



Multispecies Sward Performance

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Farm to Fork

2030 targets

Increase agriculture, fisheries and aquaculture GHG reduction target¹ to over

50%

UP FROM PREVIOUS 40% TARGET

25%

of agricultural land to be used for organic farming¹

COMPARED TO THE CURRENT 7.5%

50%

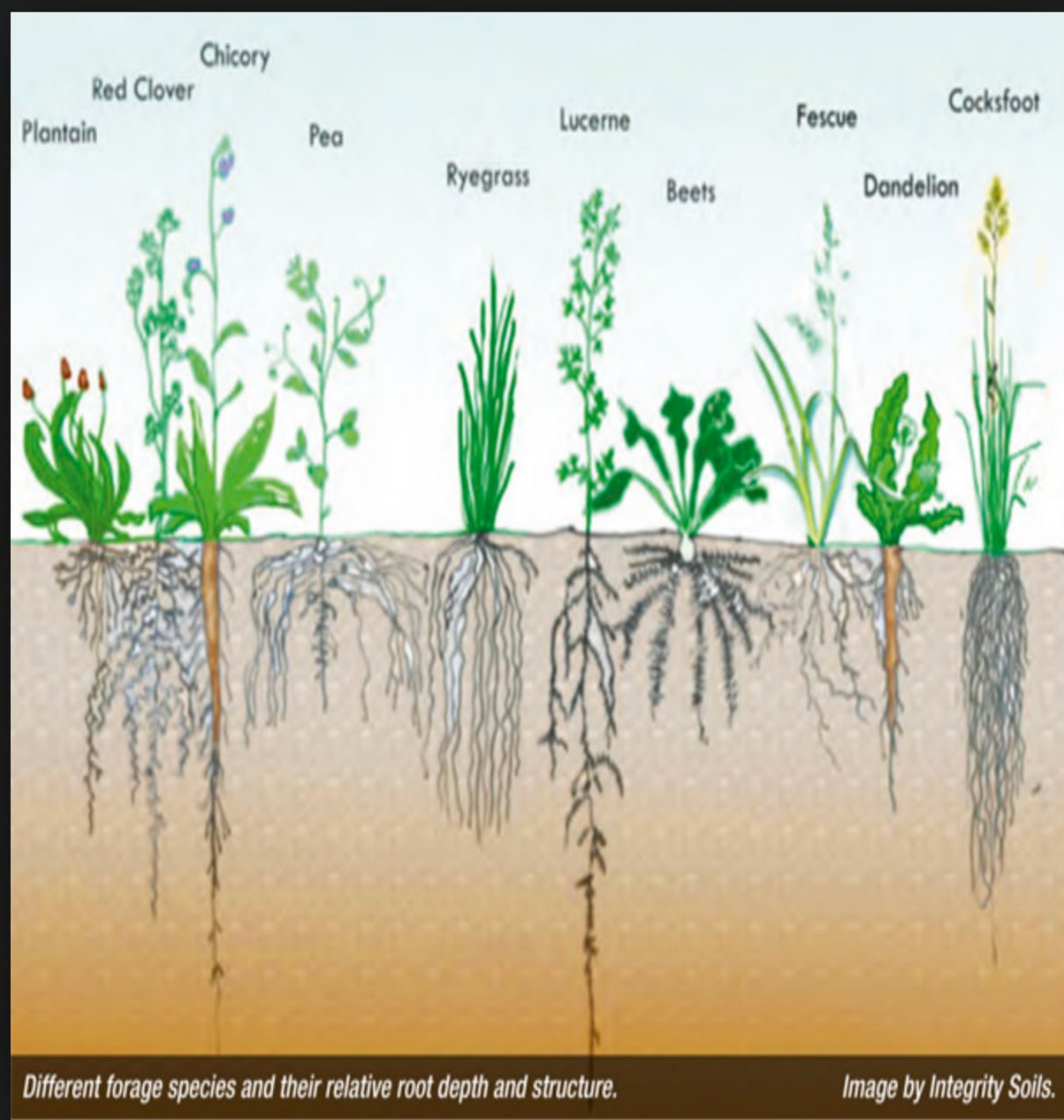
reduction in sales of antimicrobials used for farmed animals

50%

reduction of the use and risk of pesticides

20%

reduction in the use of fertilisers





SmartGrass

To identify whether multi-species swards grown under reduced N inputs could provide a potentially viable alternative to conventional high input PRG monocultures



Funded by:

