A system to optimize forage crop variety trials for regionalized Recommended Lists in Germany

A system to optimize forage crop variety trials…..
⇨ regulatory framework

- **Federal talks on govermental field trials by the Ministers for Agriculture Oct. 7th 2004 at castle Warberg resulting in:**

- **„Trilaterale Vereinbarung“ (26.06.2007)**
  trilateral agreement among
  - ⇨ **the responsible institutions in the federal states (LDS) and**
  - ⇨ **the governmental institution (BSA) for variety-trials and**
  - ⇨ **the German Plant Breeders' Association (BDP)**
- **„Bilateraler Vertrag“ (27.09.2006)**
  bilateral treaty between LDS-BSA

A system to optimize forage crop variety trials…..
⇨ General principles <u>for all crops</u> (really new)

- **Splitting up Germany into crop specific areas**
  and collaboration of federal states, which are part of these areas, with the objective of a better local analysis of the combined data basis.
- **new statistical methods und consistent software**
  are collectively implemented
  (“Hohenheim-Gülzower Serienauswertung”; PIAF [SAS])
- **Organized supplementation of the data base of regional post-registration (state) variety trials (LSV), with the national VCU-trials (WP).**

A system to optimize forage crop variety trials…..
⇨ General principles <u>for all crops</u> (just codified)

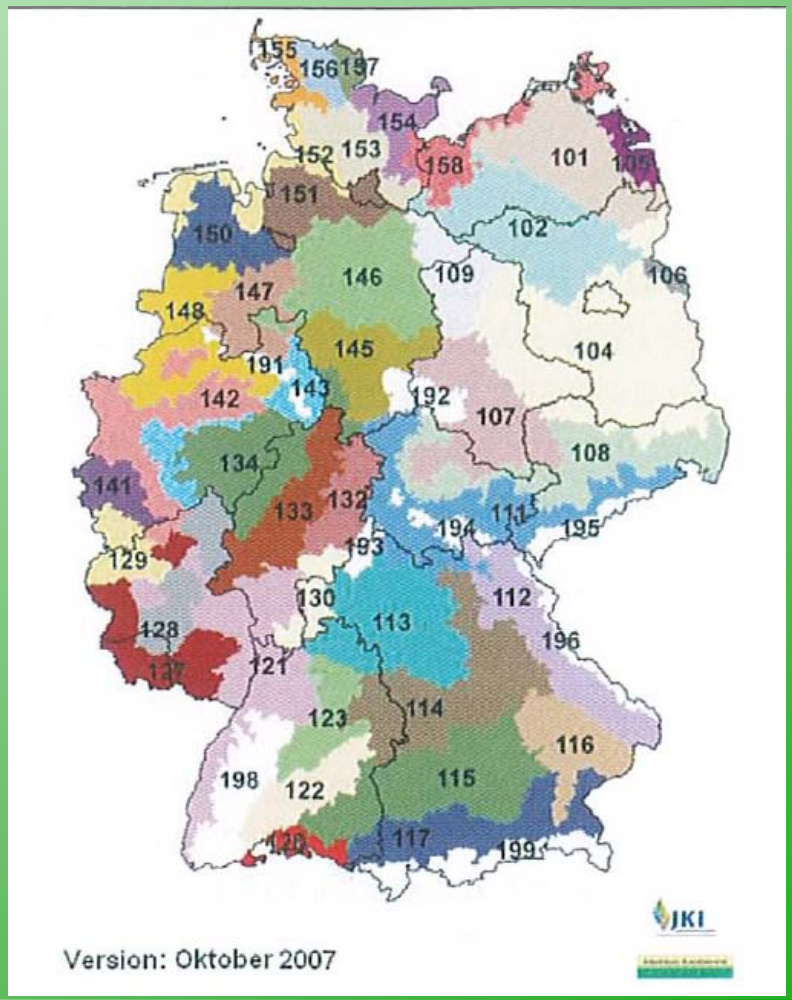
- **Common rules for a systematic variety-transfer**
  from VCU-trials to trials for local recommendation (LSV)
- **Combined trials:**
  Integration of LSV and WP (if possible ⇦ size!).
- **Reduction costs of field trials performed by federal states to the minimum necessary for advice to the local farmers**
  – considering arrangements at federal level between the responsible institutions in the federal states and the governmental institution (BSA “Bundessortenamt”).

