

KWS UK - Breeding for Biogas

Hybrid Rye Trial Results 2014



Seeding the future
since 1856



Introduciton

We are very pleased to present to you the results of the **KWS 2014 Hybrid Rye trials**. We hope these are informative and help with your variety choices for this 2014 planting season.

...Breeding

KWS is continuing to breed **Energy Maize**, **Energy Beet** and **Hybrid Rye** varieties for the biogas sector, the only breeder to do so.

...Investing

The investment in breeding is important as the benefits in **variety development** are clear, but these varieties also need to be appropriately tested for UK conditions. For the 2014 harvest KWS UK invested in bringing to the UK the only **Whole Crop forage trials harvester** to ensure accurate harvesting. With Near Infra Red Spectrometry (**NIRS**) we were able to calculate DM% and fresh yields immediately and accurately.

...The Future

We are still fine tuning our approach to growing Hybrid Rye for whole crop and have a number of trials planned for the 2014/15 season to further develop our knowledge.

We will be looking at:

- **Nitrogen** rate response – economic optimums
- **PGR** response by variety
- Optimum **seed rates**
- Identifying key **yield parameters**

We look forward to sharing this knowledge with you but equally look forward to hearing of your growing experiences to enhance the knowledge pool.



Varieties in Test



Variety	Type	Market
KWS Progas	Hybrid Rye	Whole Crop Silage
KWS Magnifico	Hybrid Rye	Whole Crop Silage
KWS Winter Wheat	Winter Wheat	Grain - Control
KWS Triticale	Conventional	Grain - Control