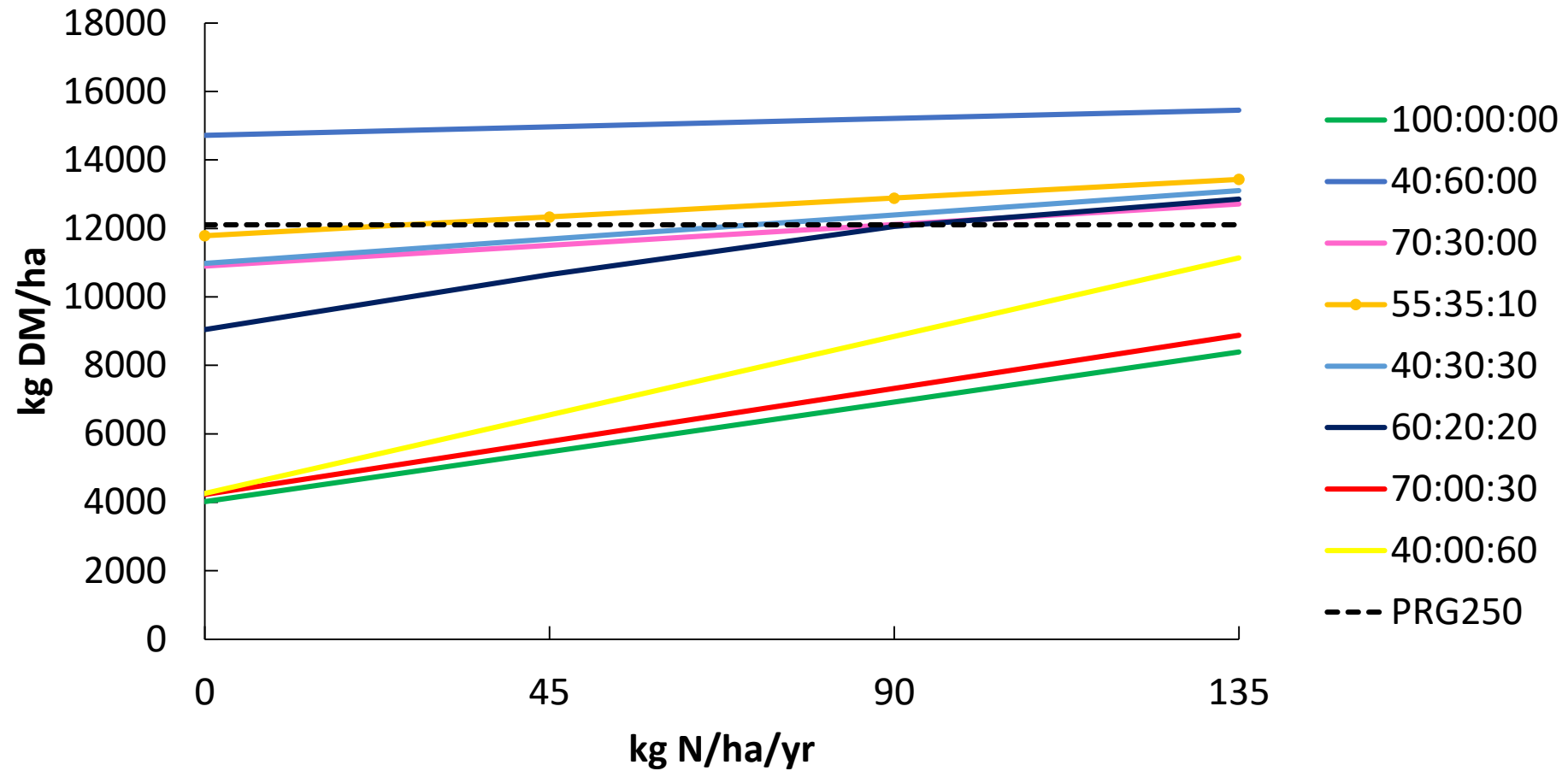




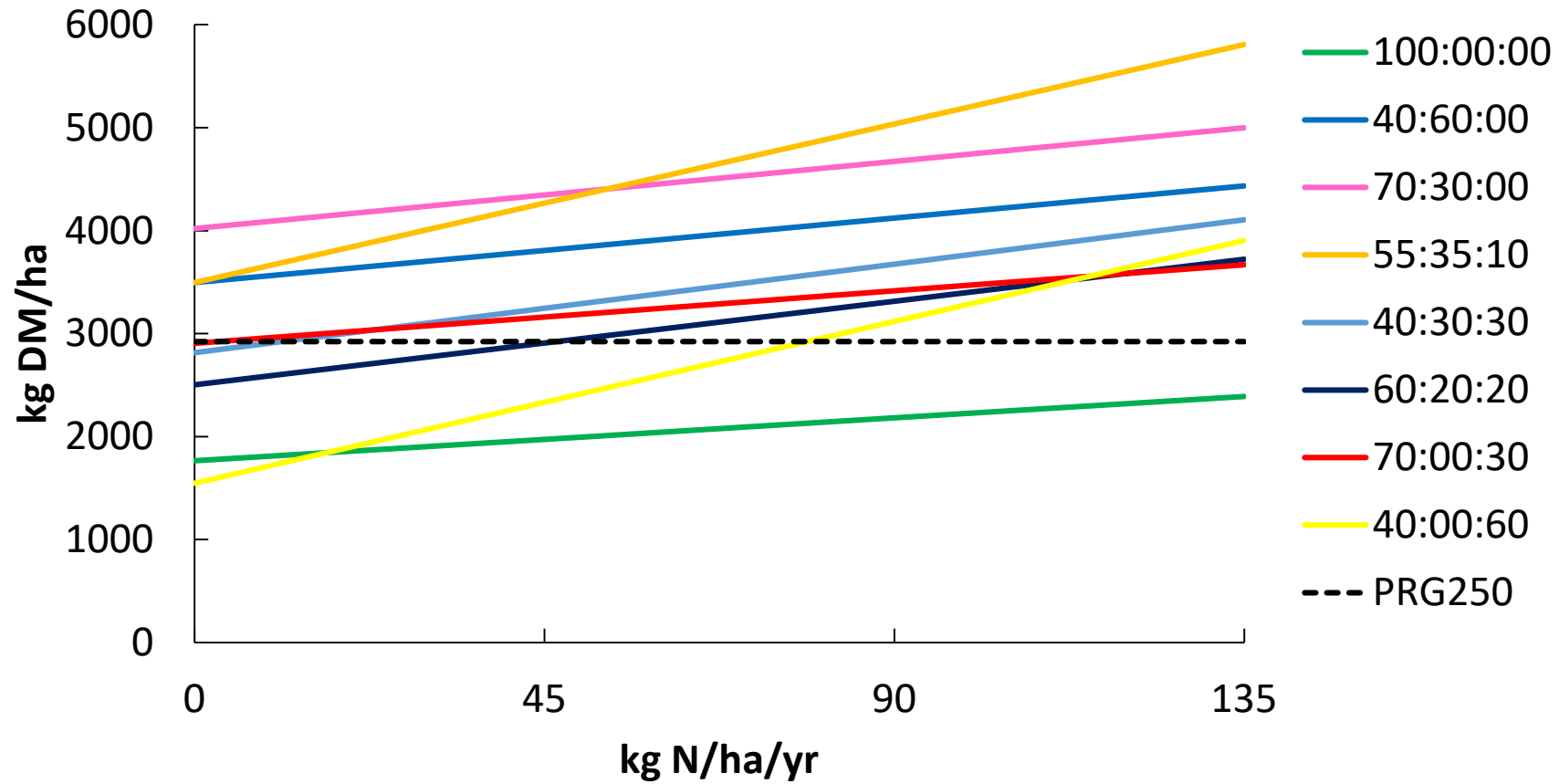
- 112 plots established in 2013
- 1-9 species from 3 functional groups (included in different proportions)
- Four levels of N : 0, 45, 90, 135 kg N/ha/yr
- Conventional control: PRG 250 kg N/ha/yr
- Harvested 8 times over growing season (DM and composition)



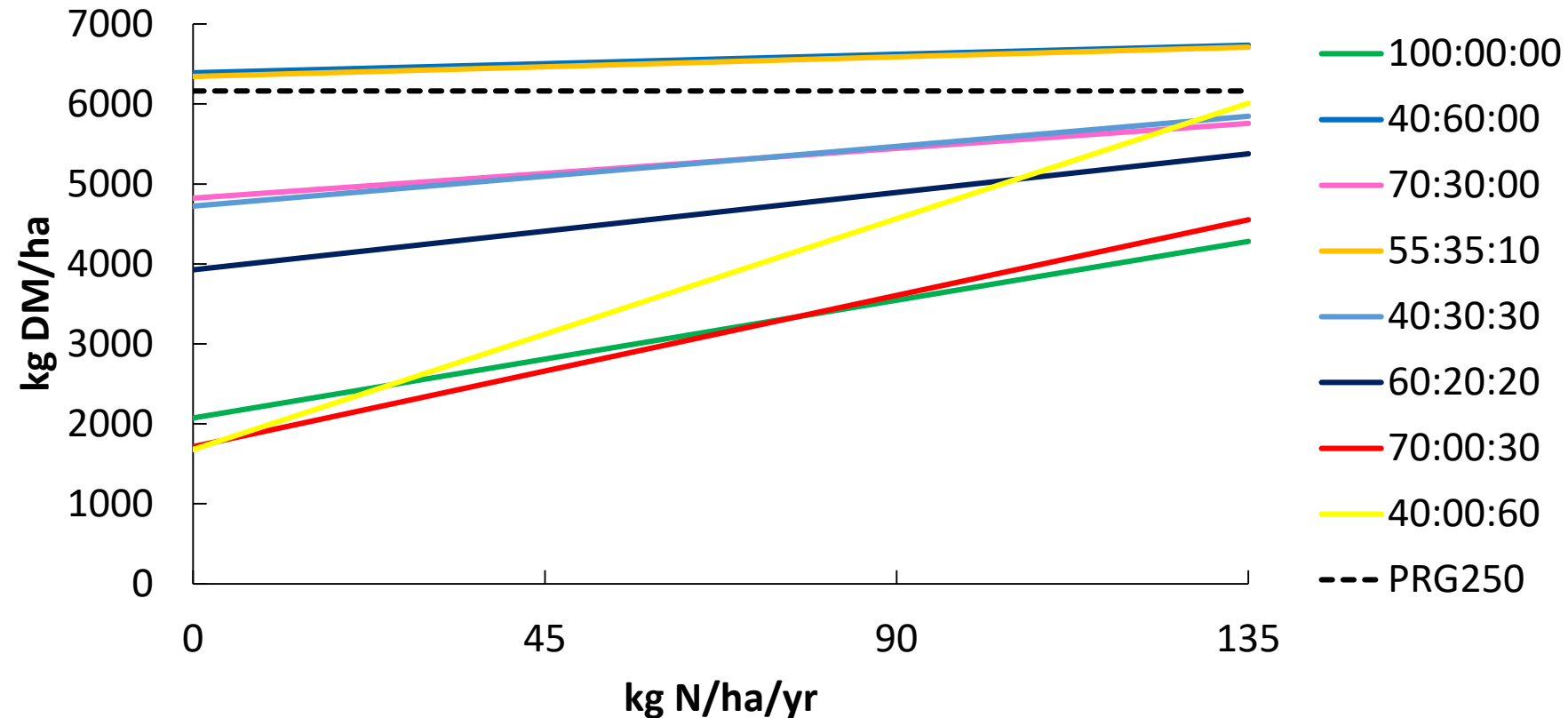
Effect of N on annual herbage production (kg DM/ha)



