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# **IHSG Workshop**

## **6-9 July 2005**

### **Weed Control – Genetic purity**

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In Denmark it is a public concern to reduce pesticide consumption

- a lot of herbicides were prohibited or restricted in use during the 90'ies
- many herbicides could not fulfil data requirements
- pesticide action plan III is aiming at a reduction of pesticide use to a treatment frequency index (TFI) of 1,7

As minor crops the interest from companies in registering herbicides in seed crops is low

- Search for new herbicides for seed crops
- Optimizing herbicide efficacy

# The Danish concept



Combining the results of pot experiment and field experiments in the search for new possibilities for herbicide use in seed crops and in optimizing the efficacy

## Pot experiments

**Benefits :** Possibility of including many treatments  
Controlled conditions  
(moisture, nutrients, no competition).  
Primary useful at early growth stages  
Low cost

**Limitations:** Only short time effects can be assessed  
Higher efficacy compared to field conditions



# Pot experiments are valuable in:

- Screening of herbicide efficacy (comparing herbicides or species/ cultivars, selectivity index)
- Influence of growth stage
- Influence of sow depth
- Influence of climatic conditions
- Influence of soil moisture



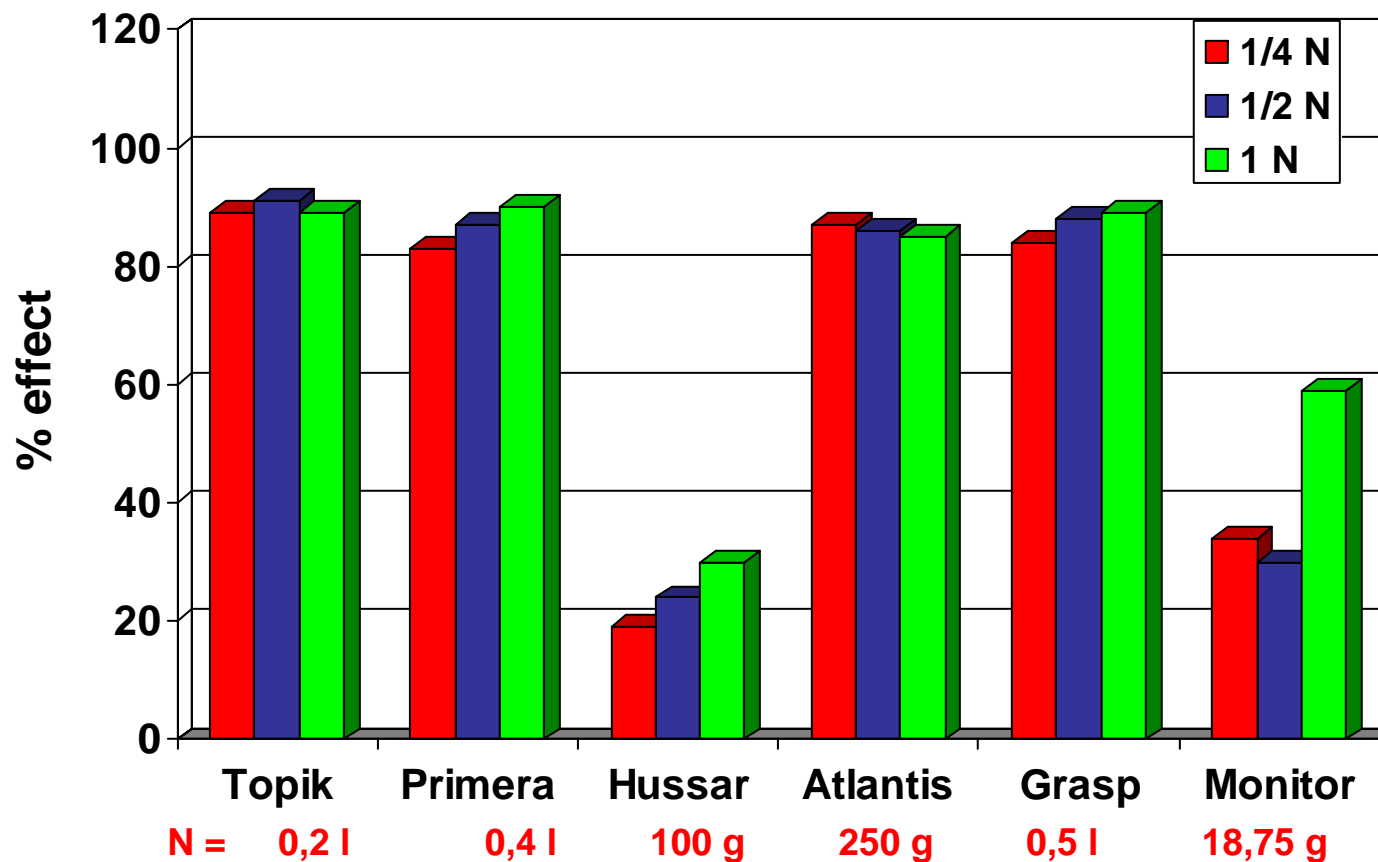


# Results of pot experiments have to be confirmed in field experiments

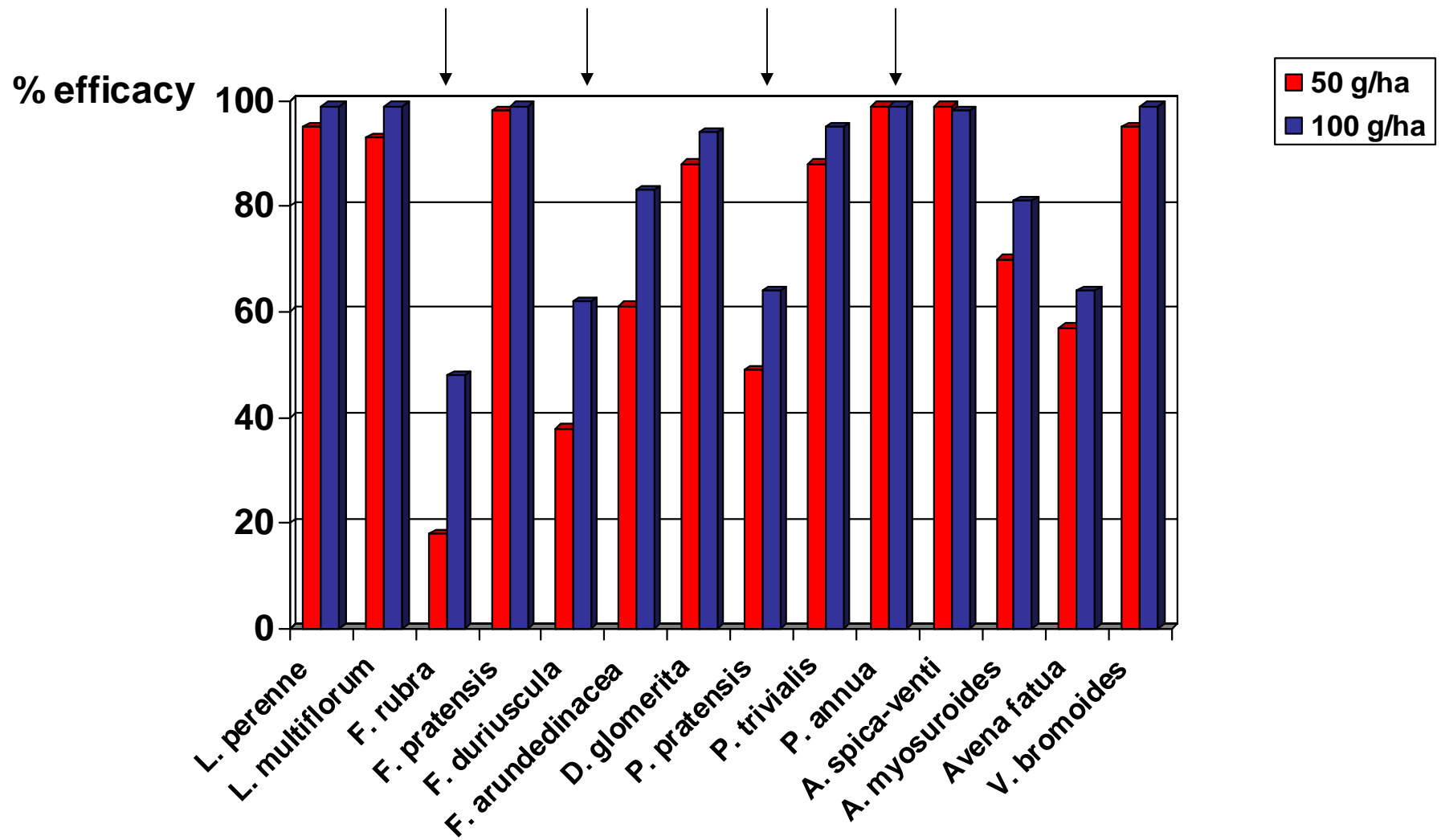
- Assess the activity under natural conditions
- Ensure selectivity especially seed productivity