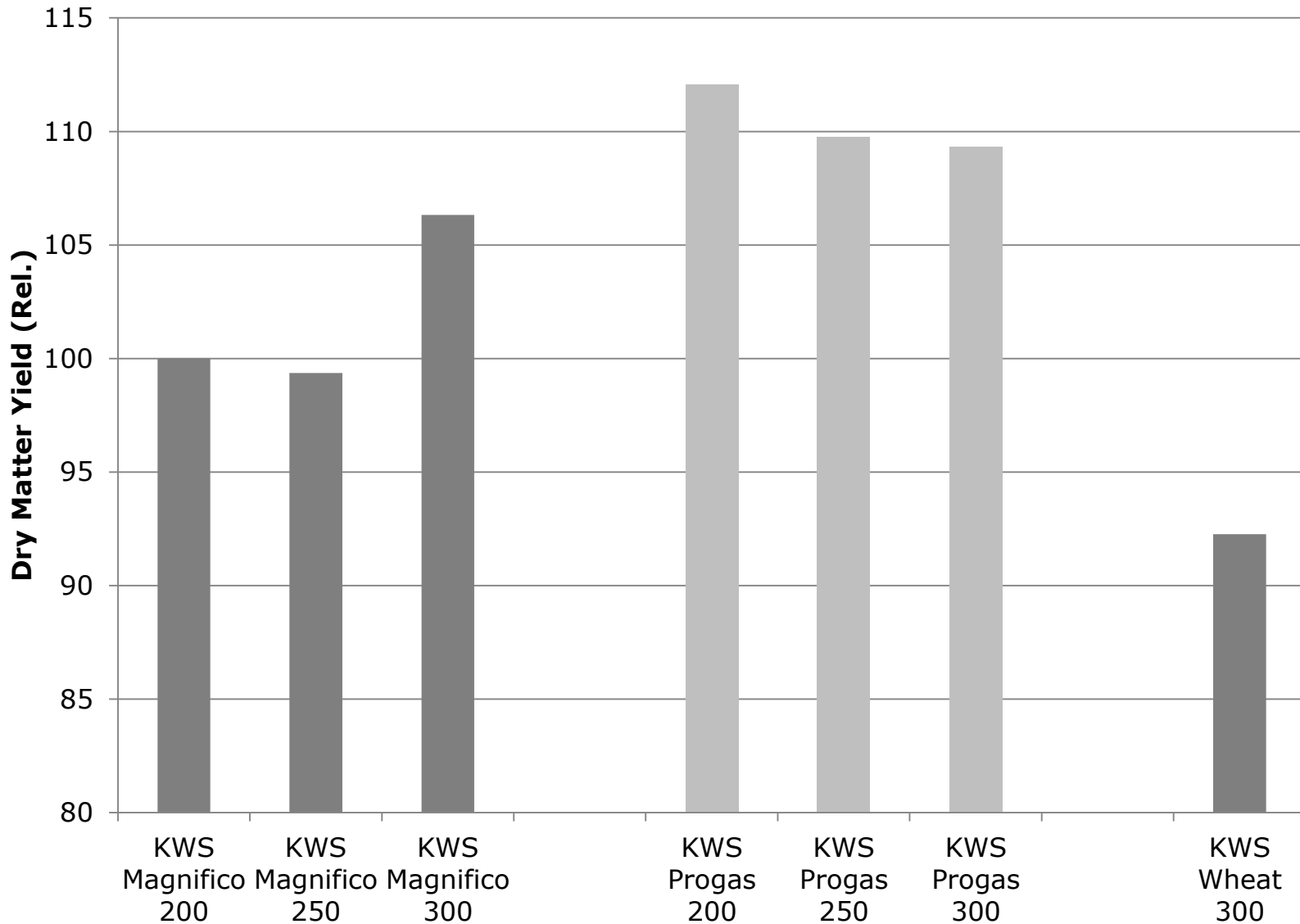
Trial One

- Located at Fowlmere, Hertfordshire
- 2 sowing dates
 - Drilled 10 October 2013 – Harvested 1 July 2014
 - Drilled 15 November 2013 – Harvested 1 July 2014
- Three seed rates
 - Low 200/m²
 - Medium 250/m²
 - High 300/m²
- 3 replicates of each treatment
- Randomised block design

