

Integrated pest management
options to improve maize forage
yield and quality for small-scale
dairy farmers in central Kenya

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Project's aims include...

- **To assess effects of**
 - maize streak virus disease and weeding regimes on forage yield and quality
 - the animal on disease and weed transmission
- **To quantify**
 - Economic implications of diseases and weeding regimes on maize grain and forage.
- **To promote**
 - Sustainable IPM in maize forage smallholder dairying in the central Kenyan highlands.

This paper ...

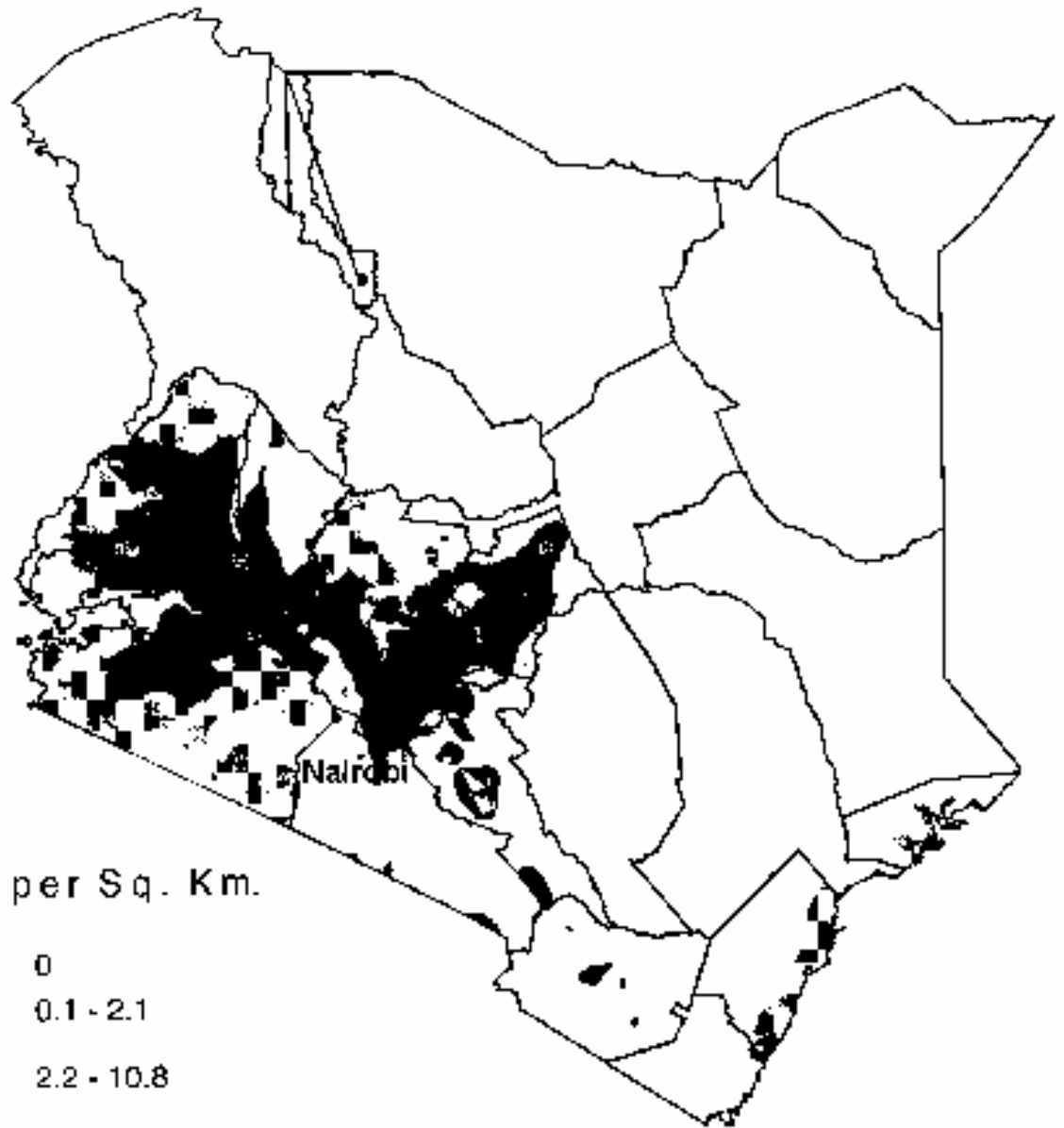


- Importance of maize as forage for smallholders
- Impact of weeds and diseases on forage yield and quality
 - Farmers' perceptions
 - Experimental studies
- Integrated control

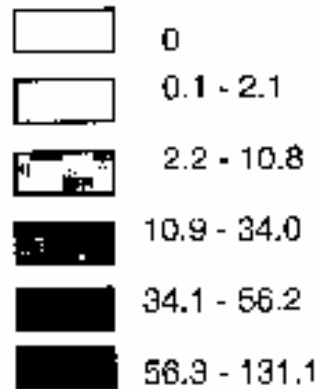
Maize research in Kenya should not ignore maize forage.