A system to optimize forage crop variety trials…..
⇨ General principles <u>for all crops</u>

<u>First</u> Splitting up Germany into crop unspecific areas defined by soil and climate characteristics

(german: “Boden-Klima-Raum”)

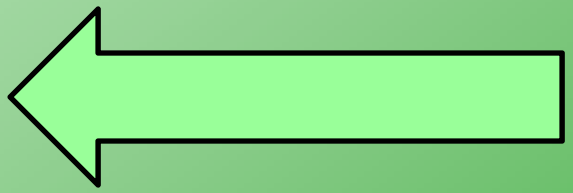
- **published 2009** by
  Graf, R., Michel,V., Roßberg, D. and Neukampf R.
  in Journal für Kulturpflanzen, 61 (7). S247-253, ISSN 0027-7479
  Verlag Eugen Ulmer KG, Stuttgart



A system to optimize forage crop variety trials…..
⇨ General principles <u>for all crops</u> ⇨ specific adapted

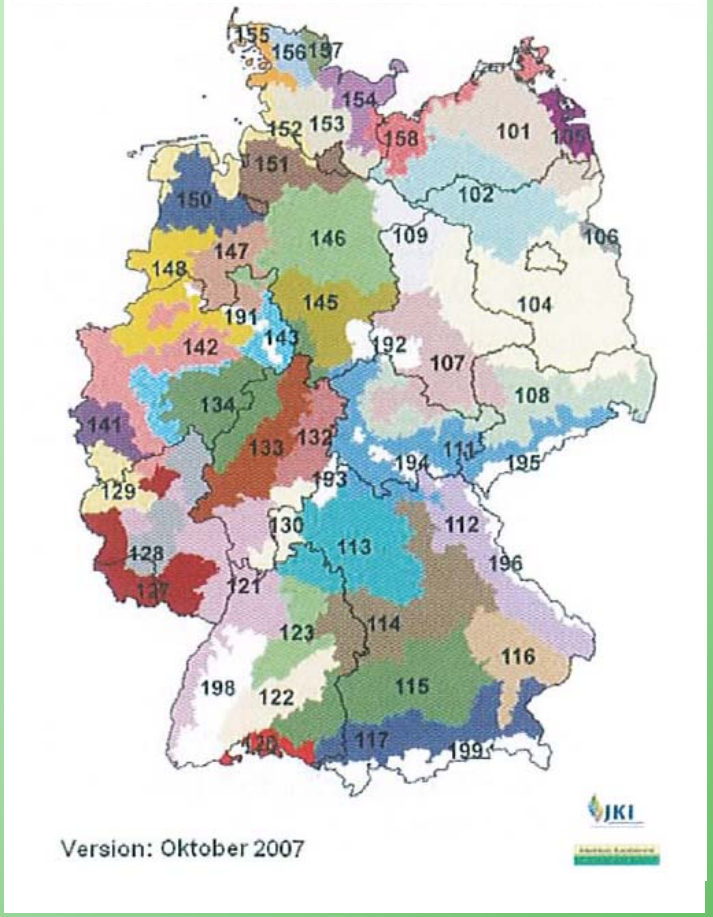
<u>Then</u> building up Germany into crop specific areas ("producing areas") by merging the unspecific areas

- **one map for each cereal**
- **7 maps for Oil and protein crops (winter rape, sunflower, field peas, faba beans, soja beans, blue lupin and flax)**
- **maize**
- **potatoes**
- **grassland**

