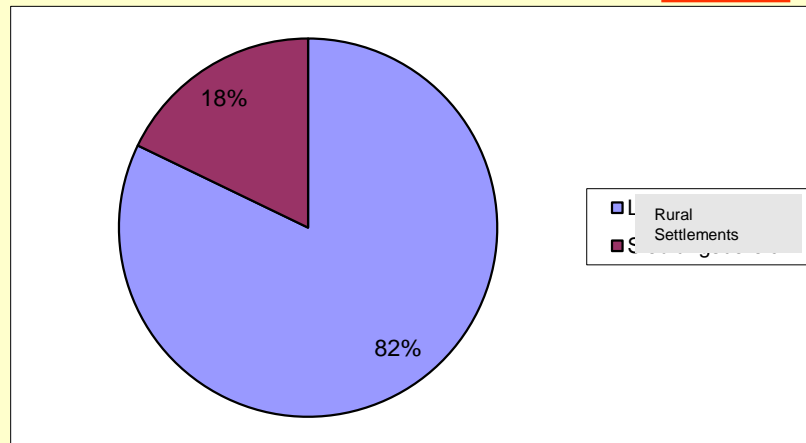
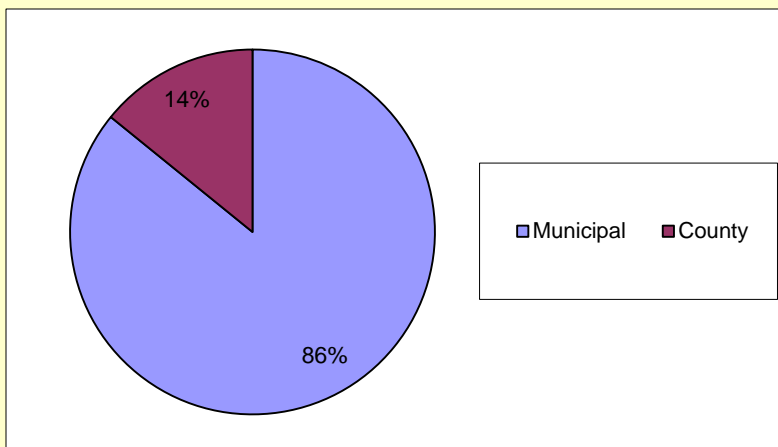


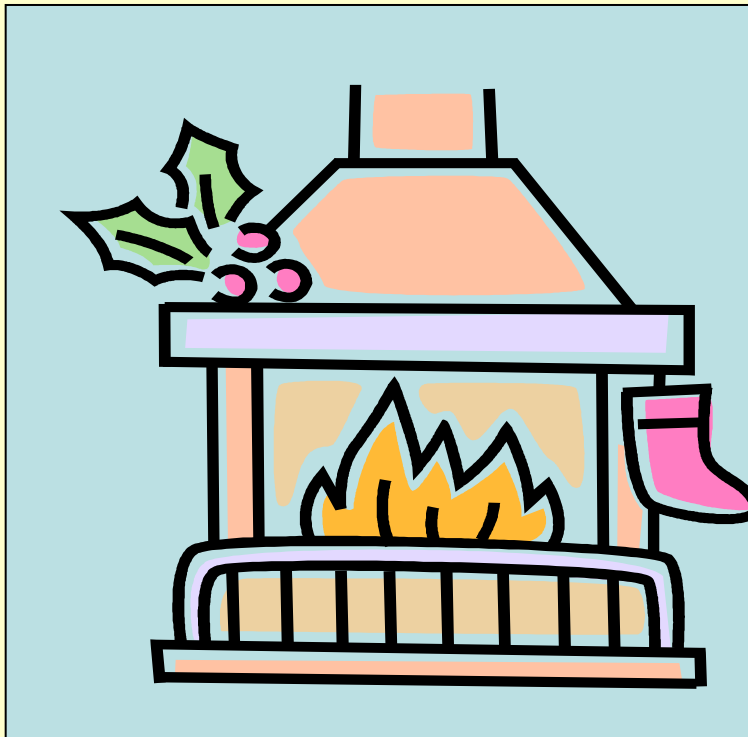
Current maintenance variations – where goes the wood now?



Estimate of hedgerow maintenance along public roads (tons dry matter/decade)

Hochrechnung Hackschnitzel		SRM	SRM	Fm	Fm	to atro	to atro
	Stichprobe	Insgesamt	Insgesamt				
Gemeindestrassen	4855	279201	325240	111680	130096	55840	65048
Kreisstrassenstrassen	438	46039		18415		9208	





The potential of biomass – assessing biomass, cooperation network - Contacts

Dr Alexander Rosenberg

Lower Saxony Chamber of Agriculture
(Landwirtschaftskammer Niedersachsen)

- Dpt. of Forestry -

P.O.Box 25 49

D-26015 Oldenburg, Germany

Phone: +49-441-801704 Fax -709

Mobile: +49-170-2379952

Email: alexander.rosenberg@lwk-niedersachsen.de

Web: www.lwk-niedersachsen.de

Ulrike Jungemann

Rotenburg (Wümme) County
(Landkreis Rotenburg (Wümme))

- County Development Task Force –

Hopfengarten 2

D-27356 Rotenburg (Wümme), GERMANY

Phone: +49-4261-983-2852 Fax -88-2852

email: ulrike.jungemann@lk-row.de

Web: www.landkreis-row.de