Kenyan dairy herd density.

From,
Omore et al.
1999,
Smallholder
Dairy
Project RRA



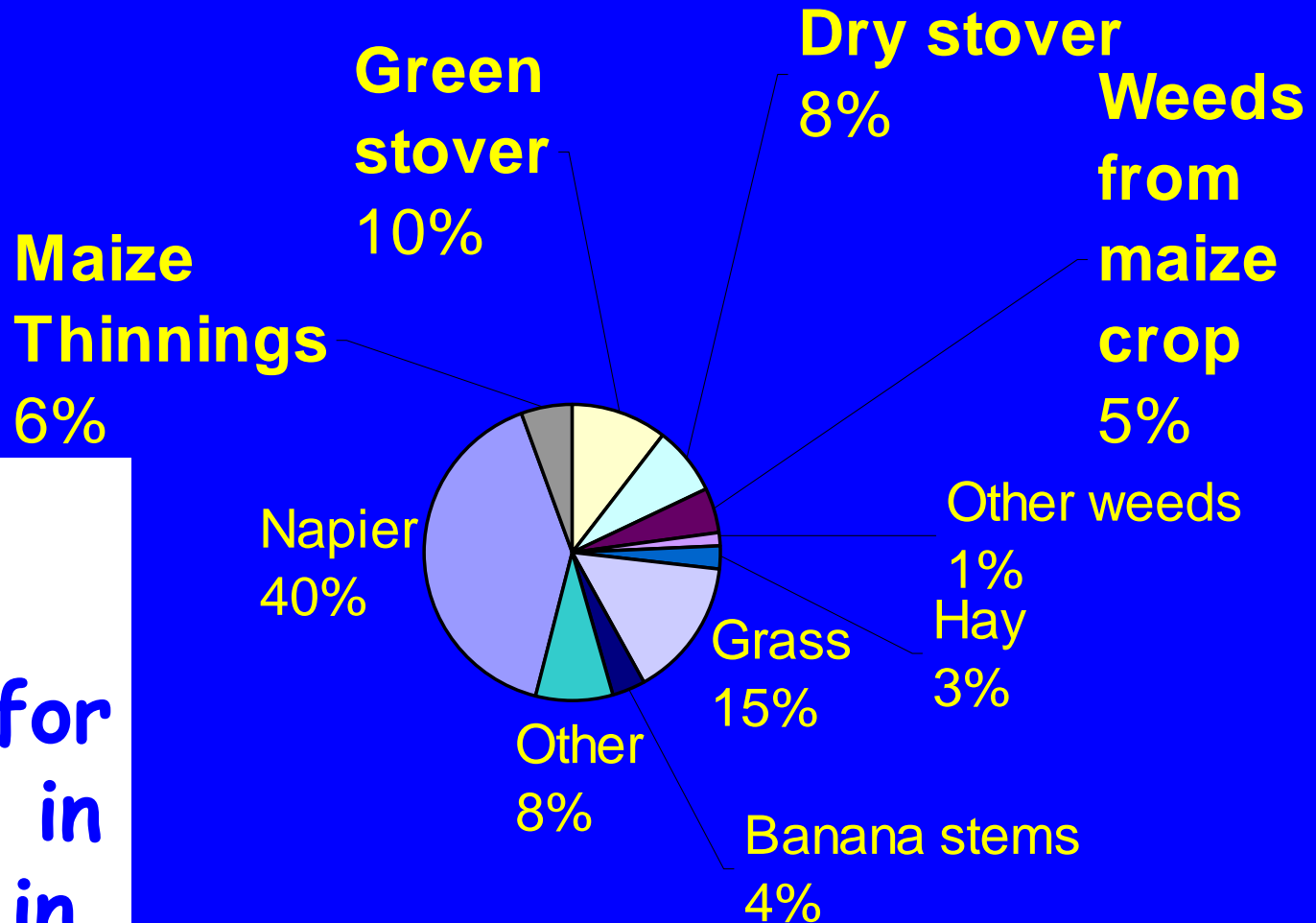
No. per Sq. Km.



In Kiambu District ...

- Dairy livestock ownership is a crucial element in poverty alleviation for many in Kiambu (population 744010).
- 48% of 189709 households stall feed dairy cattle.