According to our experience it is relevant to test treatments with less than 40% effect on the crop in field experiments

# Efficacy on *P. pratensis* (smoothstalk meadow grass) (4 leaves)



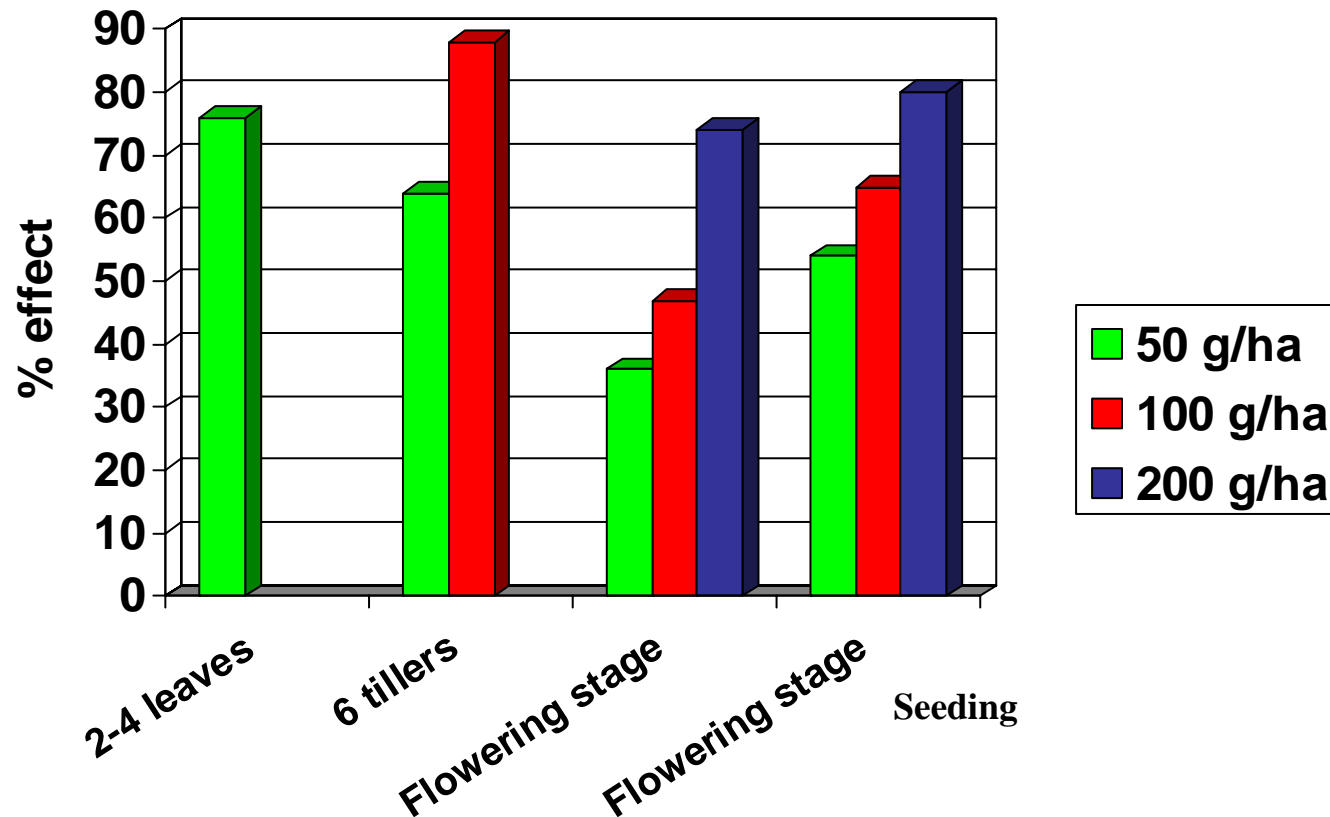
# Efficacy / selectivity of Hussar (iodosulfuron) (4 leaves)