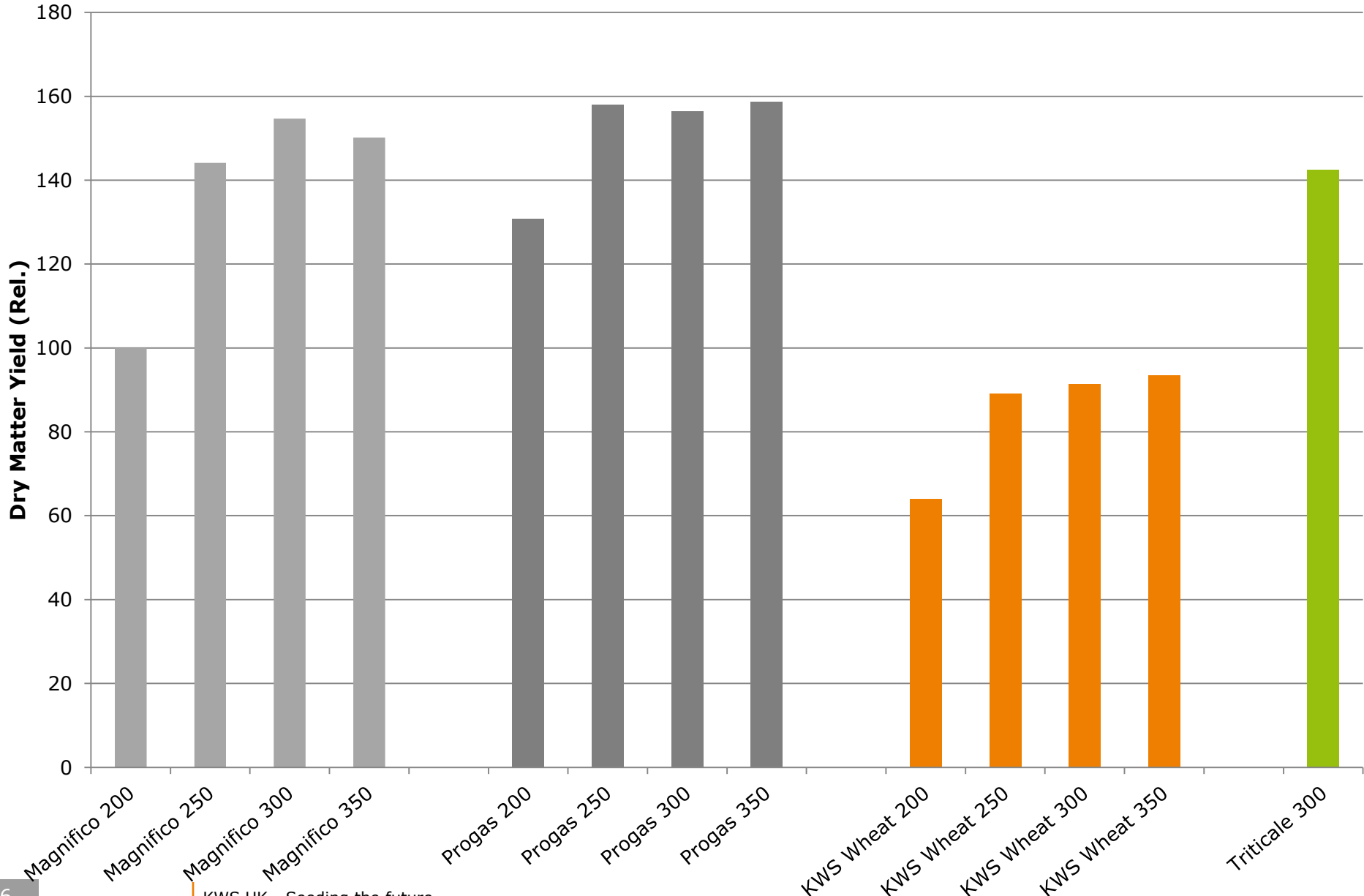
Trial Two

- Located at Sturminster Newton, Dorset
- 1 sowing date
 - Drilled 11 October 2013
 - Harvested 4 July 2014
- Four seed rates
 - Low 200/m²
 - Medium 250/m²
 - High 300/m²
 - Very high 350/m²
- 3 replicates of each treatment
- Randomised block design