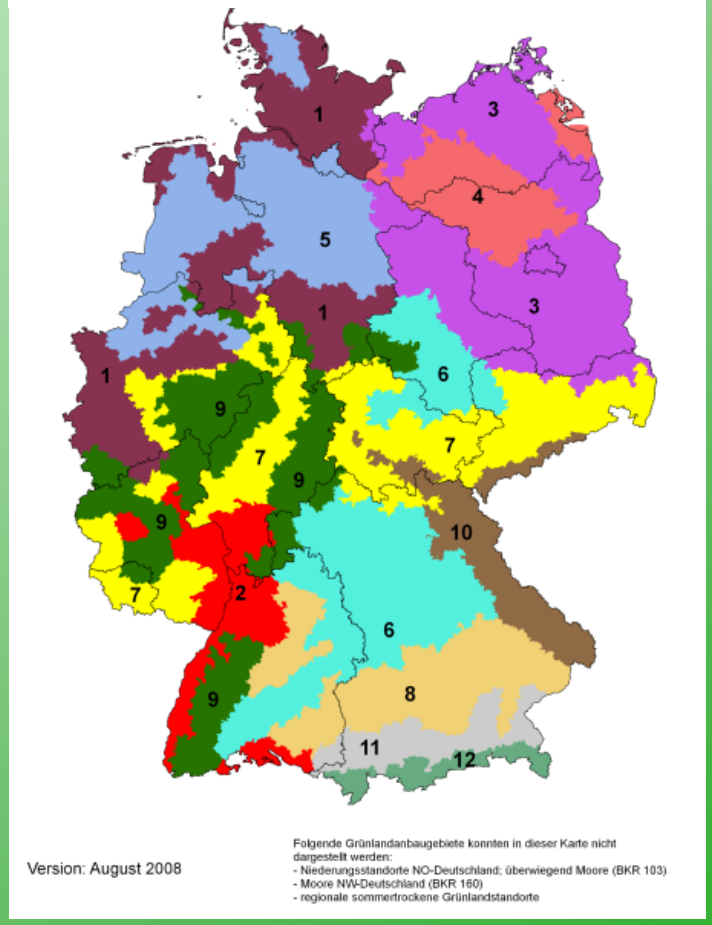


Crop specific implementation for Grassland - “producing areas” -

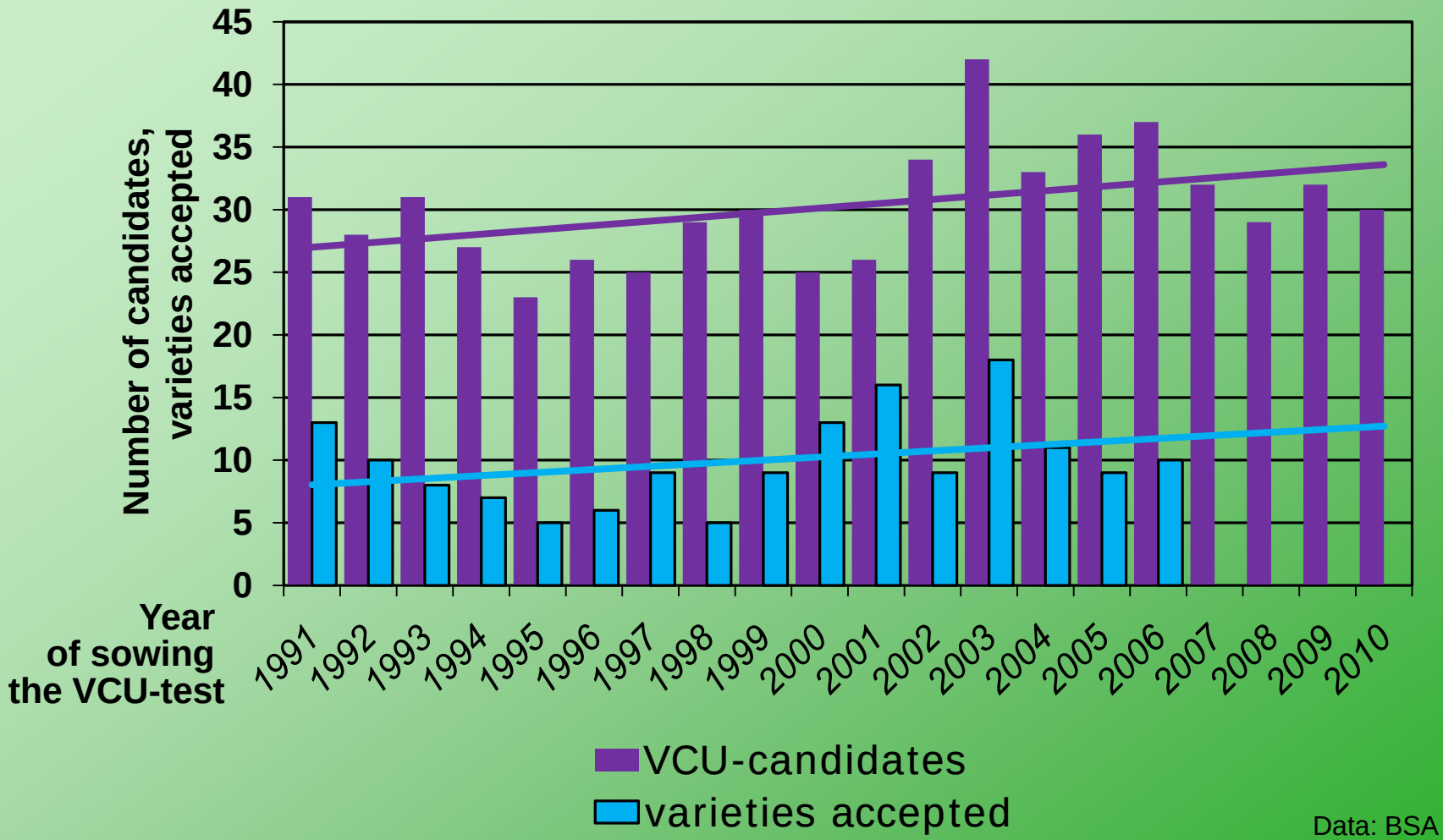
44 – (47) „soil-climate-areas“



12 (15) „producing areas“



Crop specific implementation for Grassland
- Optimizing costs to the core mandate -



Data: BSA

Crop specific implementation for Grassland
- Optimizing costs to the core mandate -

best by
dry matter yield

best by
„persistence“

New varieties checked at
all sites
(tested with high intensity)