# Efficacy of Hussar on *P. annua* (annual meadow grass) – influence of growth stage



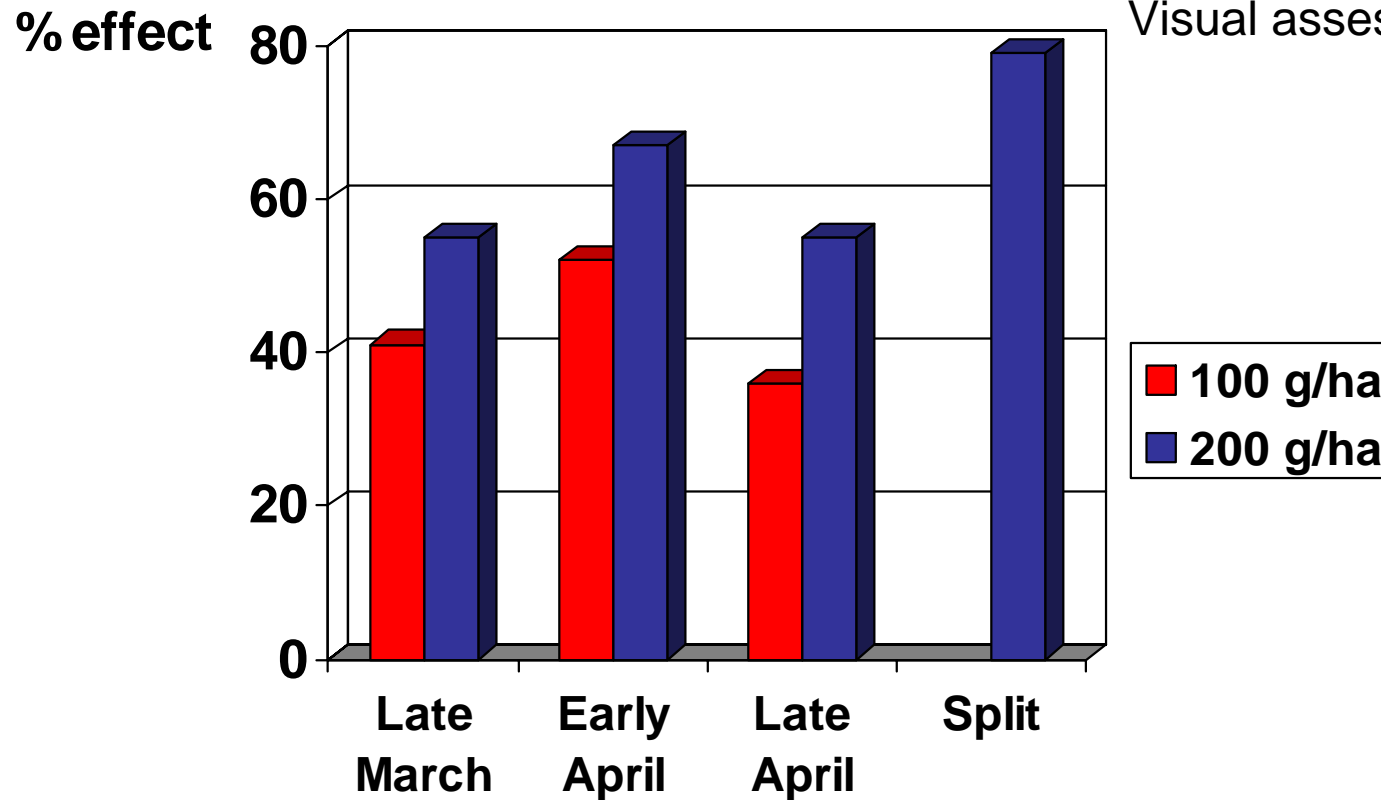
# Efficacy of Hussar on *P. annua* (annual meadow grass) – influence of growth stage



# Efficacy of Hussar on *P. annua* – field trials



Means of 2-8 trials in  
*F. rubra* and *P. pratensis*.  
Visual assessment 6 WAT



## Hussar - conclusion

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Application early April (split 10 to 14 days interval)

Dose: single application=100-200 g/ha  
split application= 2 x 100 g/ha

Expected efficacy level (*P. annua*):  
50-80% on biomass  
60-80% on seed production

Crop tolerance:

Temporary retardation, reduced height

*F. rubra*: 5-15 % yield increase (no lodging at flowering stage)