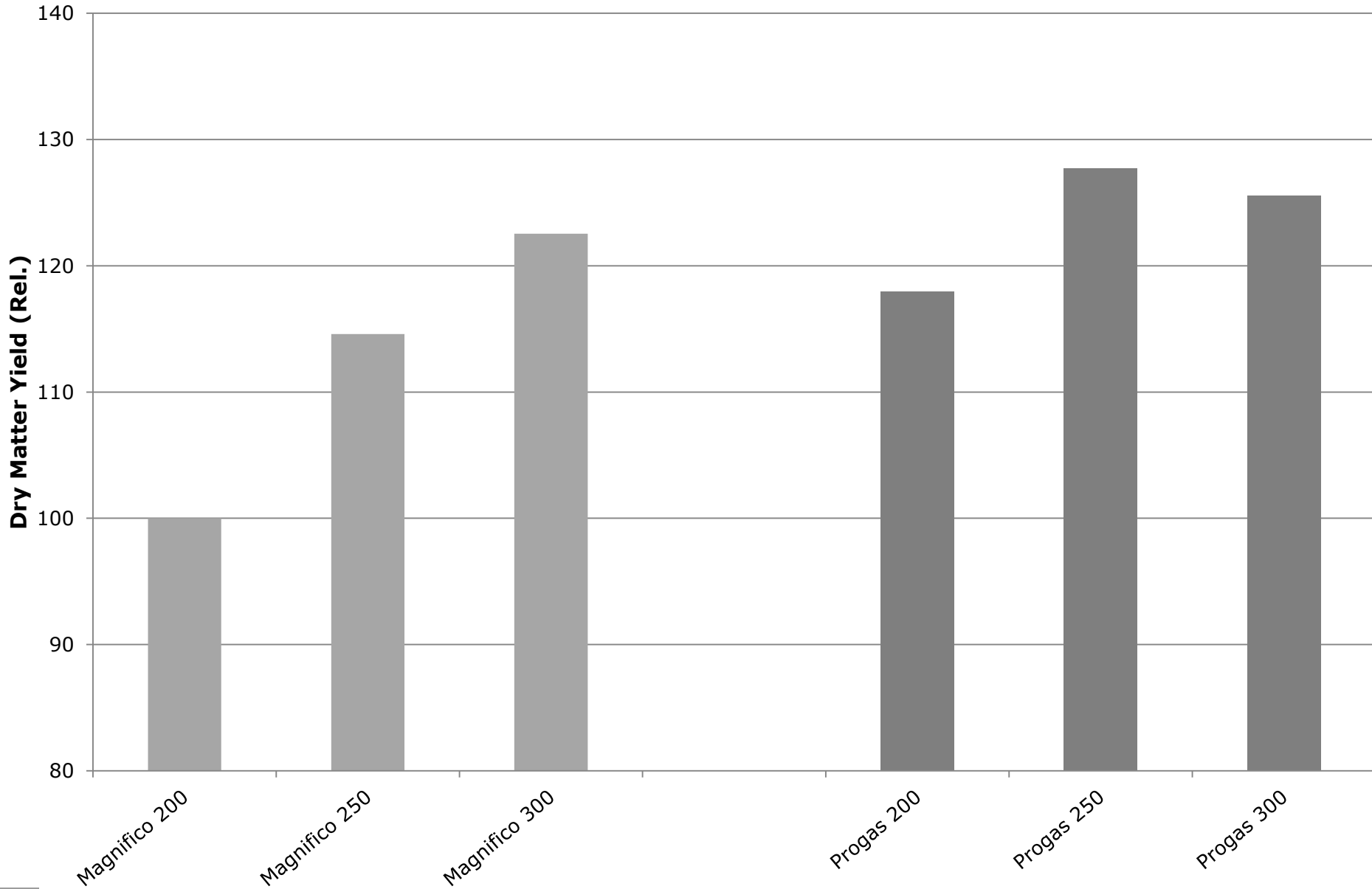
Results – Trial One – Hertfordshire



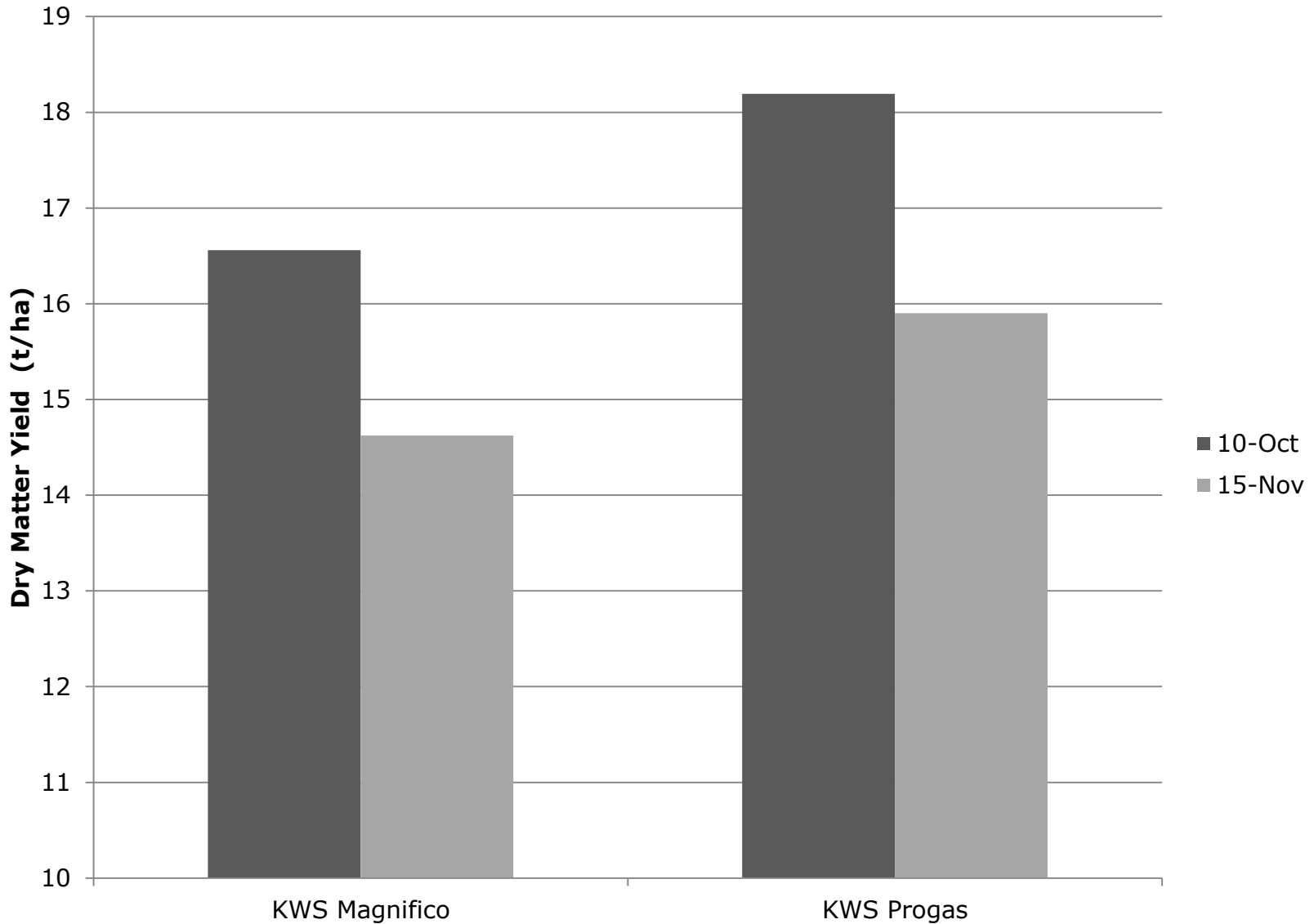
Results – Trial Two– Dorset



Trial Summary – Mean Across all Three Trials



1st Drilling vs. 2nd Drilling - Hertfordshire



Summary



- KWS Progas shows the highest yield potential
- KWS Magnifico has been consistent over seasons
- KWS hybrid rye significantly out yields triticale and wheat
- There is a consistent increase in DM yield with increased seed rates
- Adjust seed rates for the conditions
- Earlier drilling will bring higher yield potential

Please note – this is one years data so please treat the results with caution as you may see different results under your own circumstances.

Hybrid Rye for Biogas



...Many Reasons to Use Hybrid Rye for Biogas

- High biogas yields
 - 200 cu biogas/ t fresh weight
- High DM yields/ha = high methane yields per ha
- Reduced lodging risk with stiff hollow straws for strength
- Blackgrass control benefits – part of the solution
 - Competition and removal when harvesting



...what we have learnt in 2013/14 growing season

- Hybrid rye will out compete blackgrass in the autumn
- Blackgrass will be out-shaded and sit below the tall hybrid rye canopy
- Blackgrass development within hybrid rye will be poor with later maturity and reduced populations