put in the set of governmental advice

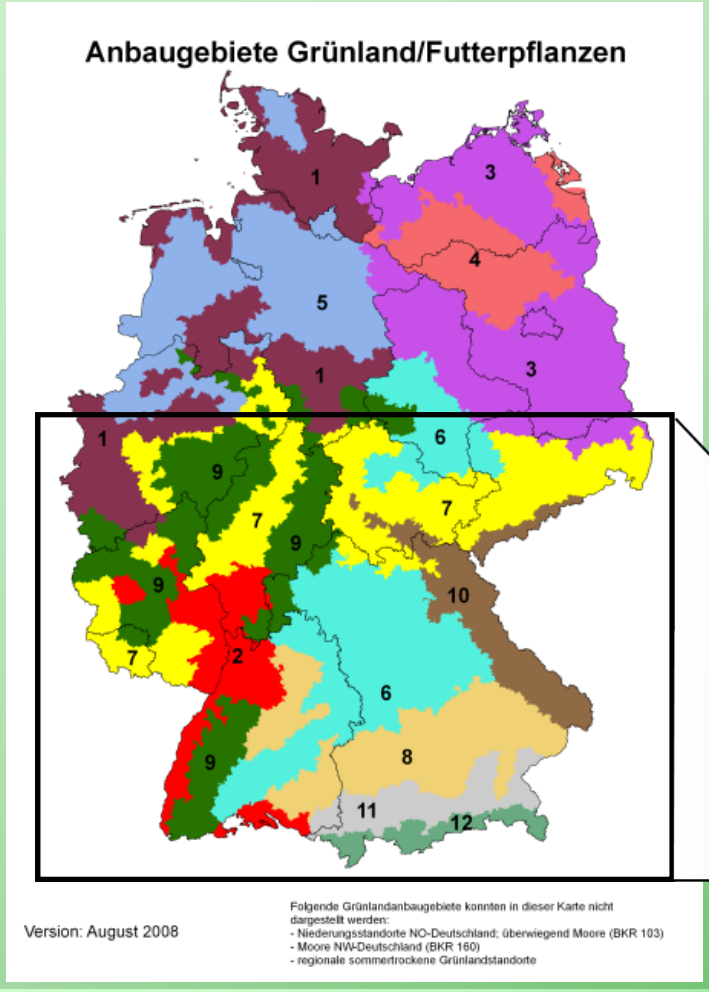
Details of this aspect are published in:
Hartmann, S. and Hochberg, H., (2007)
A new system of forage crop variety trials in Germany;
Proceedings of the International Symposium ' Agricultural Field Trials – Today and Tomorrow'
October 8th to 10th, 2007,
Stuttgart, Germany,
ISBN 978-3-86186-541-4, 52-55

presetting BSA*

Standard-varieties

* by an arrangement with the LDS; partly varieties in the set of governmental advice

