

Improving soybean varieties for coastal farming systems

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NSW DEPARTMENT OF
PRIMARY INDUSTRIES



Grains Research &
Development Corporation



Crop Agronomy Research Team, Grafton

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+ assistance from Phil Dawes, Station Manager,
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1. New Variety Evaluation - Summary of 2005-06 results

Breeding Line Trial

- Planted 13th Dec 2005
- 84 new lines (43 NSW DPI + 41 CSIRO) with industry standards - Cowrie, Soya 791, Zeus (12)
- 96 plots x 2 replicates = 192 plots. 4 rows wide x 6m long
- Assessed for height, flowering time (F50), lodging, downy mildew, maturity (P95), yield, seed size, protein, oil, and weathering tolerance



Results

15 lines advanced to large scale variety trials in 2006-2007

21 lines sent to Dr Malcolm Ryley for *Phytophthora* testing

1. New Variety Evaluation - Summary of 2005-06 results

Early Variety Trial

- Planted 7 Dec 2005
- 9 industry standards + 15 potential new varieties
- 24 plots x 4 replicates = 96 plots. 8 rows wide x 8 m



1. New Variety Evaluation - Summary of 2005-06 results

Late Variety Trial

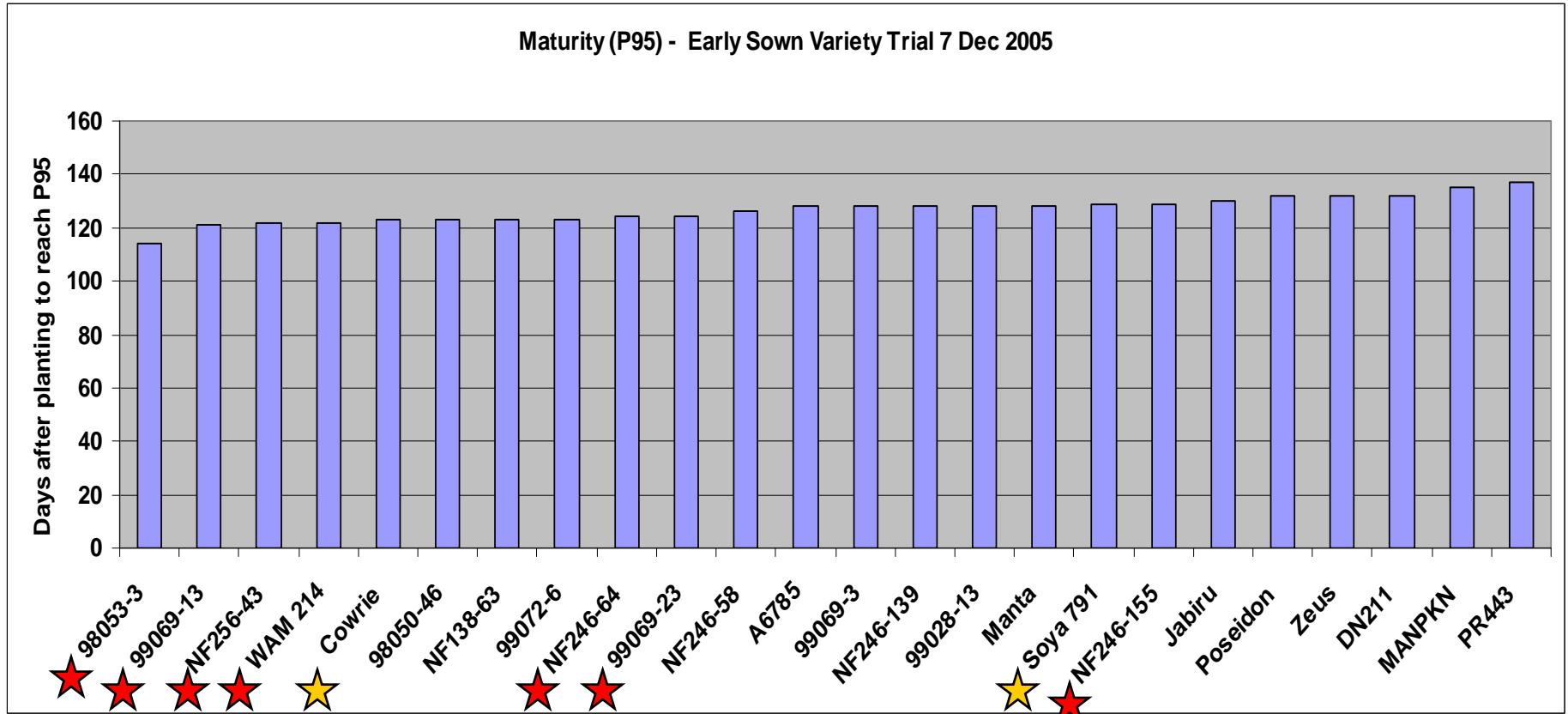
- Planted 12 Jan 2006
- 7 industry standards + 17 potential new varieties
- 24 plots x 4 replicates = 96 plots. 8 rows wide x 8 m