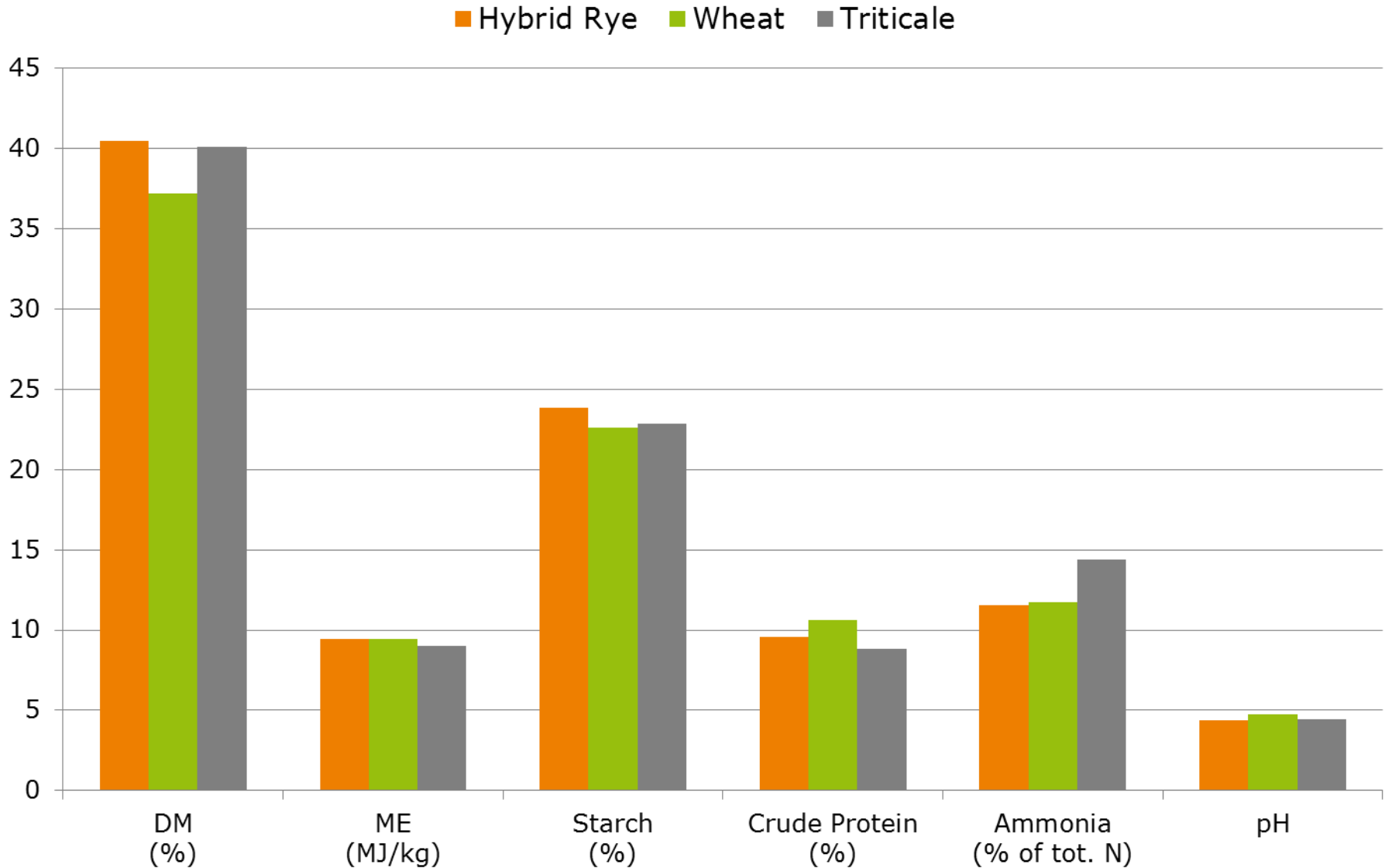
Blackgrass from wheat plots

Blackgrass from hybrid rye plots

Hybrid Rye for Livestock



Whole Crop Forage Analysis - 2014



Cultivation Advice



Hybrid Rye - Agronomy

Location suitability	All soil	
Sowing time / sowing rate		
Early	15.Sept. - 30.Sept.	200 seeds/m ²
Mid	01.Oct. - 30.Oct.	220- 240 seeds/m ²
late	After 01.Nov.	260 seeds/m ²
Fertiliser	Location and soil adapted; consider available soil N.	
N - fertiliser	N - Availability from organic fertiliser to consider	
	Growth Stage 25	60 - 80 kg N/ha
	Growth Stage 31	30 - 40 kg N/ha
	Growth Stage 37	30 - 40 kg N/ha
	Total	120 - 160 kg N/ha
Plant protection		
Plant Growth Regulator		
Light soil	Growth Stage 31	1.5 – 1.8 l/ha CCC ₇₂₀
Better soil	Growth Stage 31 - 32 + Growth Stage 37 - 49	1.5 – 1.8 l/ha CCC ₇₂₀ + 0.5 – 0.6 l/ha Terpal
Fungicide	Leaf rust protection required – 2 – 3 applications	
Herbicide	As required: e.g. Pre Em – Avadex then Liberator	
Insecticide	As required.	
Harvest	End June, early July - soft-cheesy dough maturity (35 – 40 DM%)	

* **Note:** We have taken great care to compile this cultivation advice and they reflect the current information, without giving guarantees. Please note the yearly development of your crop. Always read the instructions before using any plant protection product. We are not liable for the accuracy, completeness and actuality of this cultivation advice and are not liable in case of negligence and/or deliberate intention.

...what we have learnt in 2013/14 growing season

- It is important to lift seed rates as drilling dates get later
- A robust PGR programme is relatively cheap and reduces lodging risk
- Total applied Nitrogen of 150 kg/ha appears to be optimum
- Brown rust will be a significant leaf disease in some areas in some years
 - A robust 2 – 3 programme is advisable especially where brown rust is commonly seen
- Soil types that allow for good grain filling and steady ripening will deliver the greatest yield potential

Seed Availability 2014

- KWS Magnifico & KWS Progas are available through all seed merchants for 2014
- Both varieties will be available in 12 unit bulk bags
- In addition KWS Progas will also be available in single units packs



Seed Rate (seeds/m ²)	Units/ha
200	2 units per ha
225	2.25
250	2.5
275	2.75

Thank You

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