Crop specific implementation for Grassland - “producing areas” -



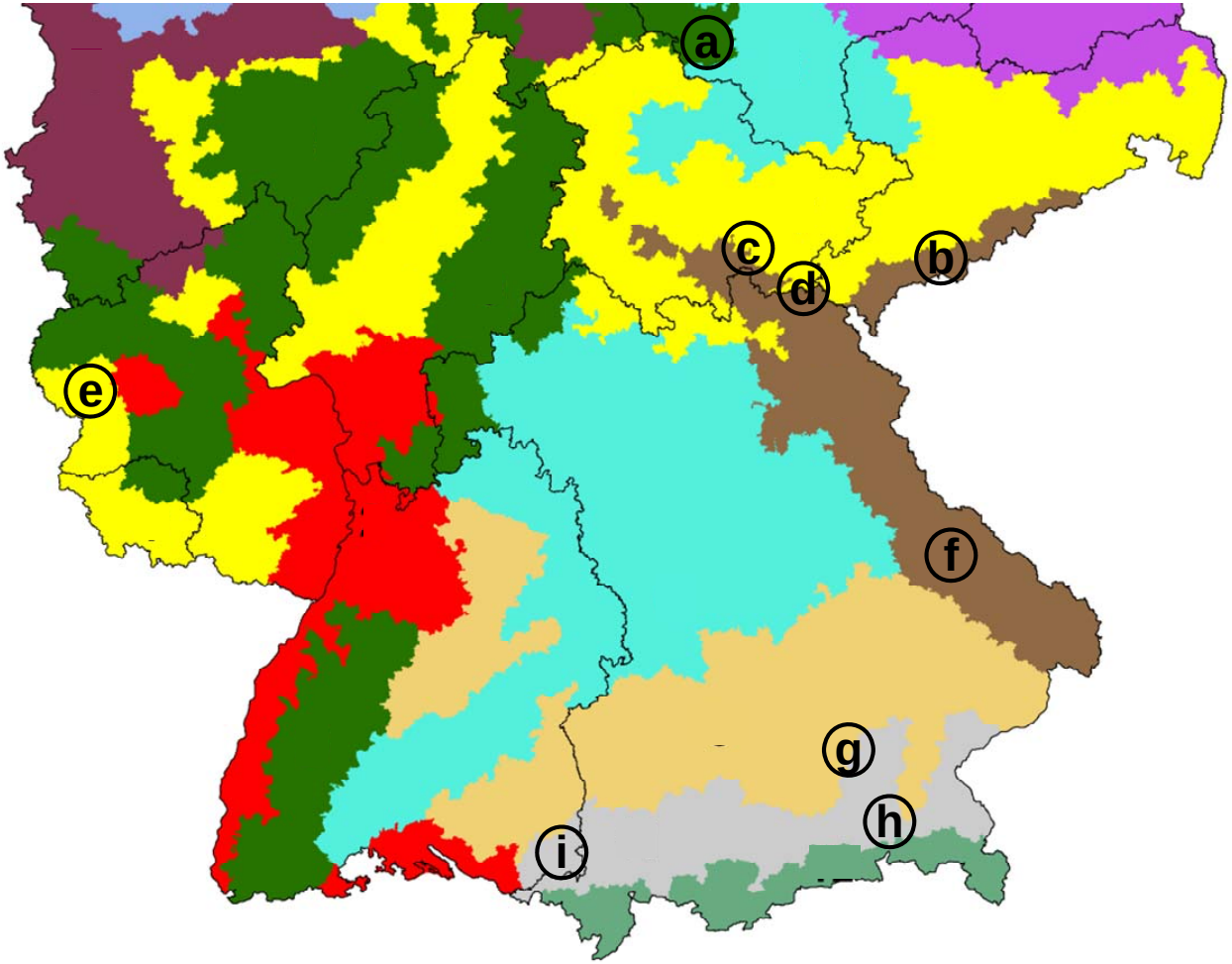
- Better sites, northwest
- Better sites. Southwest
- Lowlands, northeast (incl.)
- Sandy soils, northeast, drought
- Sandy soils, northwest, drought
- Sites with drought in summer
- Uplands in the middle of germany
- Uplands in southern of germany
- Mountain region of west germany
- Mountain region of east germany
- Prealpine region
- Alps

state group “middle-south” (producing areas 7 to 12)