**Annual
usage
scores for
forages in
Kiambu in
2001
(Project RRA)**



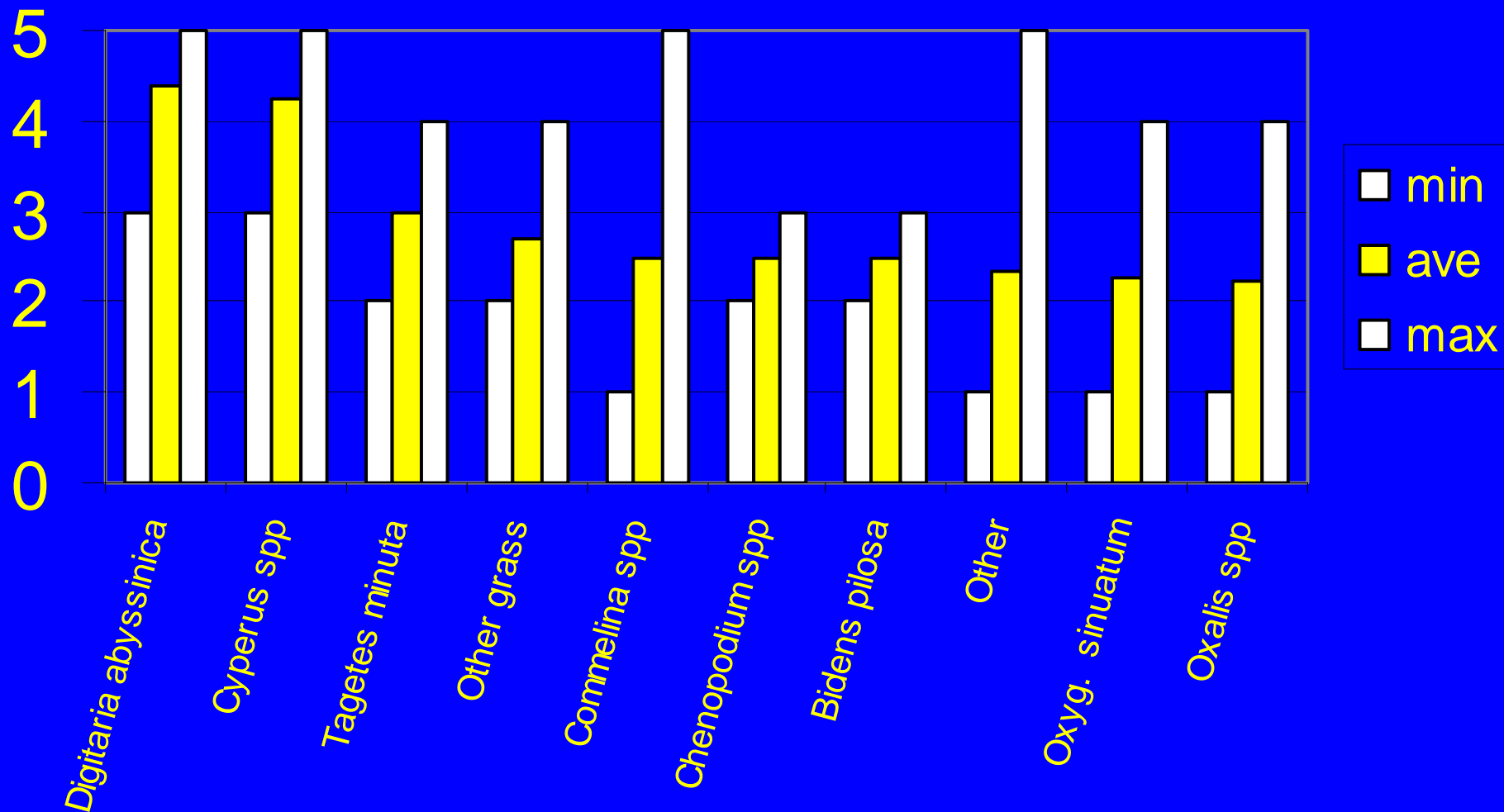
Forage supplies in Kiambu

- Napier grass is the main forage contributing 40% of feed supplies
- The maize crop itself (thinnings and stover) contributes 24% to feed supplies
- Weeds in the maize crop are 5%
- **Forage is in short supply especially from January to March.**

*Project's RRA (McLeod *et al.*, 2001).