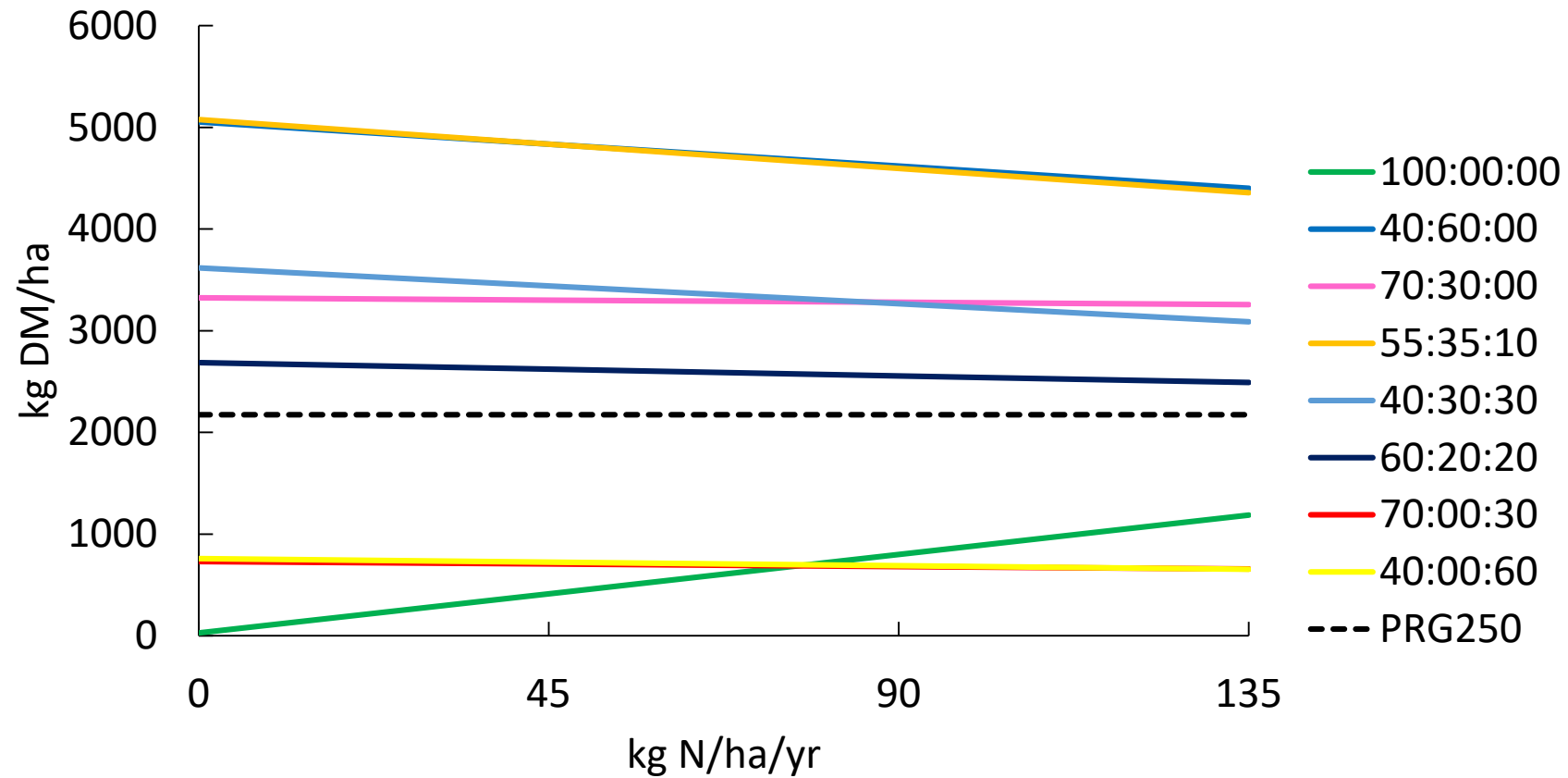
Effect of N on spring herbage production (kg DM/ha)



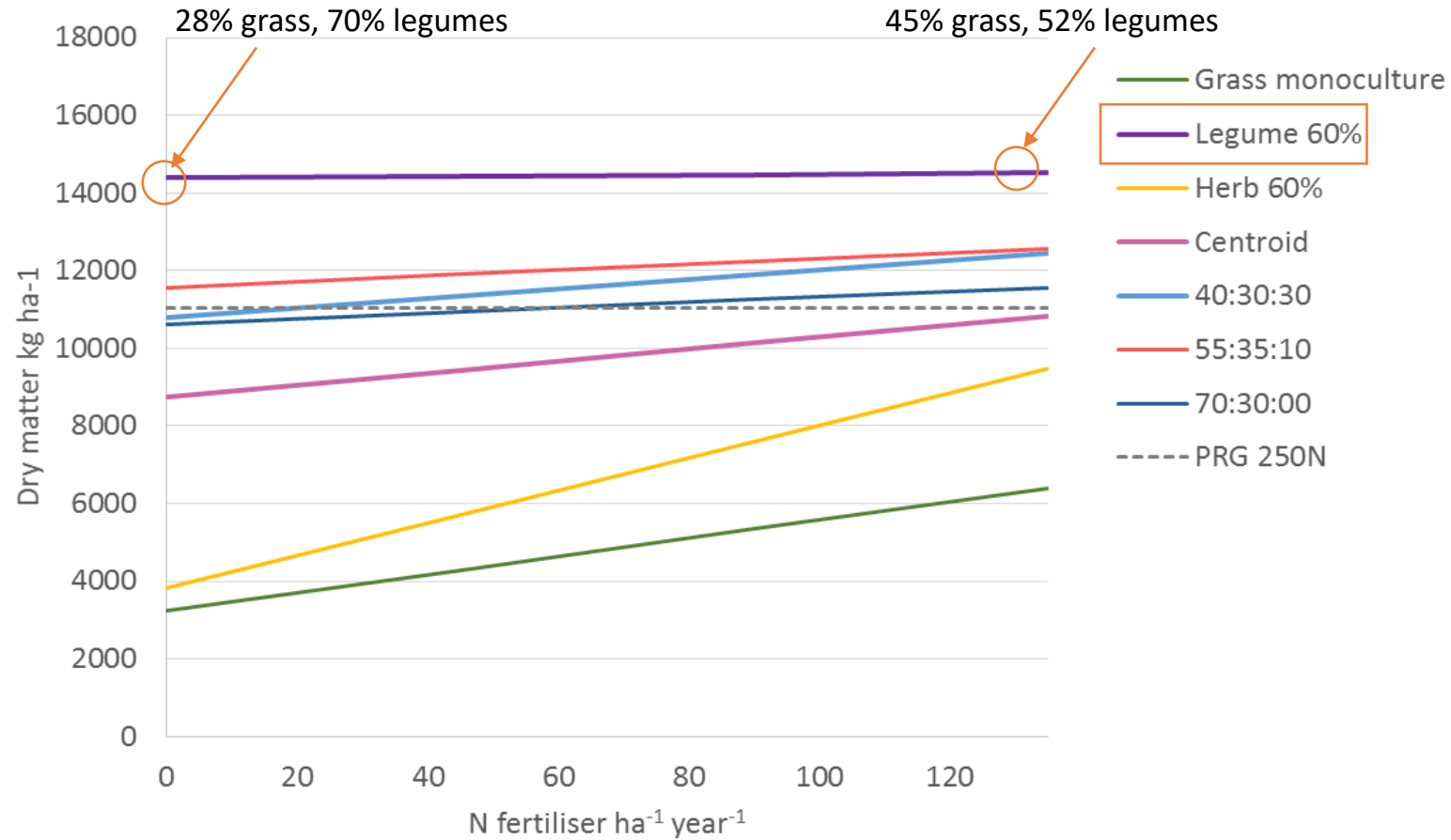
Effect of N on summer herbage production (kg DM/ha)