Bavaria, Saxonia, Thuringia, Baden-Württemberg, [Saxony-Anhalt, Hesse, parts of North Rhine-Westphalia]

Crop specific implementation for Grassland

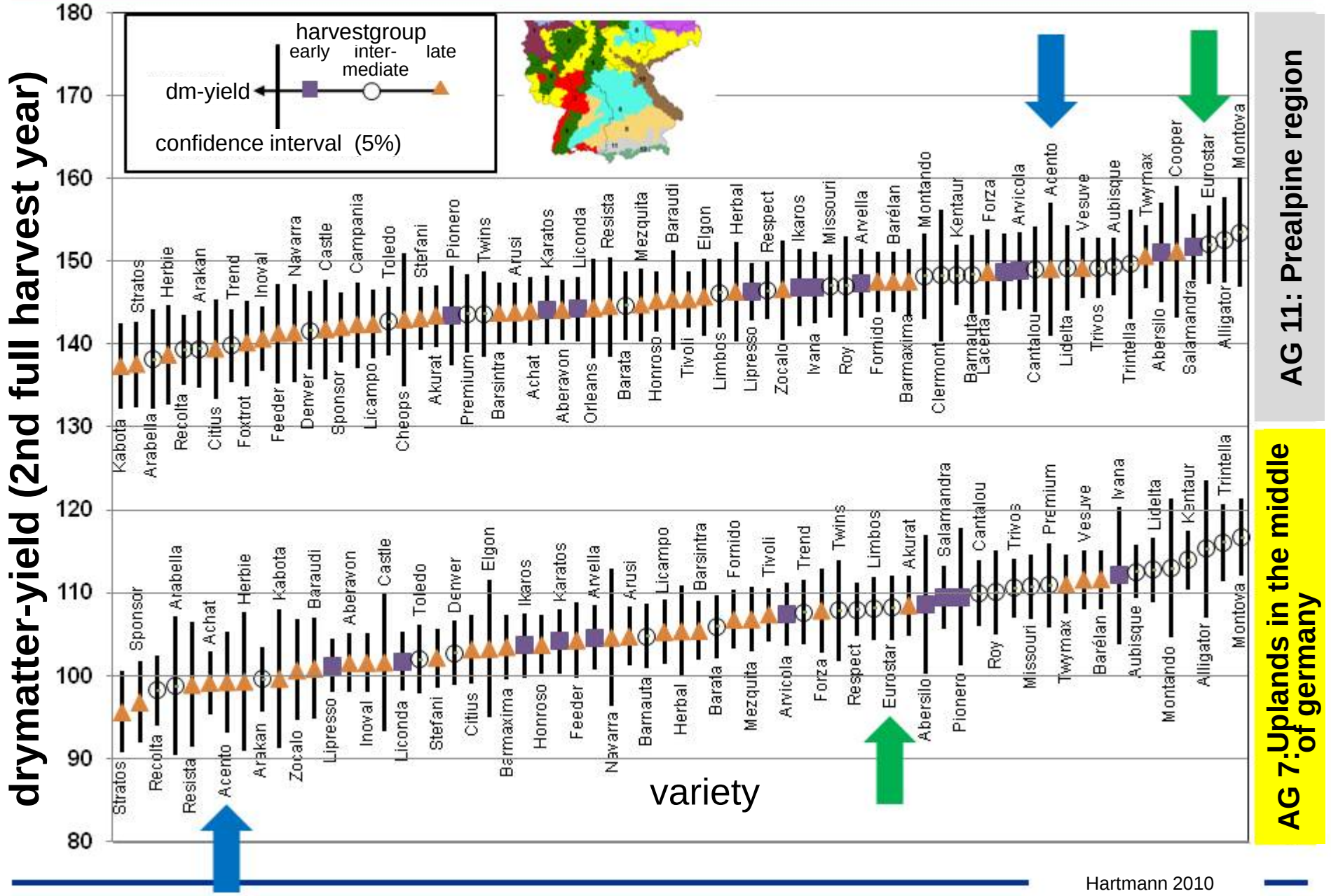
"producing areas" and sites of "middle-south" for perennial ryegrass