*P. pratensis*: 2-10% yield loss in 50% of the experiments

# Genetic purity

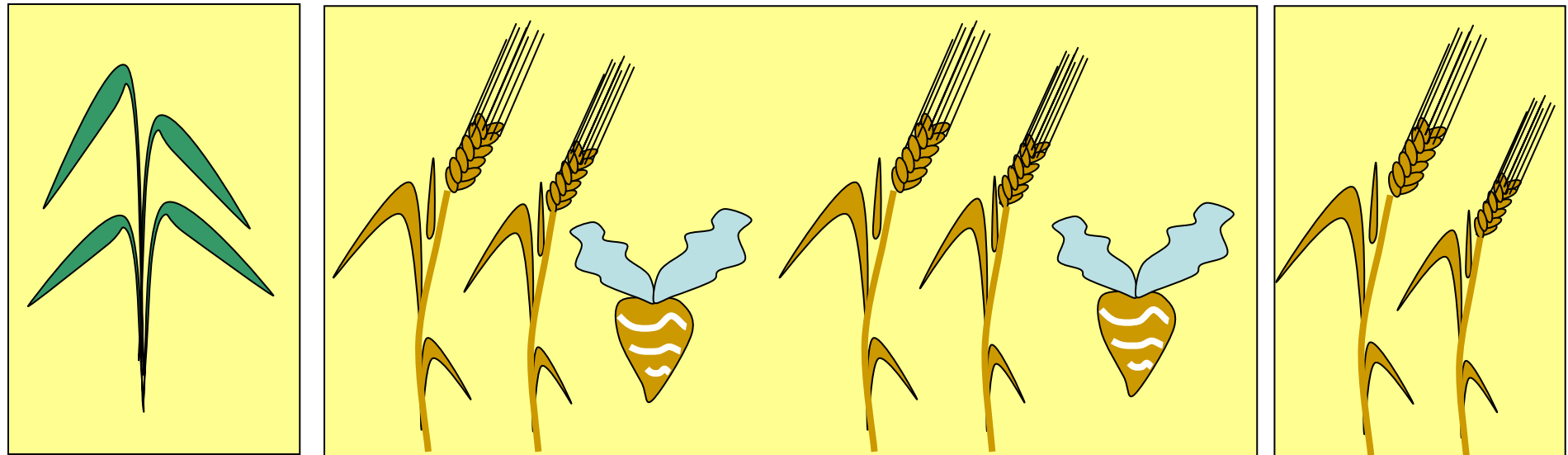


Control of old grass plants

Soil tillage - Time and type

False crop rotation

False seedbed



Seed crop

Rotational crop