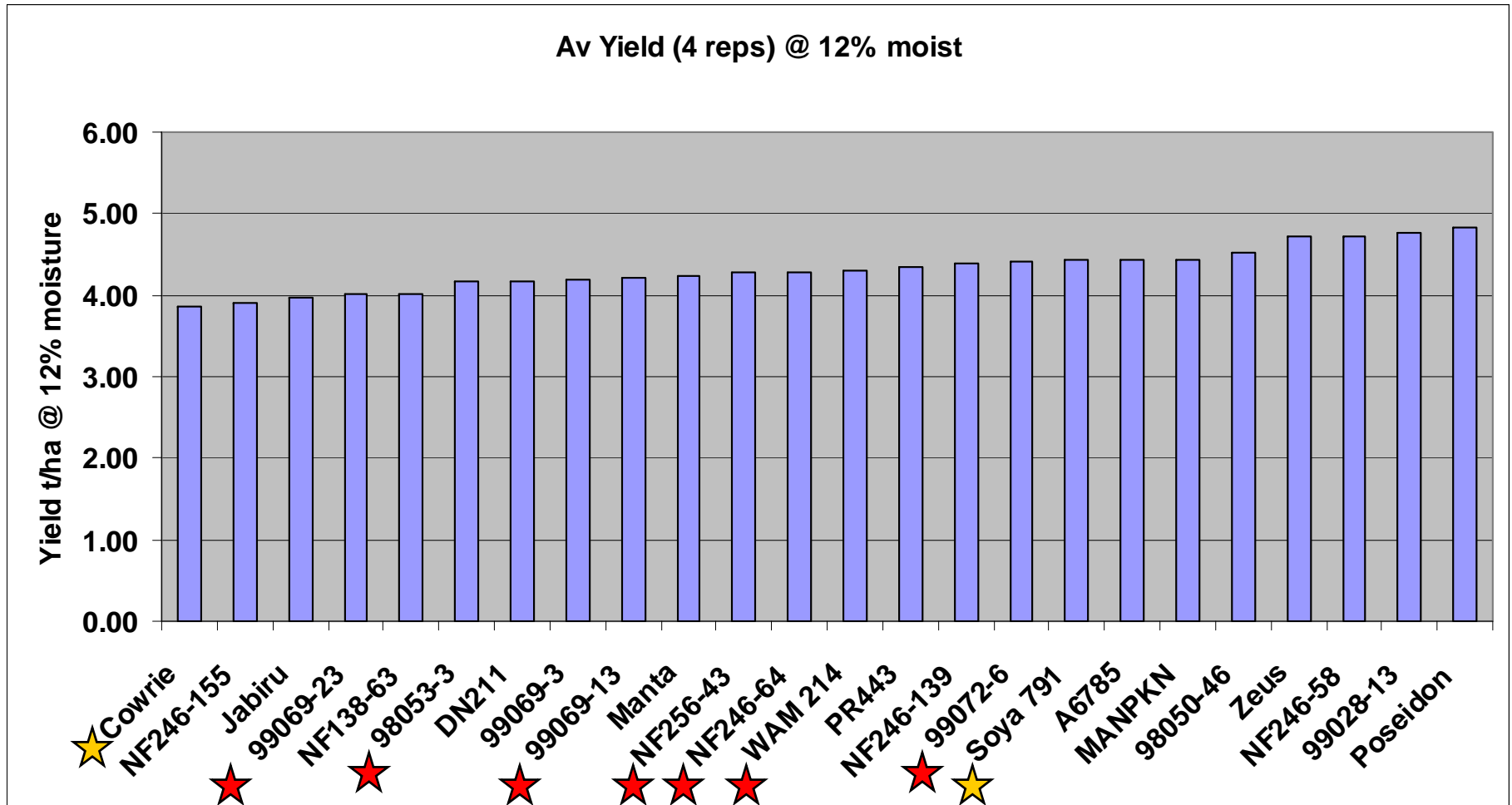
Soybean Field Day Grafton March 2006

110 growers & industry reps

Early variety trial 7 Dec – Maturity (days to P95)