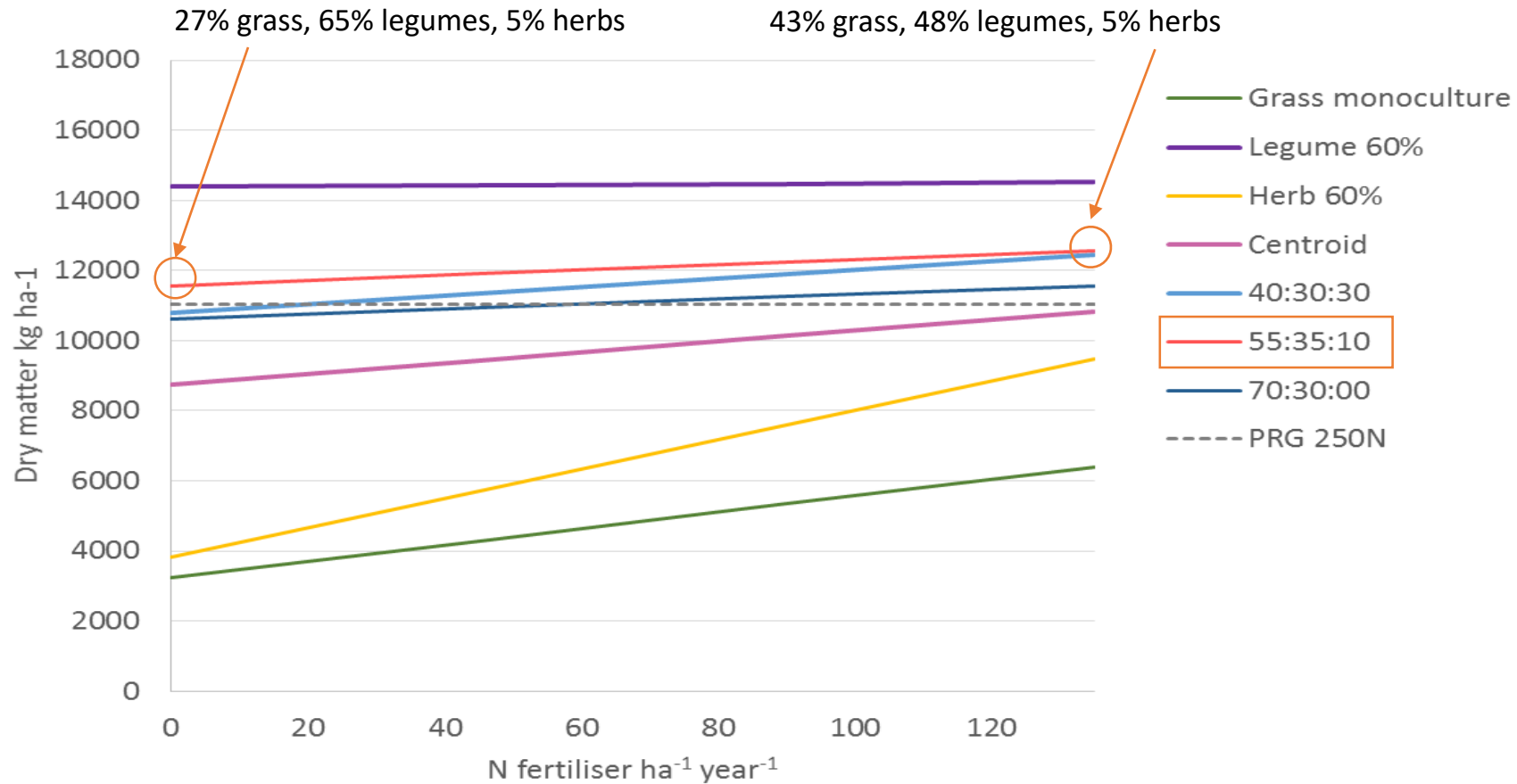
Effect of N on autumn herbage production (kg DM/ha)