Establish

new grass crop

Year: 1

2

3

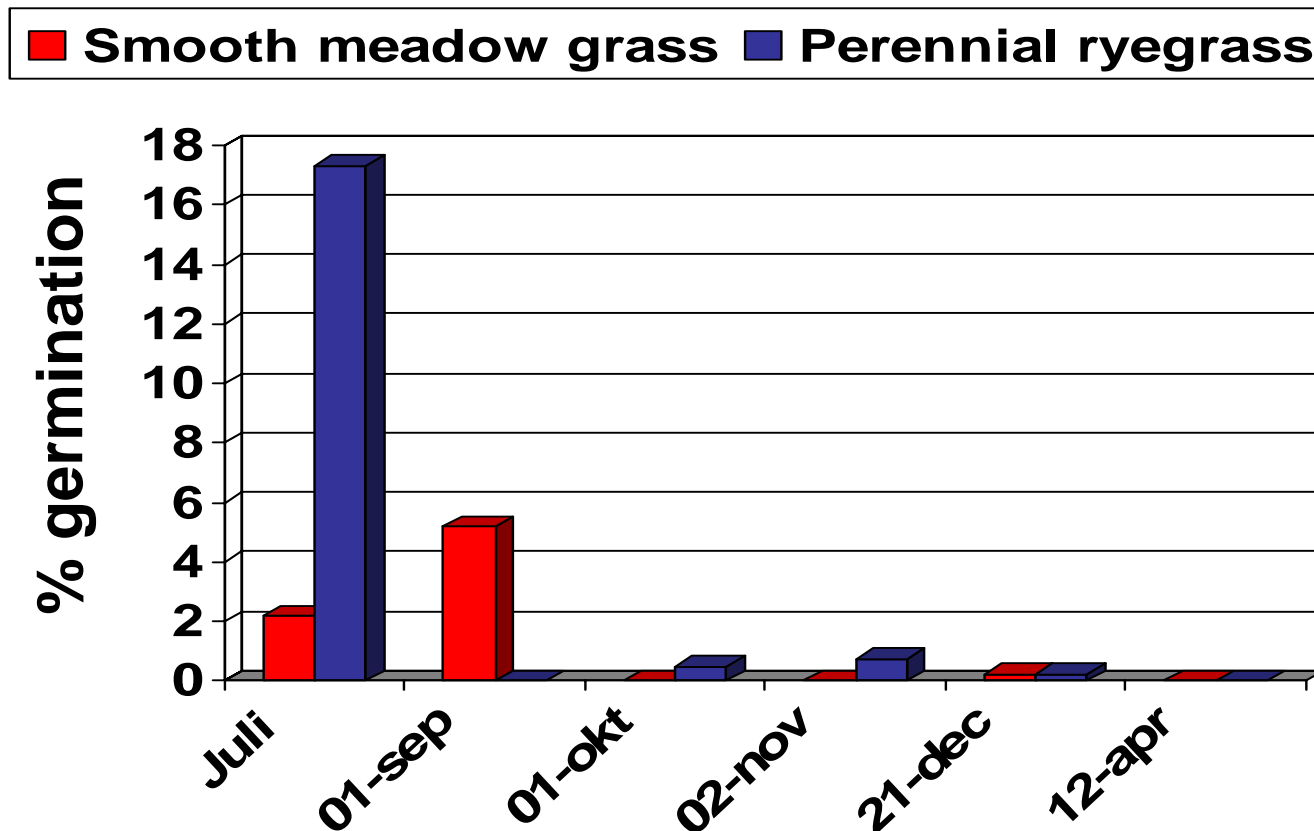
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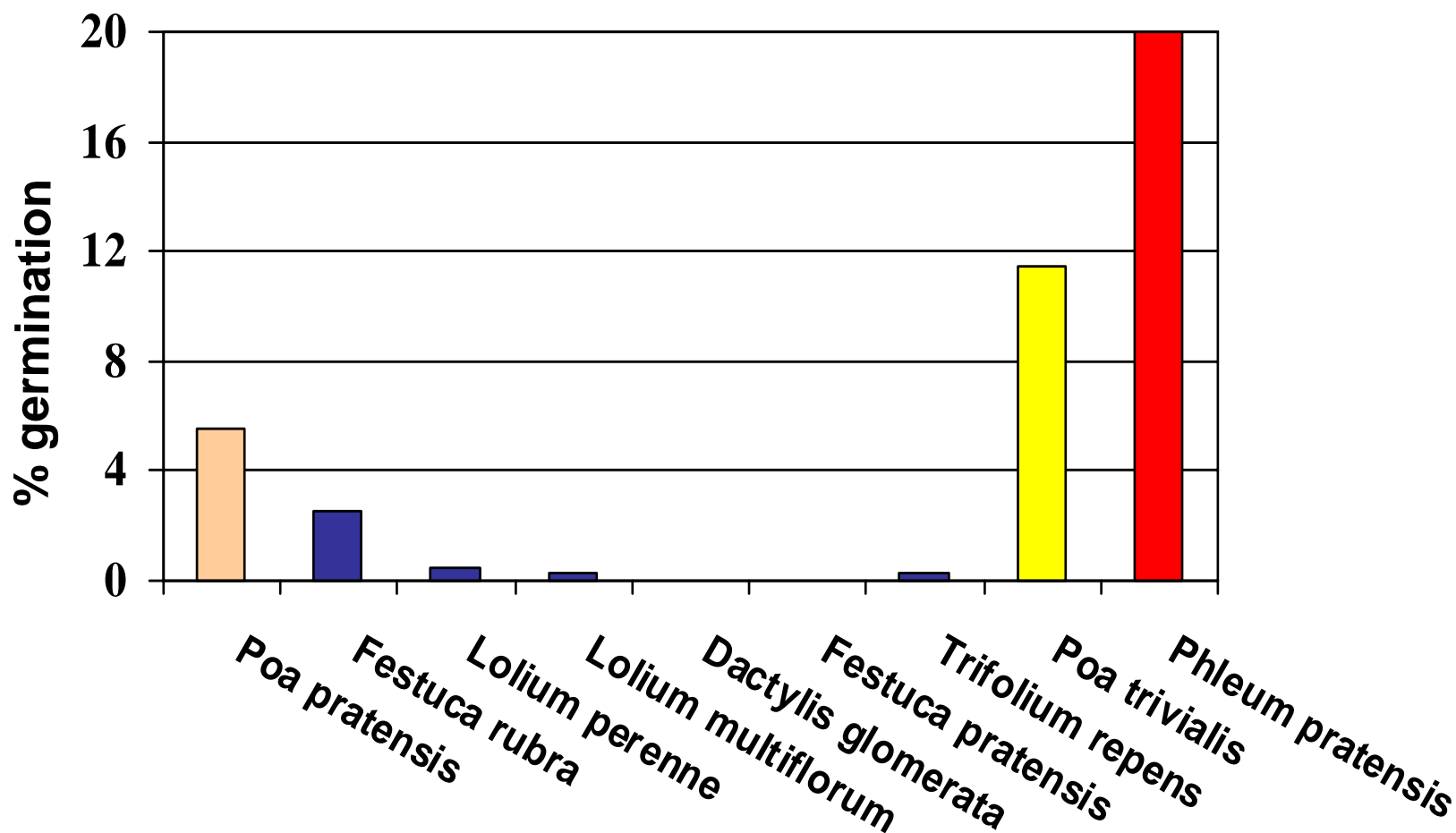
## Survival of grass seeds after 1 year in the field