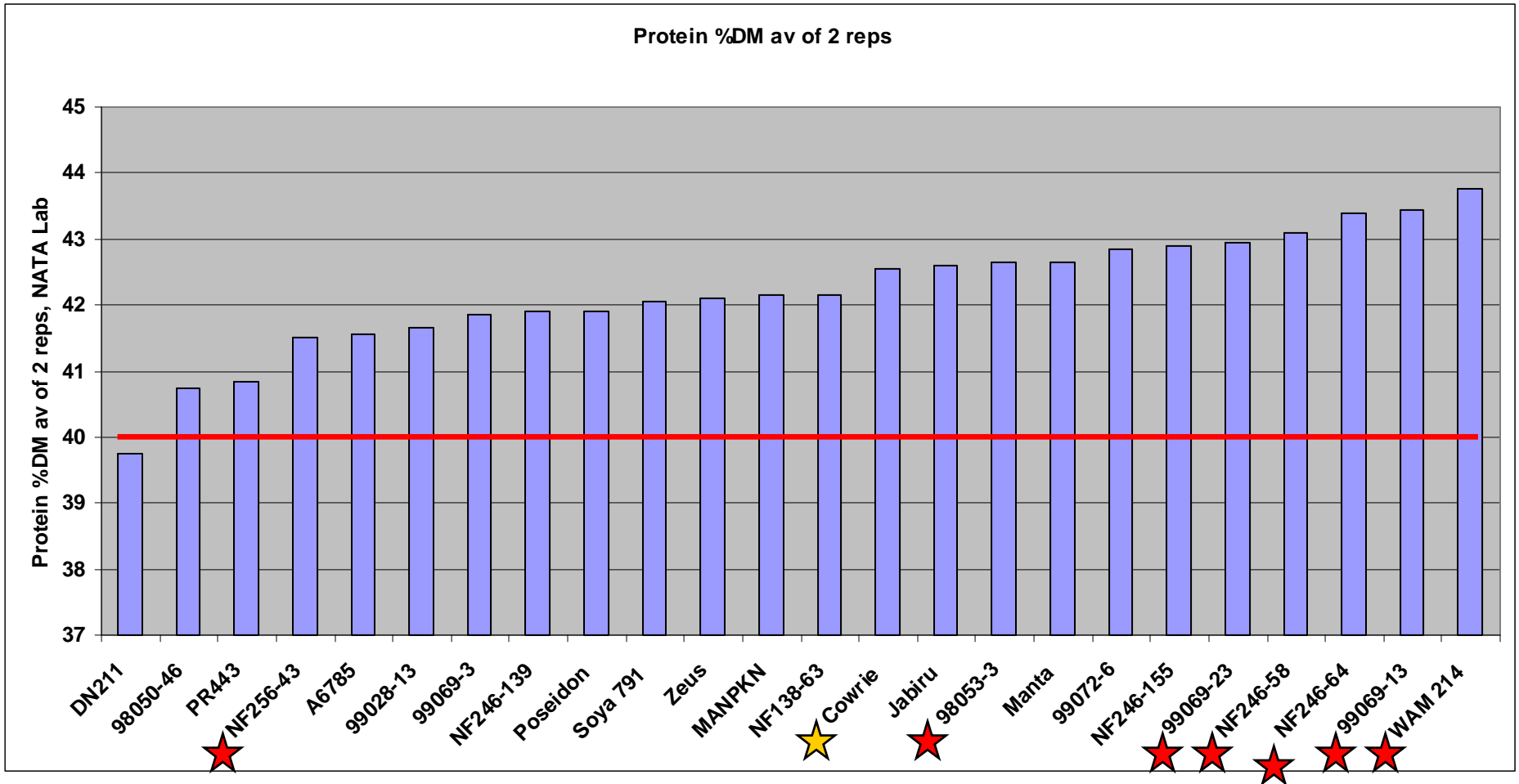


Early variety trial 7 Dec - Yield av of 4 reps



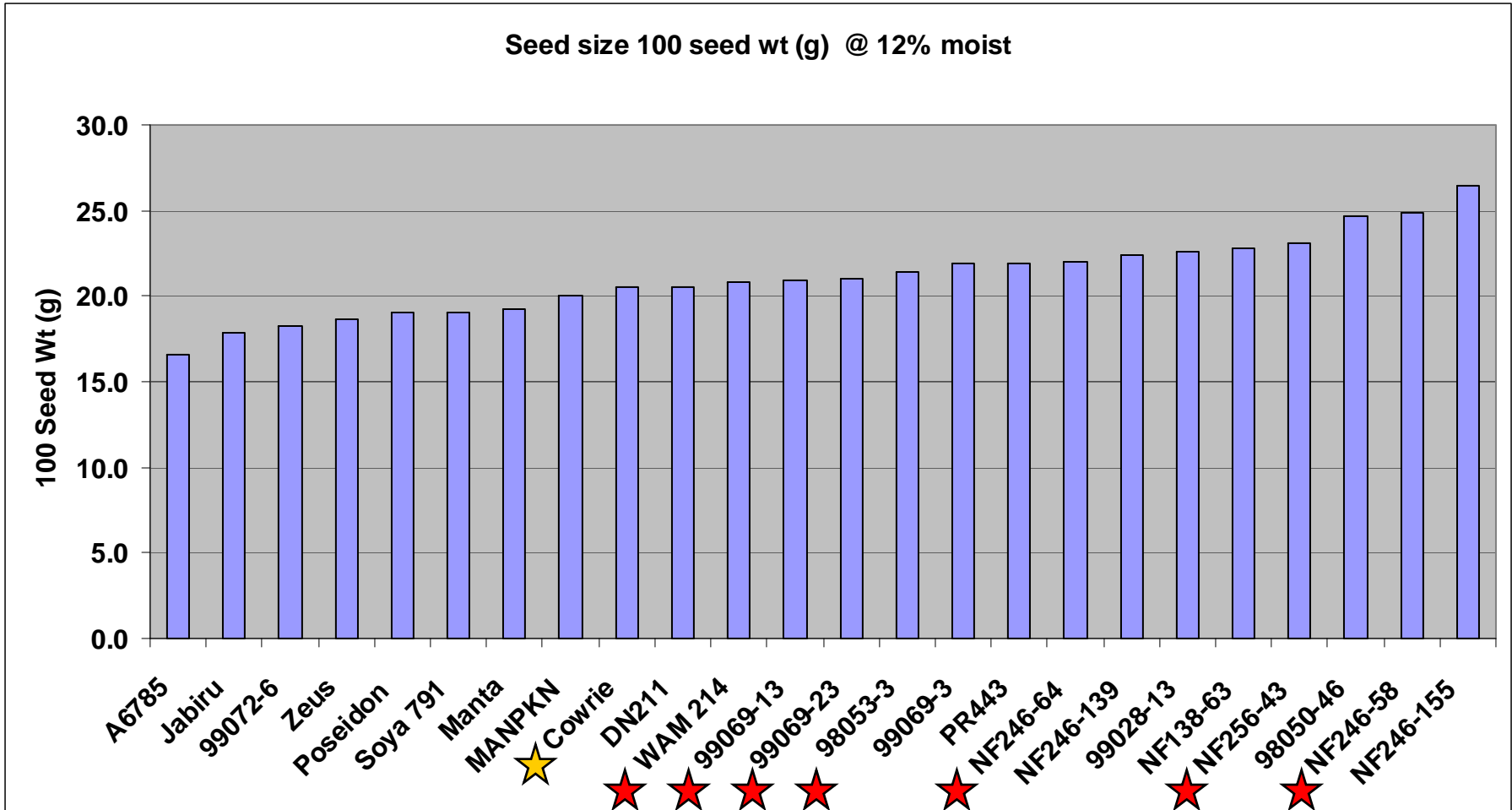
Early variety trial 7 Dec – Protein

Tested by Futari Grain Tech - NATA accredited Lab