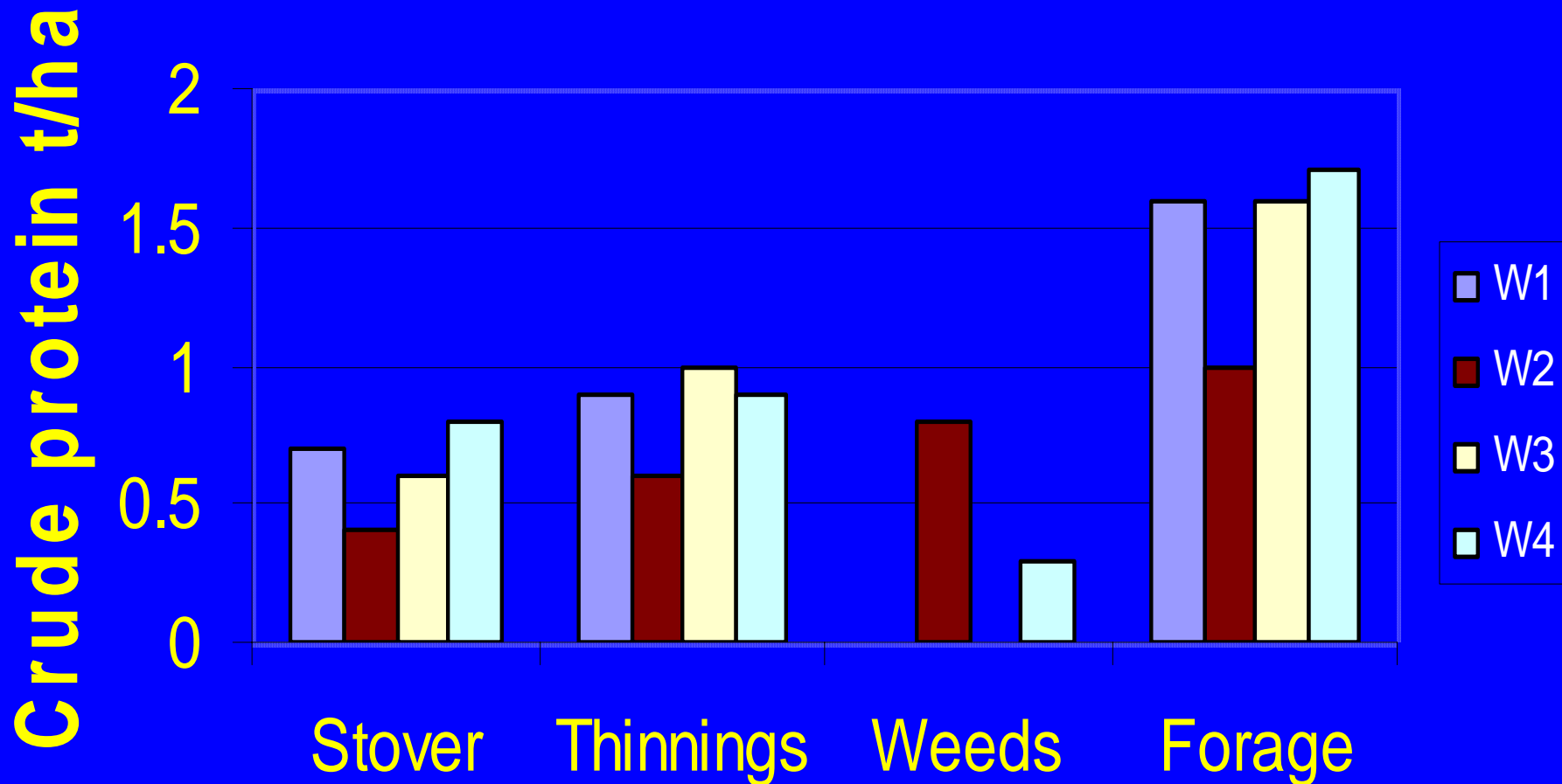
Impact of weeds on stover yield

Farmers' perception: 0 = no effect; 5 = high impact



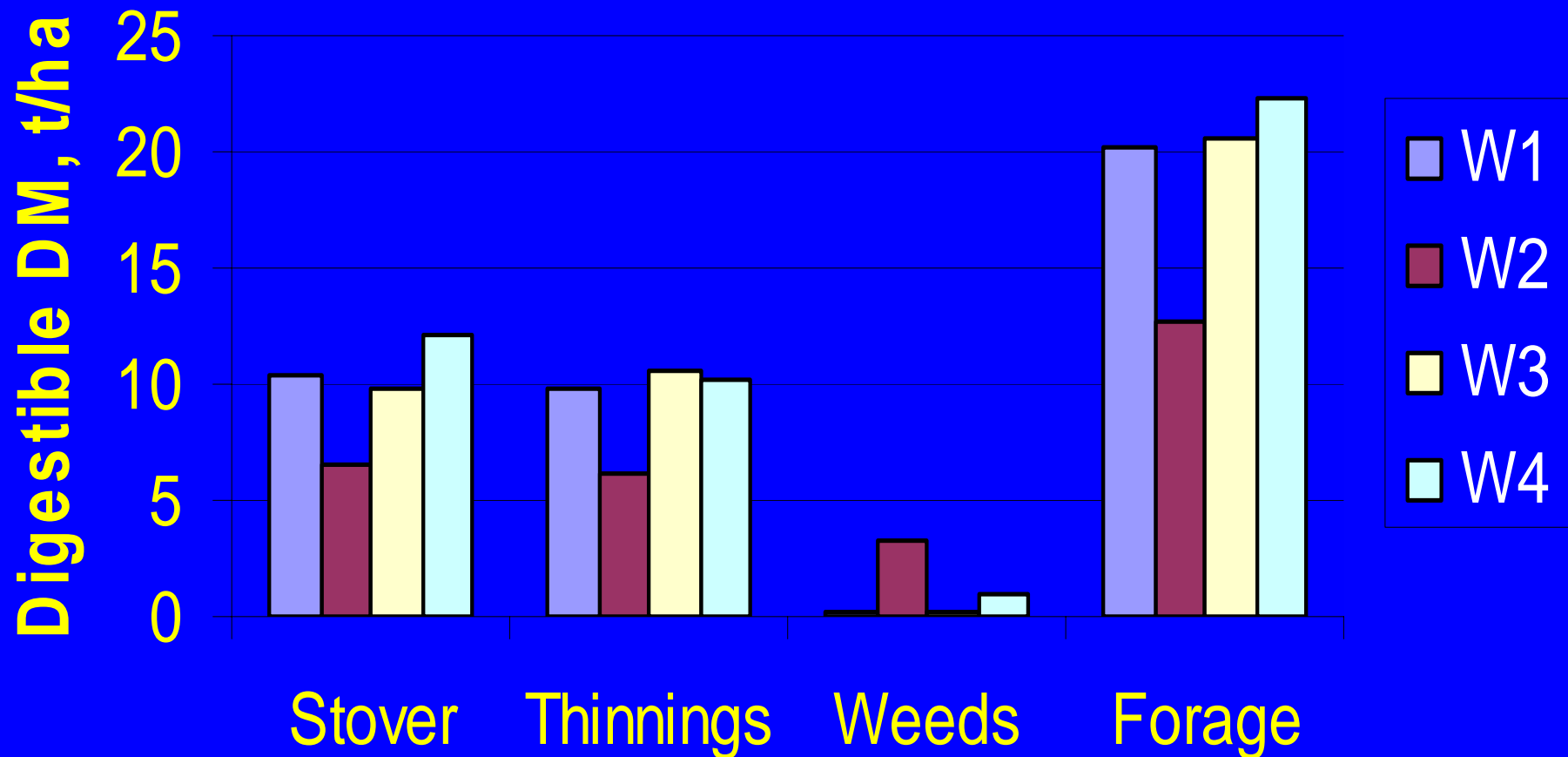
Impact of weeds on crude protein

W1: weed free W2: unweeded