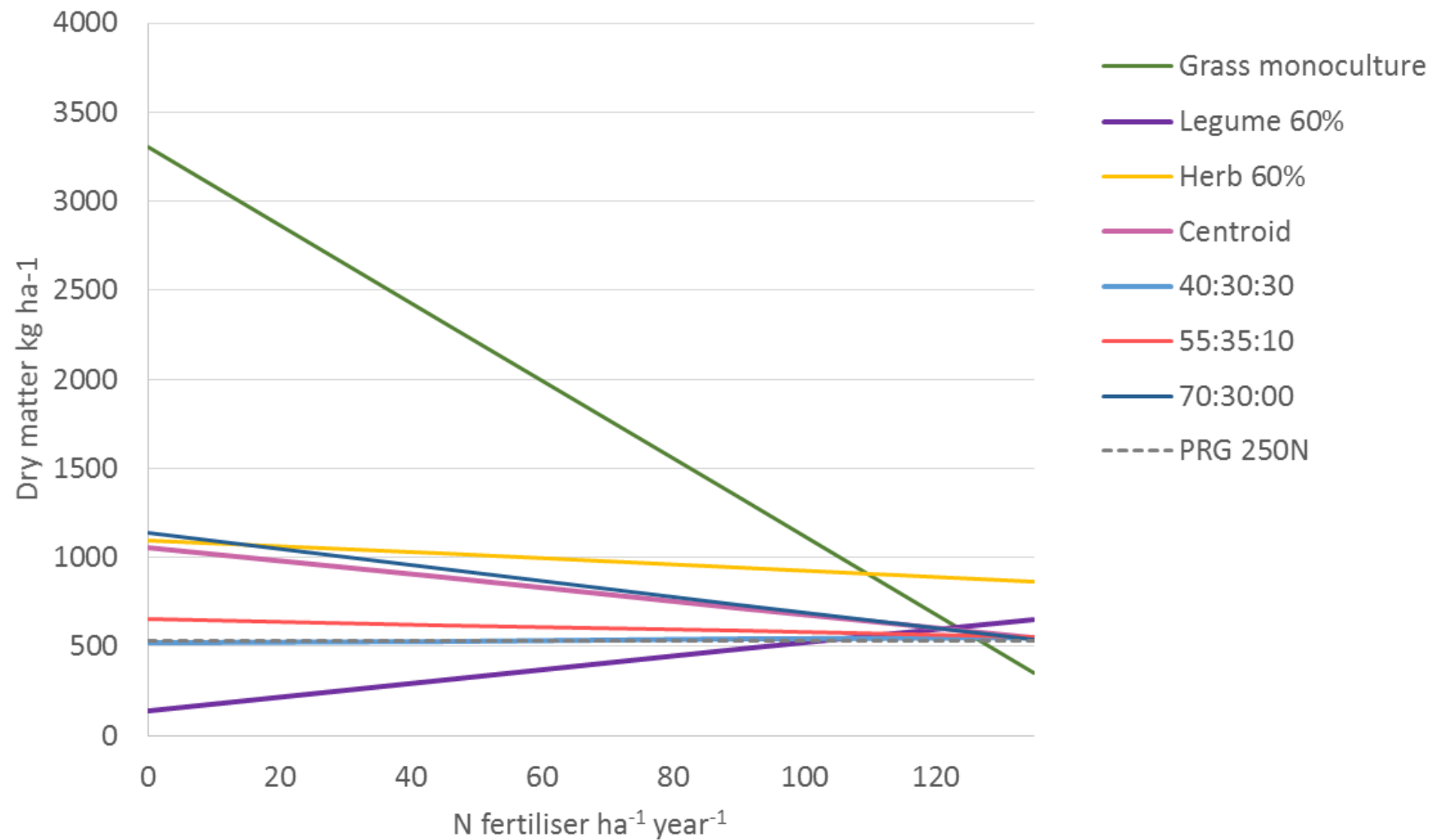
Composition of DM yield



Composition of DM yield

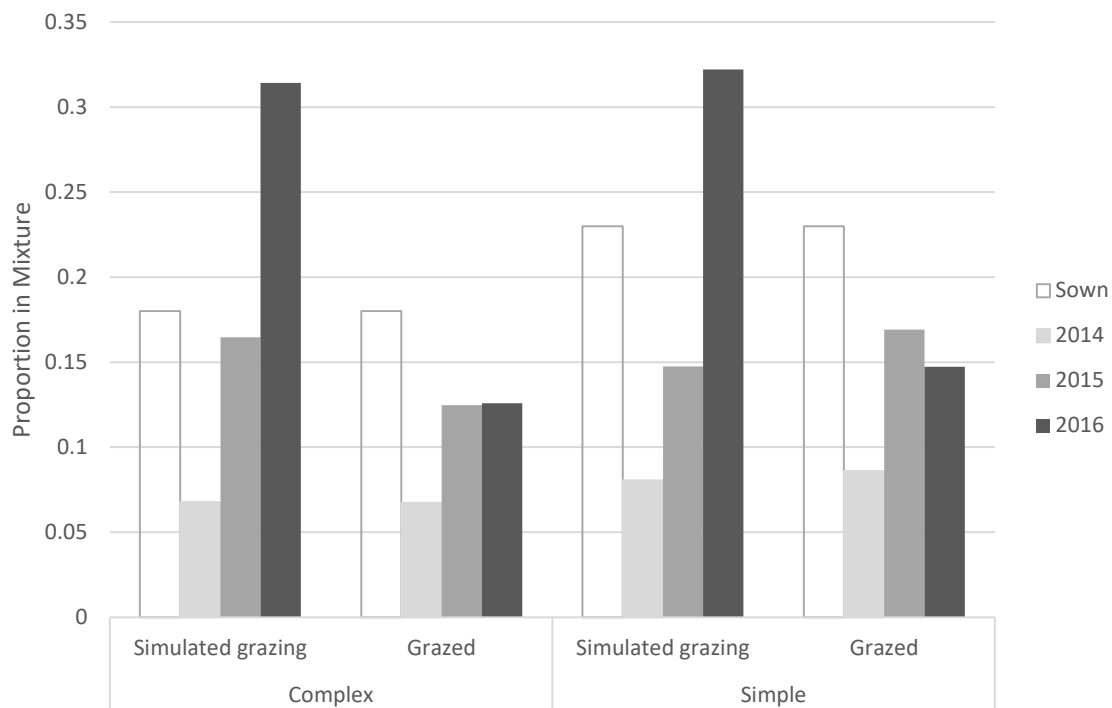


Weed invasion (unsown species kg/ha)

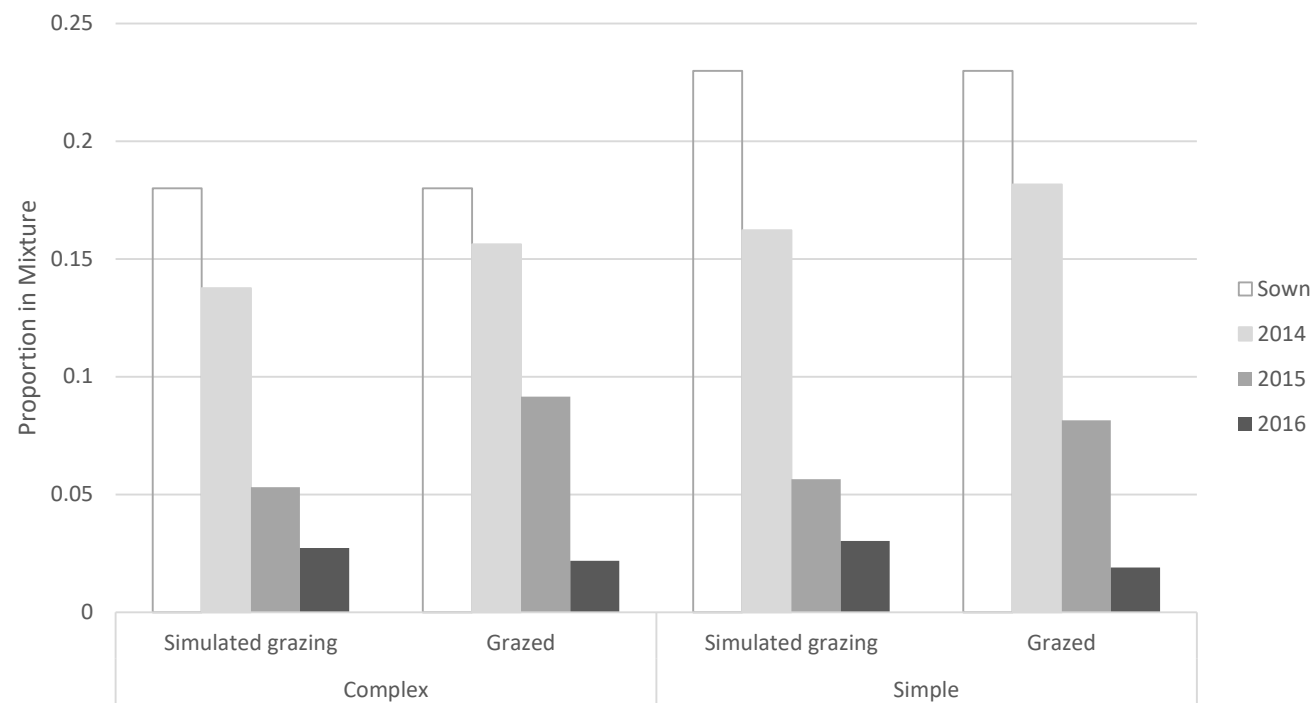


Species persistence?

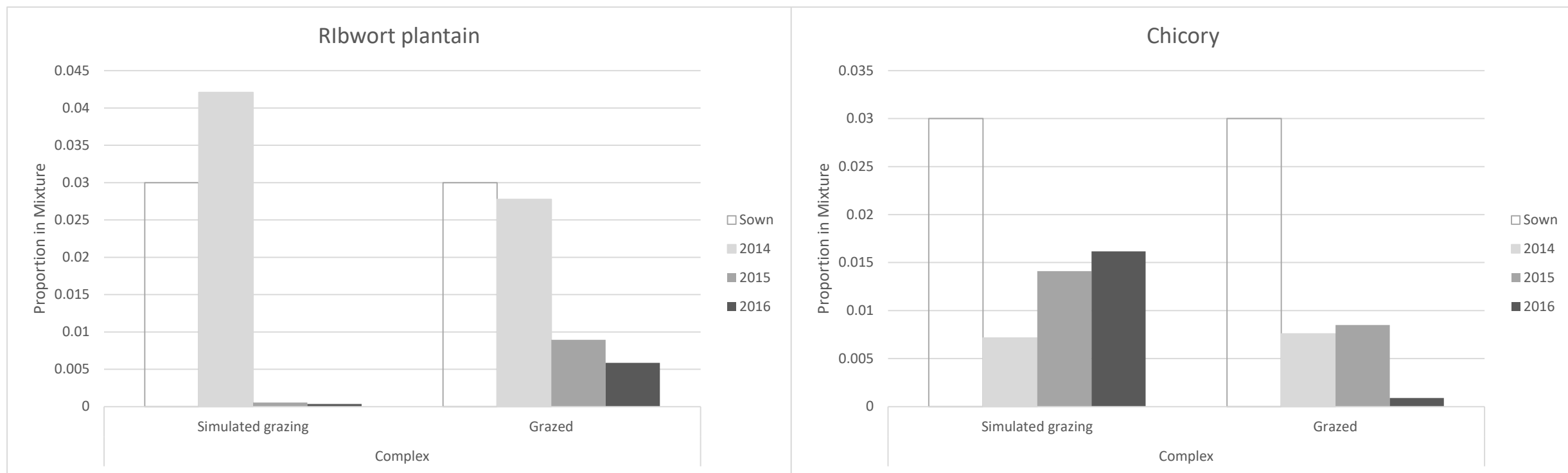
Cocksfoot



Timothy



Species persistence?