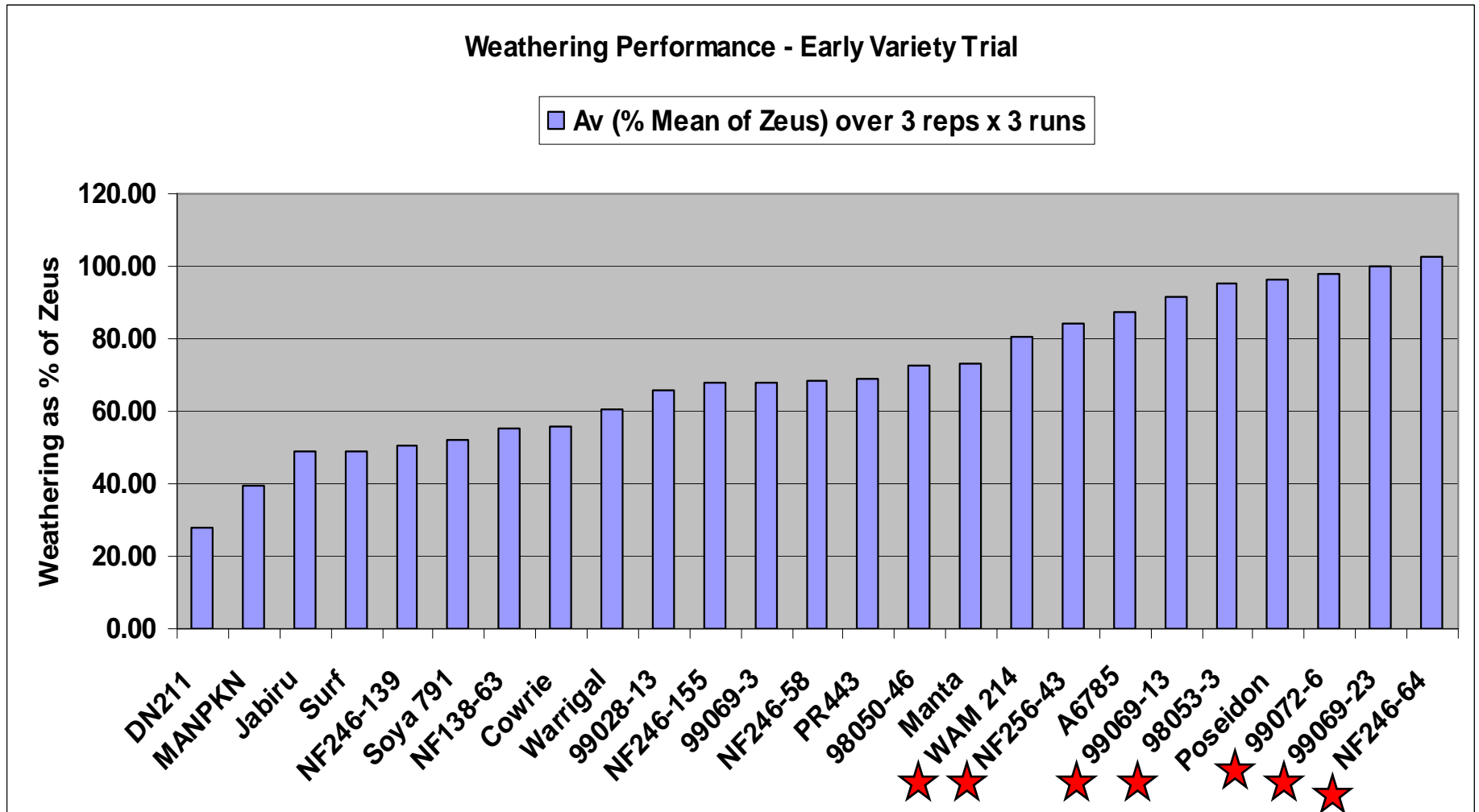
Early variety trial 7 Dec

Seed Size 100 seed wt (g) Av of 4 reps



Early variety trial 7 Dec – Weathering Tolerance

★ Benchmark Zeus = 100%



Early Variety Trial - Top Performers in 2005-06

	Yield t/ha @ 12% moisture	Protein %dry matter	Seed size g/100 seed	Weathering Tolerance (Zeus = 78.3)
98053-3	4.16	43.7	21.5	67.3
WAM 214	4.28	44.0	20.8	58.4
NF246-64	4.29	43.8	22.0	69.0
Cowrie	3.89	43.5	20.5	49.0
Soya 791	4.39	42.4	18.9	43.0