Versuchsorte

- ⓐ **Hayn** (Sachsen-Anhalt)
- ⓑ **Forchheim** (Sachsen)
- ⓒ **Burkersdorf** (Thüringen)
- ⓓ **Oberweißbach** (Thüringen)
- ⓔ **Kyllburgweiler** (Rheinland-Pfalz)
- ⓕ **Steinach** (Bayern)
- ⓖ **Osterseeon** (Bayern)
- ⓗ **Fussen** (Bayern)
- ⓘ **Kißlegg** (Baden-Württemberg)

new statistical analysis shows big regional differences in variety performance

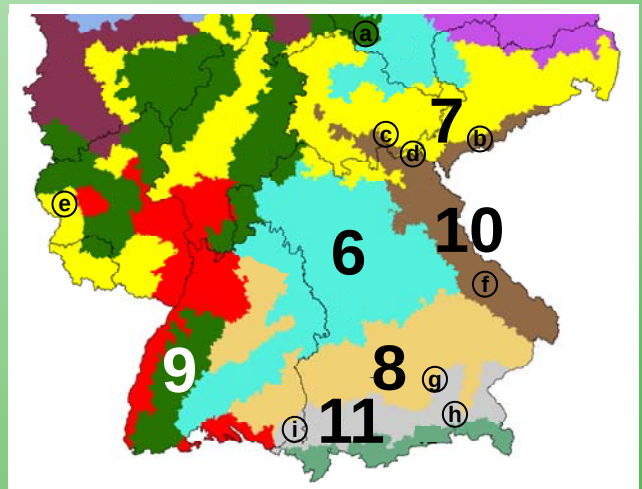


new statistical mothods: closing the gap between requirement and reality

correlation between production areas

	production area						
production area		6	7	8	9	10	11
	6		0,244	0,324	0,155	0,345	0,287
	7	0,244		0,529	0,253	0,562	0,468
	8	0,324	0,529		0,336	0,746	0,620
	9	0,155	0,253	0,336		0,357	0,297
	10	0,345	0,562	0,746	0,357		0,660
	11	0,287	0,468	0,620	0,297	0,660	
sites:				1		3	2

	supplemental production area						
main production area		6	7	8	9	10	11
	6		X	X			
	7	X		X	X		
	8					X	X
	9		X			X	
	10		X	X			X
	11			X		X	
equivalents:				1		2,238	1,240 = 4,478



- 6 Sites with drought in summer
- 7 Uplands in the middle of g.
- 8 Uplands in southern of g.
- 9 Mountain region of west g.
- 10 Mountain region of east g.
- 11 Prealpine region

new statistical mothods: closing the gap between requirement and reality

	(equivalent) sites per production area	
production area	**until 2006**	**„Hohenheim-Gülzower Serienauswertung“**
6 Sites with drought in summer	1	1,56
7 Uplands in the middle of germany	1	2,03 (1 site cancelled in target area)
8 Uplands in southern of germany	1	4,48
9 Mountain region of west germany	1	2,32
10 Mountain region of east germany	3	5,63
11 Prealpine region	2	4,60

But always keep in mind: dry-matter yield is only one part of recommendation

yield

⇨WP 6 middle – south [1)]

⇨ LSV 10 middle – south [2)]

persistence

⇨SFG/WP 3 middle – south[1)]

⇨ SV 5 Bavaria [2)]

variety profiles

increasingly different

permanent ⇔ forage grassland

resistence

⇨ WP specific trials[1)] 4 BRD

⇨ + alle resistence data from WP, LSV und SV

quality

⇨ up to now special trials

⇨ in near future NIRS

1) „major“ species sown every year; „minor“ every third year

2) „major“ species sown in even years; „minor“ every third year

Thank you for your kind attention!

The Core Team “Middle - South”:

Baden-Württemberg:

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Saxonia

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Thuringia

⇨ **Hegner, H., Hochberg, H.**

Data also from: Hesse, North Rhine-Westphalia, Rhineland-Palatinate and Saxony-Anhalt