W3: herbicide W4: handweeded

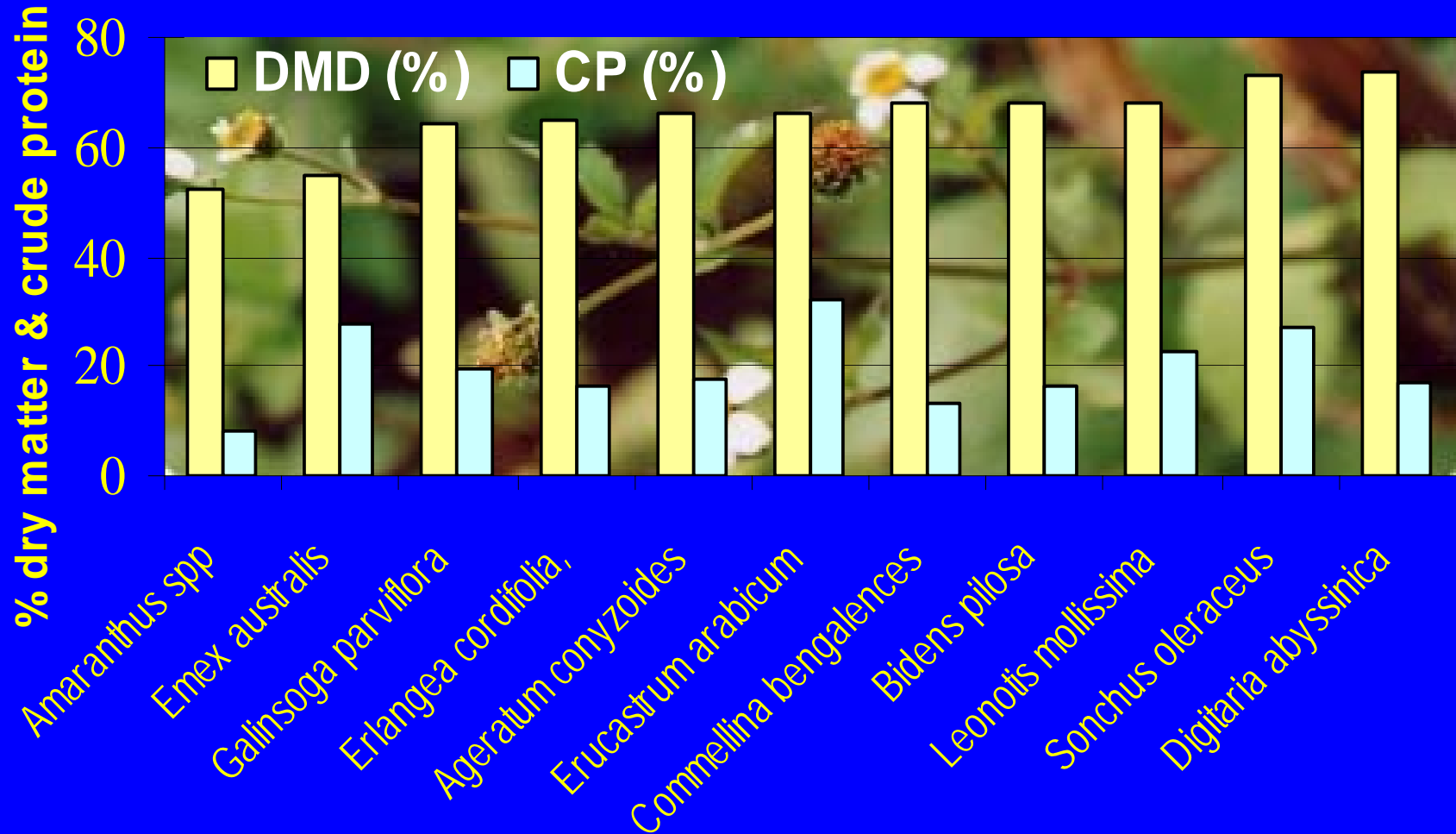


Impact of weeds on digestible dry matter

W1: weed free W2: unweeded
W3: herbicide W4: handweeded

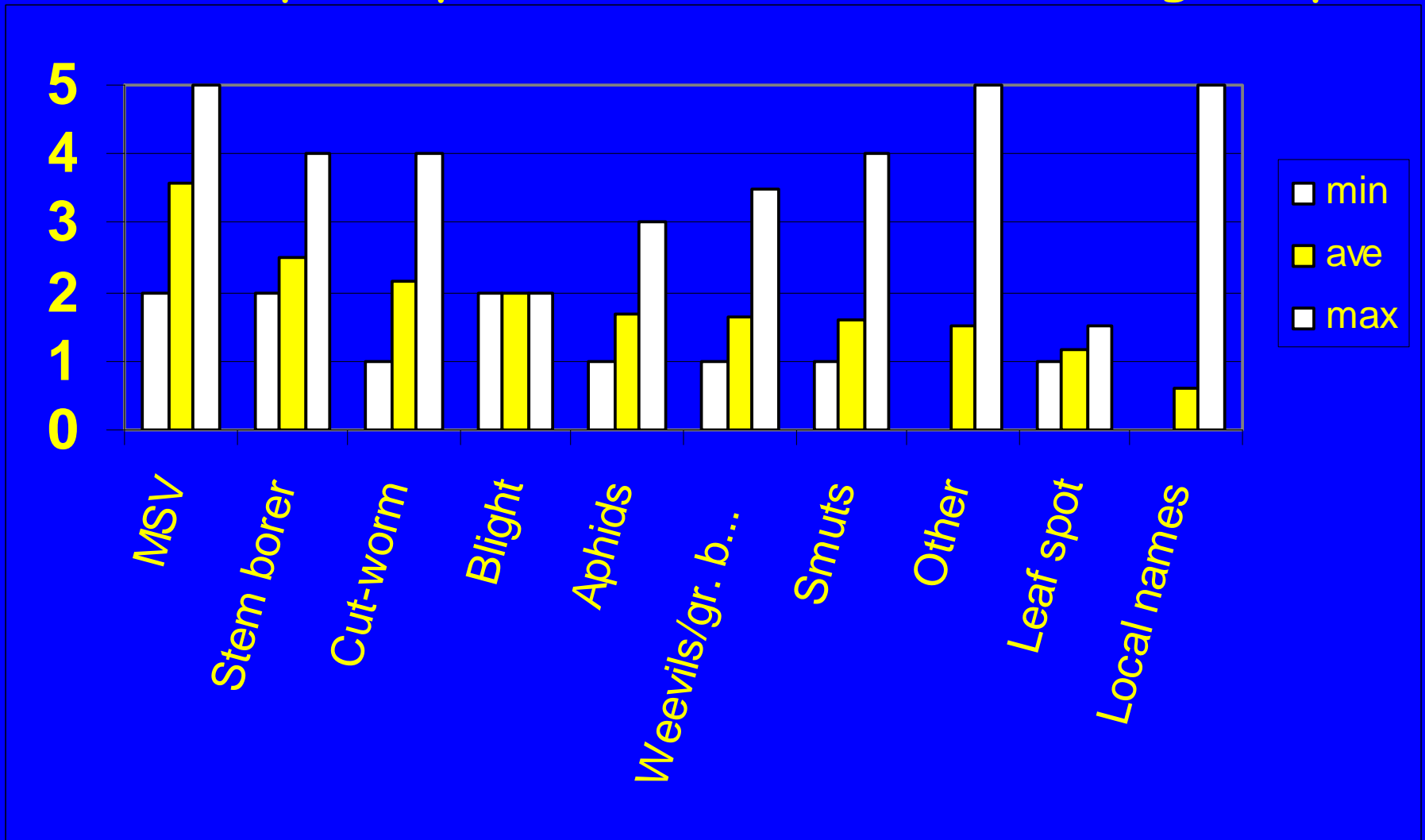


Digestible dry matter and crude protein (%) of some edible weeds



Impacts of pests and diseases on stover yield

Farmers' perception: 0 = no effect; 5 = high impact



Maize streak virus disease was ranked as the most serious in effect on yields and the most difficult to control.