Influence of time for bury. Seeds applied to surface in July 1998,  
At monthly intervals buried to ploughing depth. Germination tested  
autumn 1999





# Survival of seeds after 3 years storage in 25 cm's depth



# How to prevent contamination with previous grown varieties



## **Post harvest**

- 1. Leave the stubble undisturbed as long as possible**
- 2. Control old plants effectively before ploughing**

## **Avoid false crop rotation**

- 1. Grow a spring sown crop after the seed crop**
- 2. Avoid seed production of volunteers in rotational crops**
- 3. Chose an effective herbicide in an effective dose**

## **Prior to establishment of a new grass seed crop**

- 1. Use false seedbed in order to destroy remaining viable seeds**

# Vulpia bromoides - biology



- Annual weed
- Autumn germination
- Difficult to distinguish from red fescue
- Flowering in June – July
- Difficult to separate from red fescue, meadow fescue, hard fescue
- Infestation in winter wheat



# Vulpia bromoides – non chemical control



- Cut before seeding
- Hand weeding
- Separat harvest of infested areas
- Grow spring sown crops

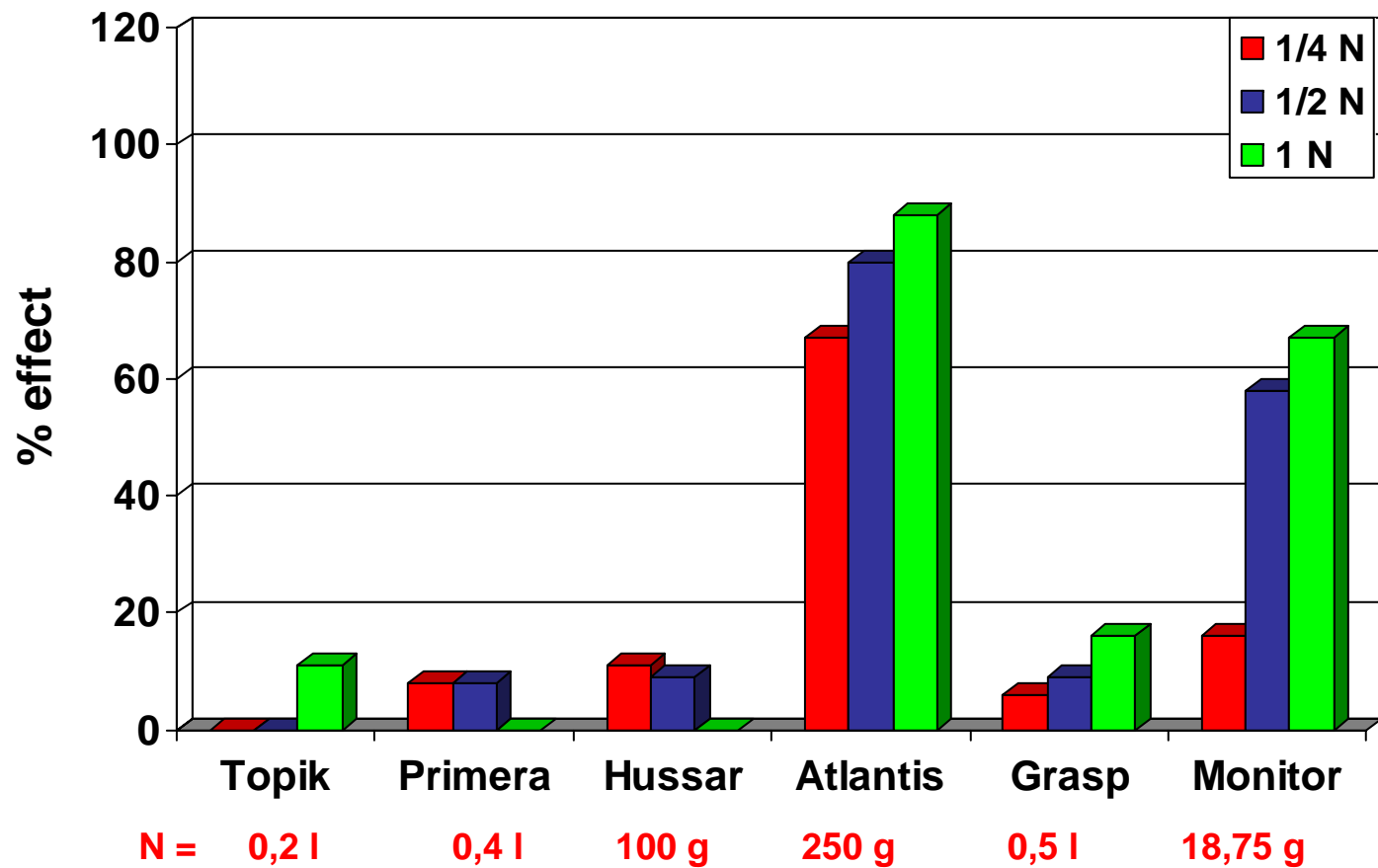


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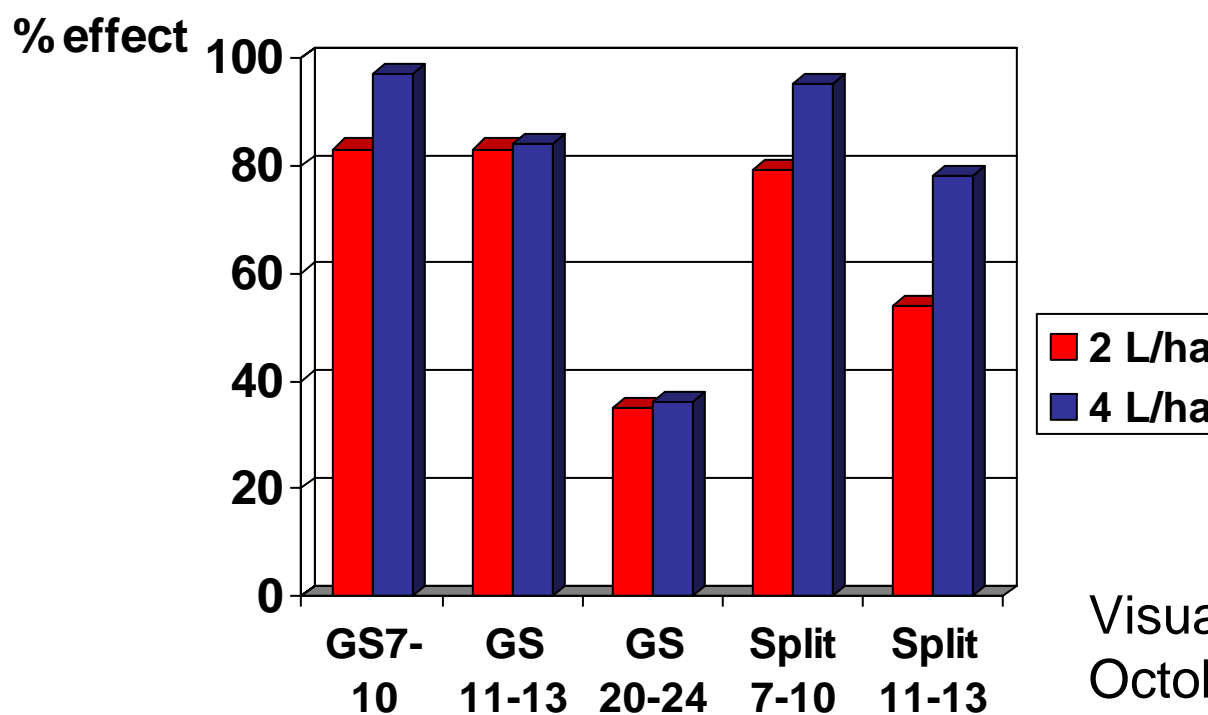


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# Efficacy on *V. bromoides* (4 leaves)



# Vulpia bromoides – efficacy of Stomp (pendimethalin)



Visual assessment  
October  
Mean of 3 trials

Thank you for your attention