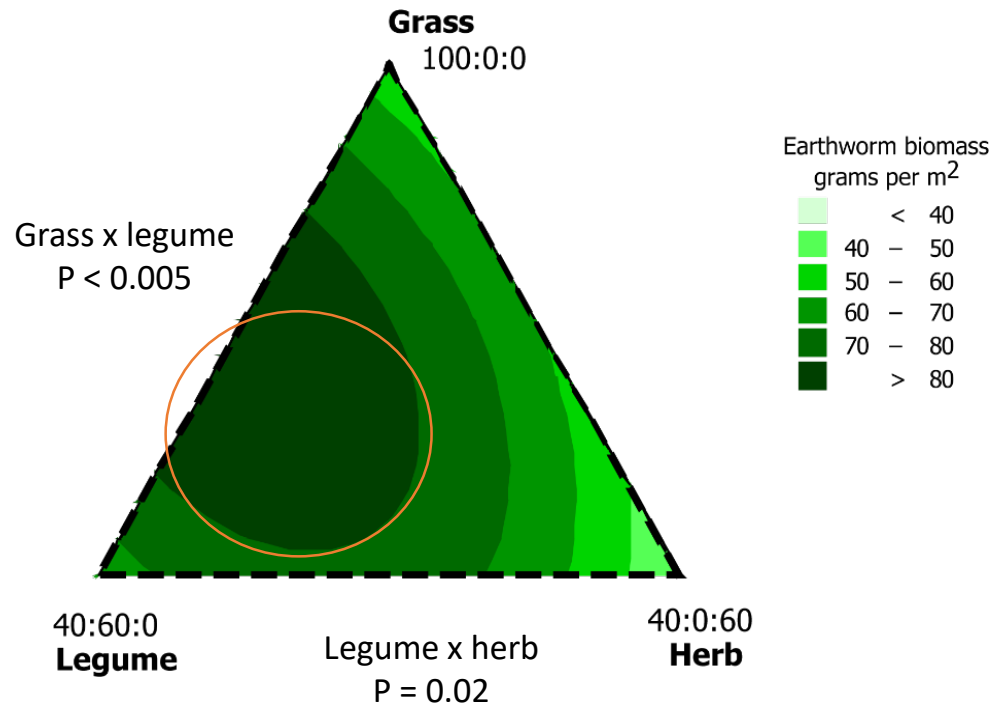


Earthworm abundance & diversity

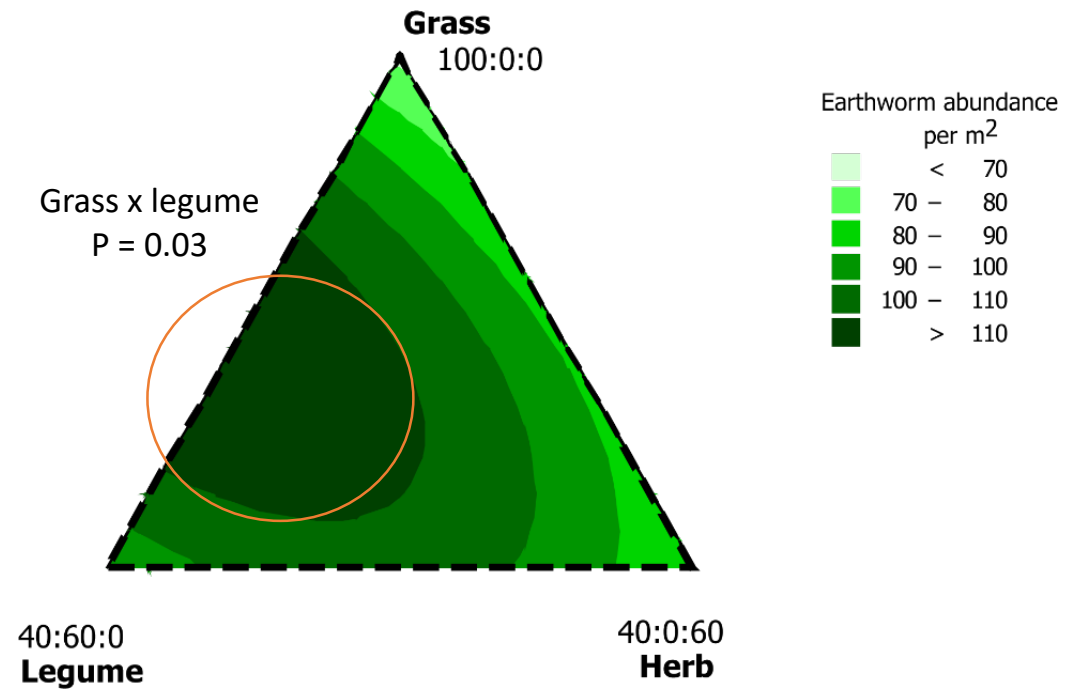
- Earthworms were sampled using a non-destructive method
- (electrical octet)
- Sampled over three years, every spring and autumn
- (final 2 years are presented here)

Earthworms

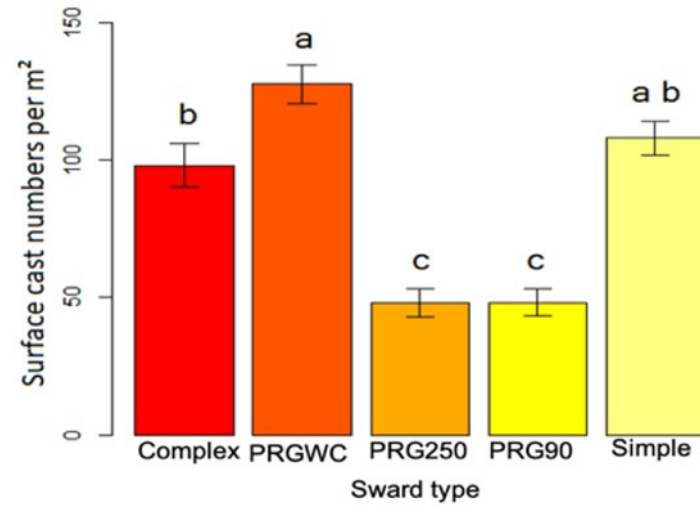
Biomass of $80 \text{ g m}^{-2} = 800 \text{ kg ha}^{-1}$



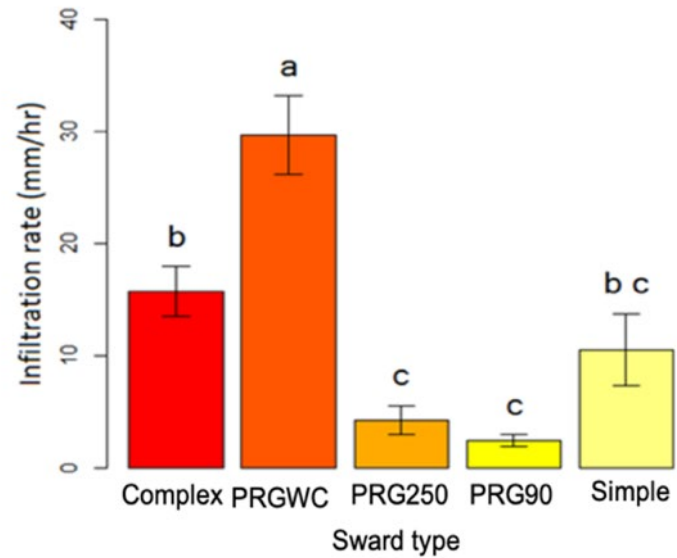
Abundance of $110 \text{ m}^{-2} = 1.1 \text{ million ha}^{-1}$