Streaking



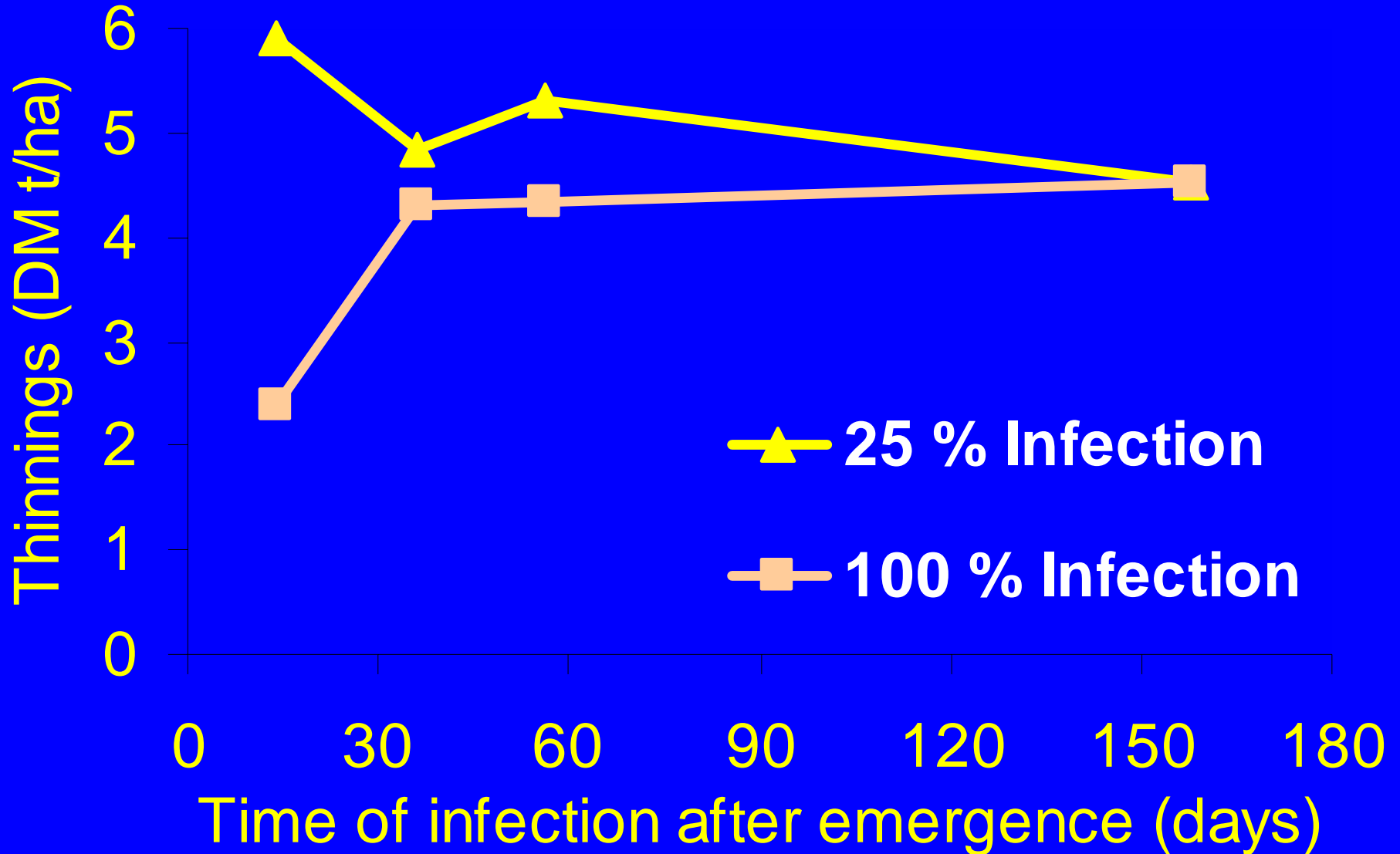
Stunting

Infecting young maize plants with maize streak virus disease

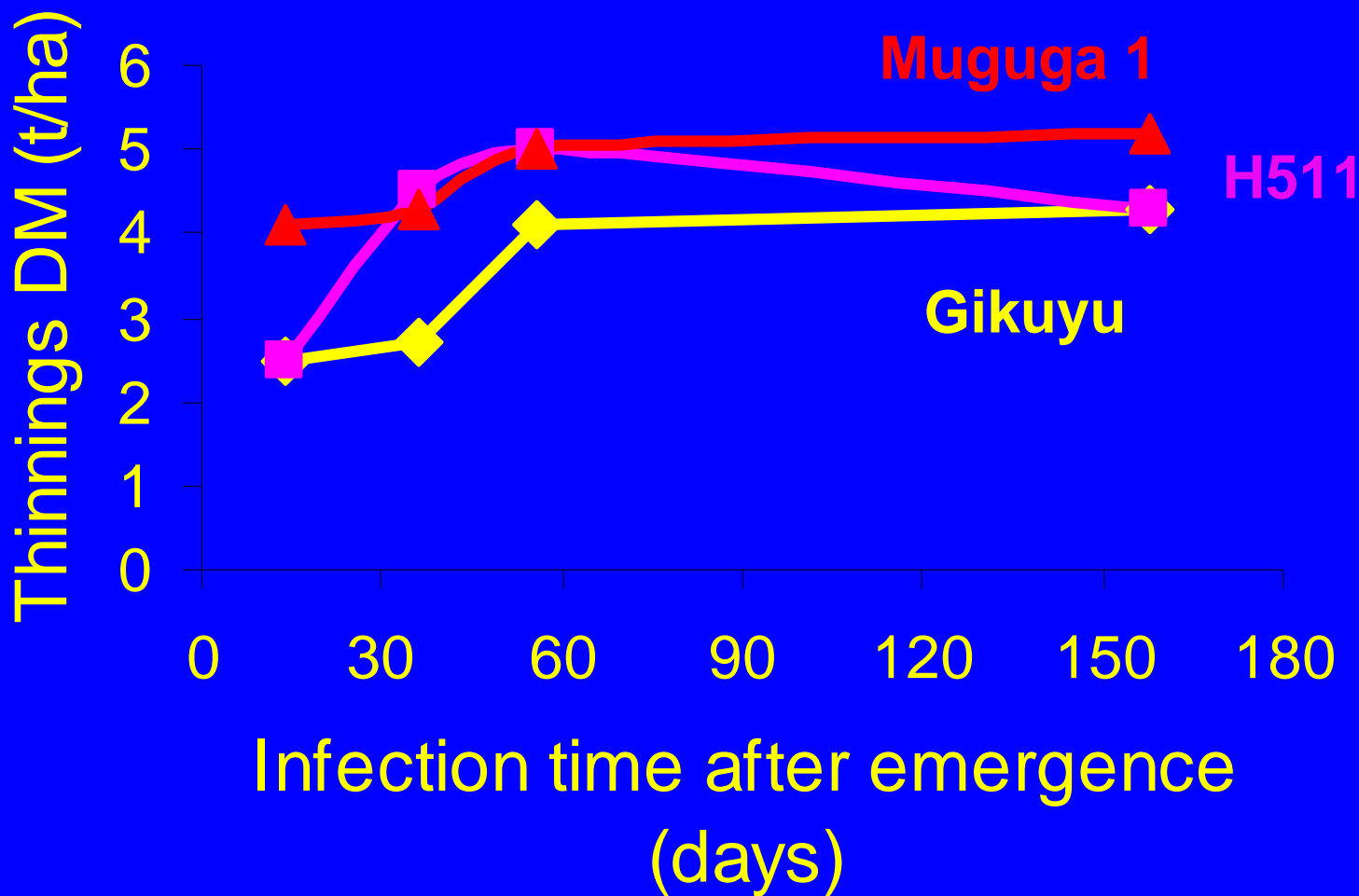
Vials contain leaf hoppers fed previously on infected plants



Effect of level and time of maize streak infection on thinnings yield



Time of maize streak infection on thinnings yield of maize cultivars



Conclusions

- Napier grass is the main forage but the maize crop (thinnings, stover and weeds) contributes 29% to forage
- Farmers in Kenya clearly perceive MSVD and weeds as major problems
- Resistant cultivars and weeding can alleviate effects
- Participatory research is continuing to add habitat management (push-pull) system for maize stalk borer control

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