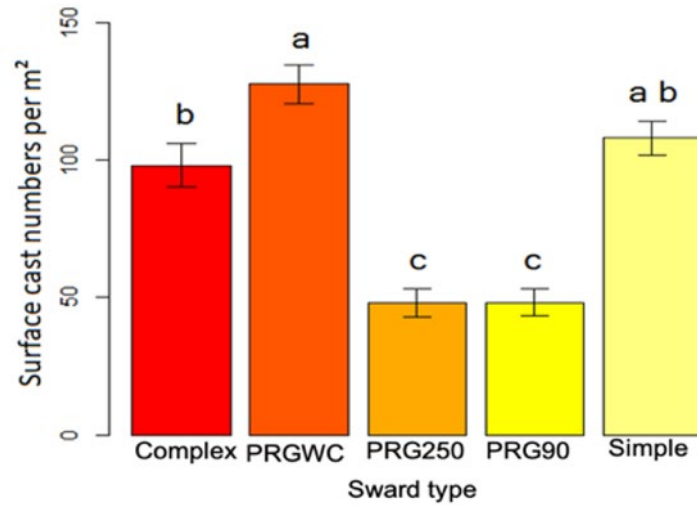
Earthworm surface casts



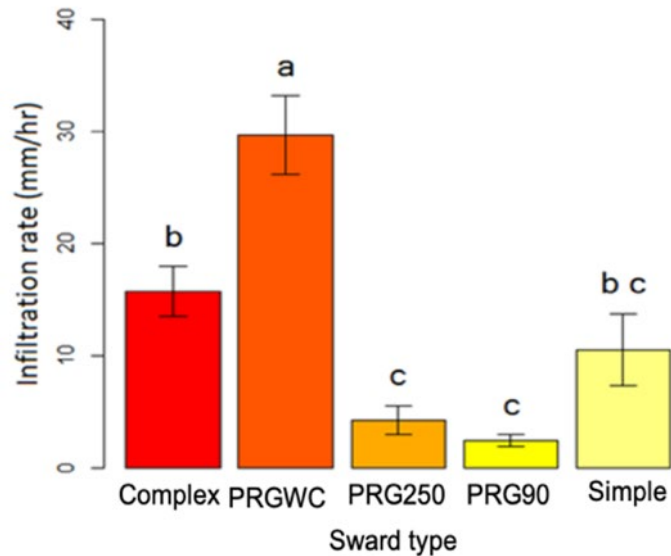
Water infiltration rates



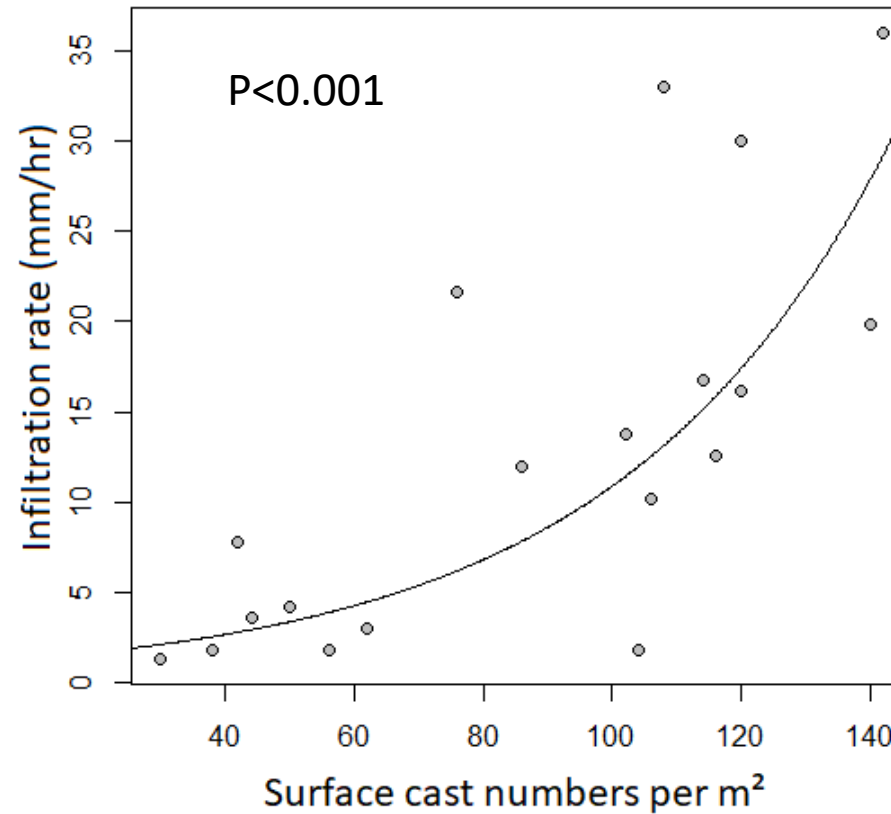
Earthworm surface casts



Water infiltration rates

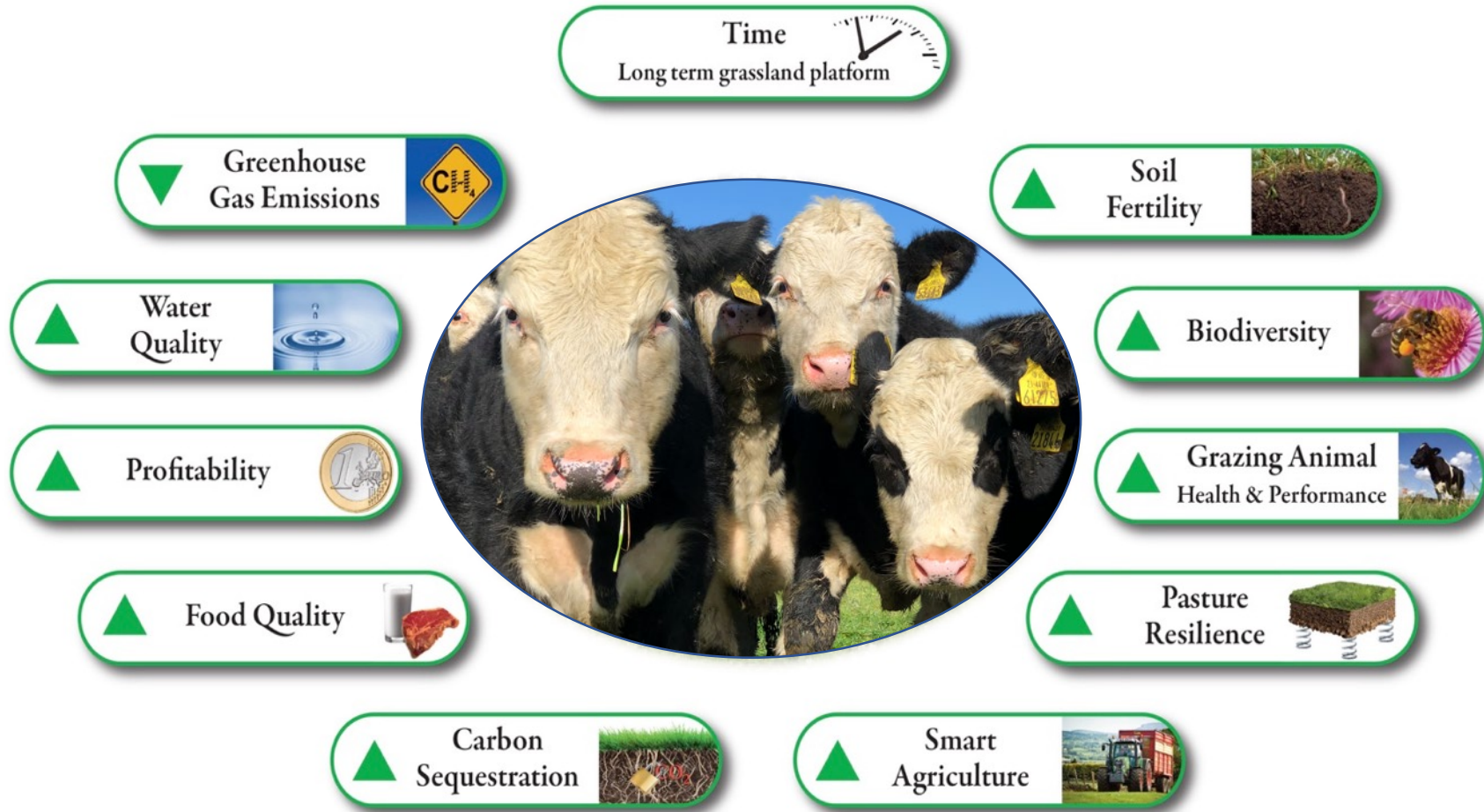


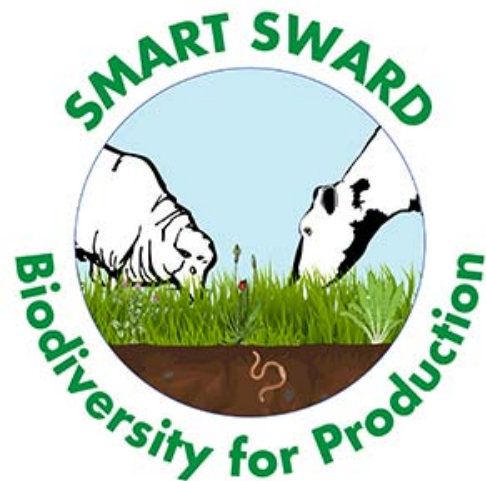
Relationship between earthworm casts and water infiltration





UCD Lyons Long Term Grazing Platform





SMARTSWARD

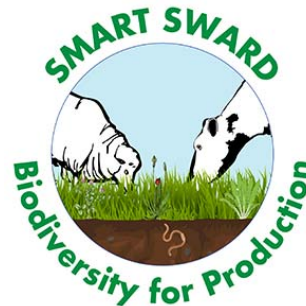
DAFM RSF: 17/S/267



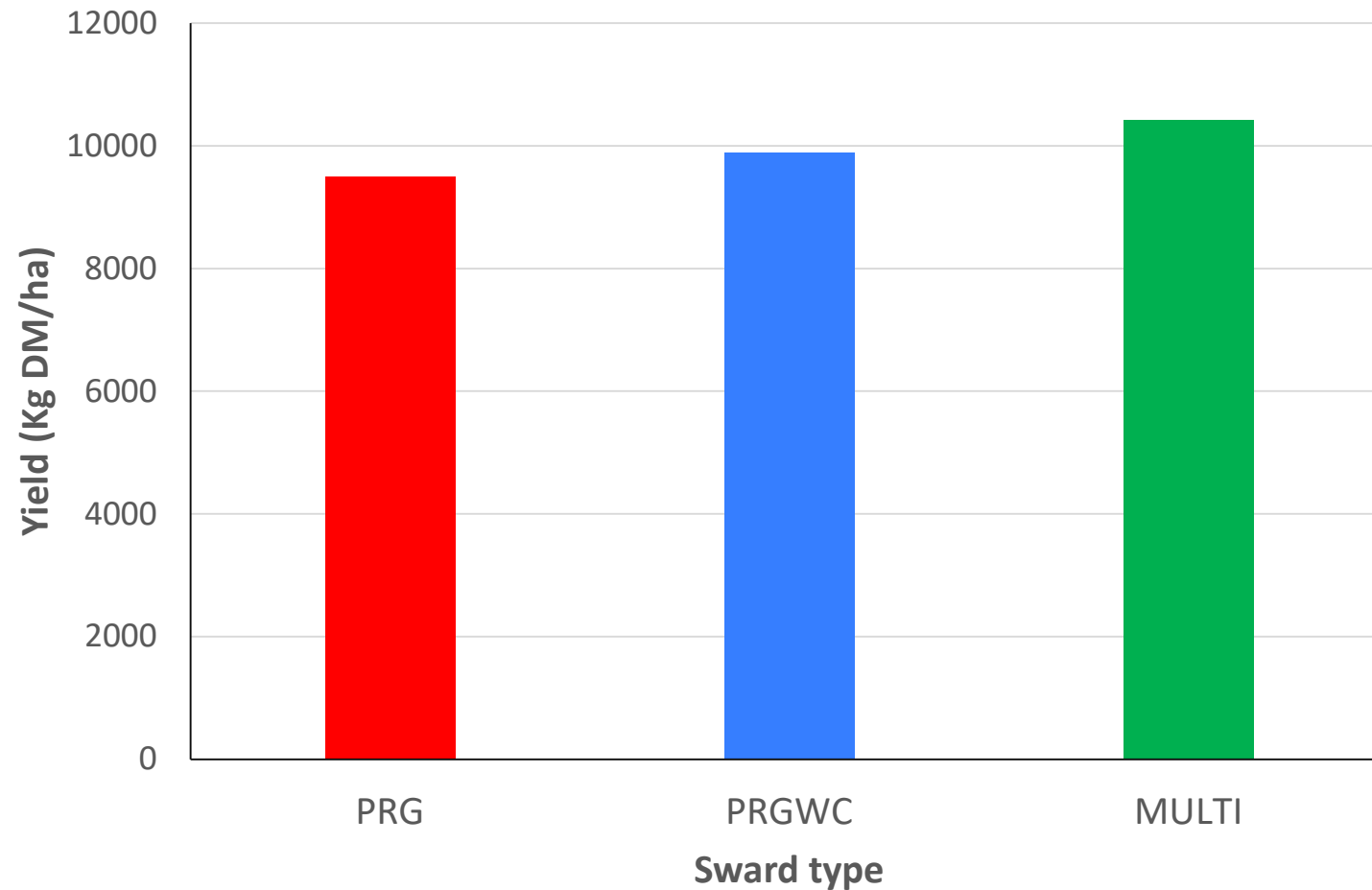


UCD Lyons Long Term Grazing Platform

- 3 farmlets established 2019 (8ha each)
 - PRG – 205 kg N/ha
 - PRG and white clover - 90 kg N/ha
 - Multi - PRG, Timothy, white clover, red clover, chicory and ribwort plantain - 90 kg N/ha
- Stocked @ 2.5 LU/ha – dairy calf to beef
- Target
 - PGHM 1200 – 1800 kg DM/ha
 - PGSH 4cm v's 6cm Multi



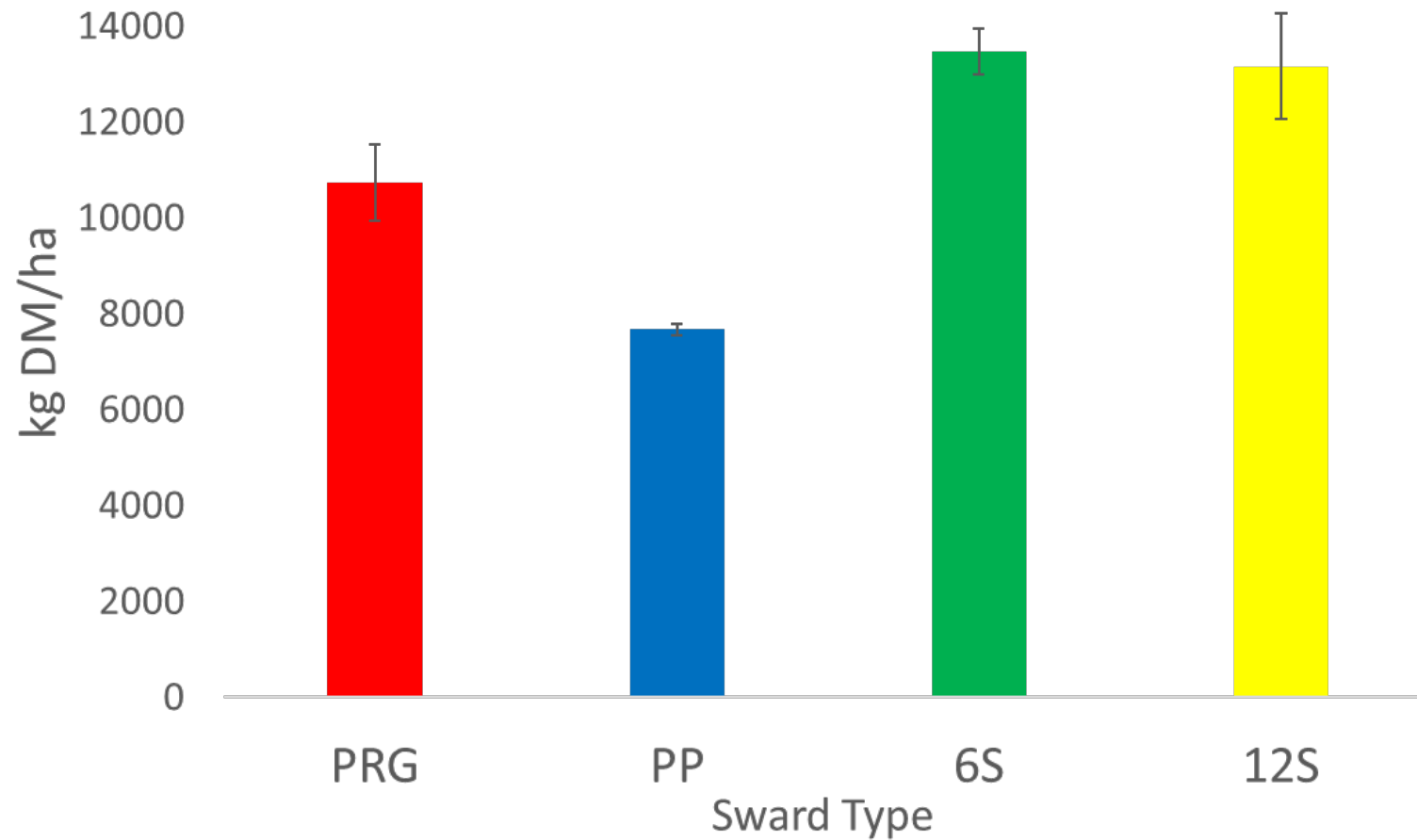
DM yield from three sward types during 2020



- 4 sward types
 - Perennial ryegrass (170 kg N/ha/yr)
 - Permanent pasture (135 kg N/ha/yr)
 - 6 species mix – PRG, Timothy, white & red clover, chicory, ribwort plantain (70 kg N ha/yr)
 - 12 species mix - 6 species mix + cocksfoot, birdsfoot trefoil, sainfoin, yarrow, salad burnet and sheep's parsley (70 kg N/ha/yr)
- Co-grazed cattle & sheep
 - PGHM – 1500 v's 2500 kg DM/ha
 - PGSH – 4cm v's 6cm



DM yield from four sward types during 2020



Herbage growth rates in four sward types during 2020