LSD:

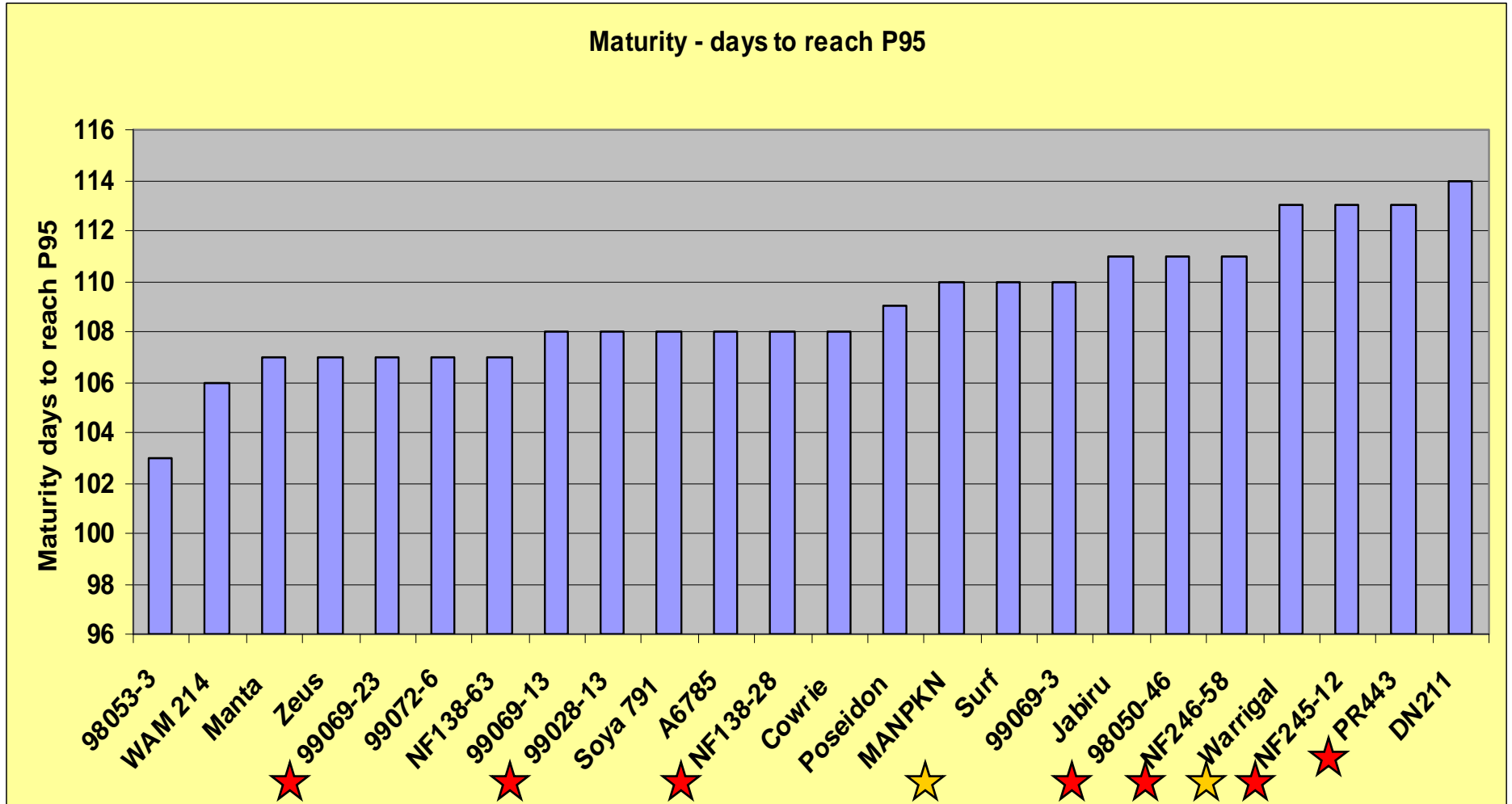
0.36

1.3

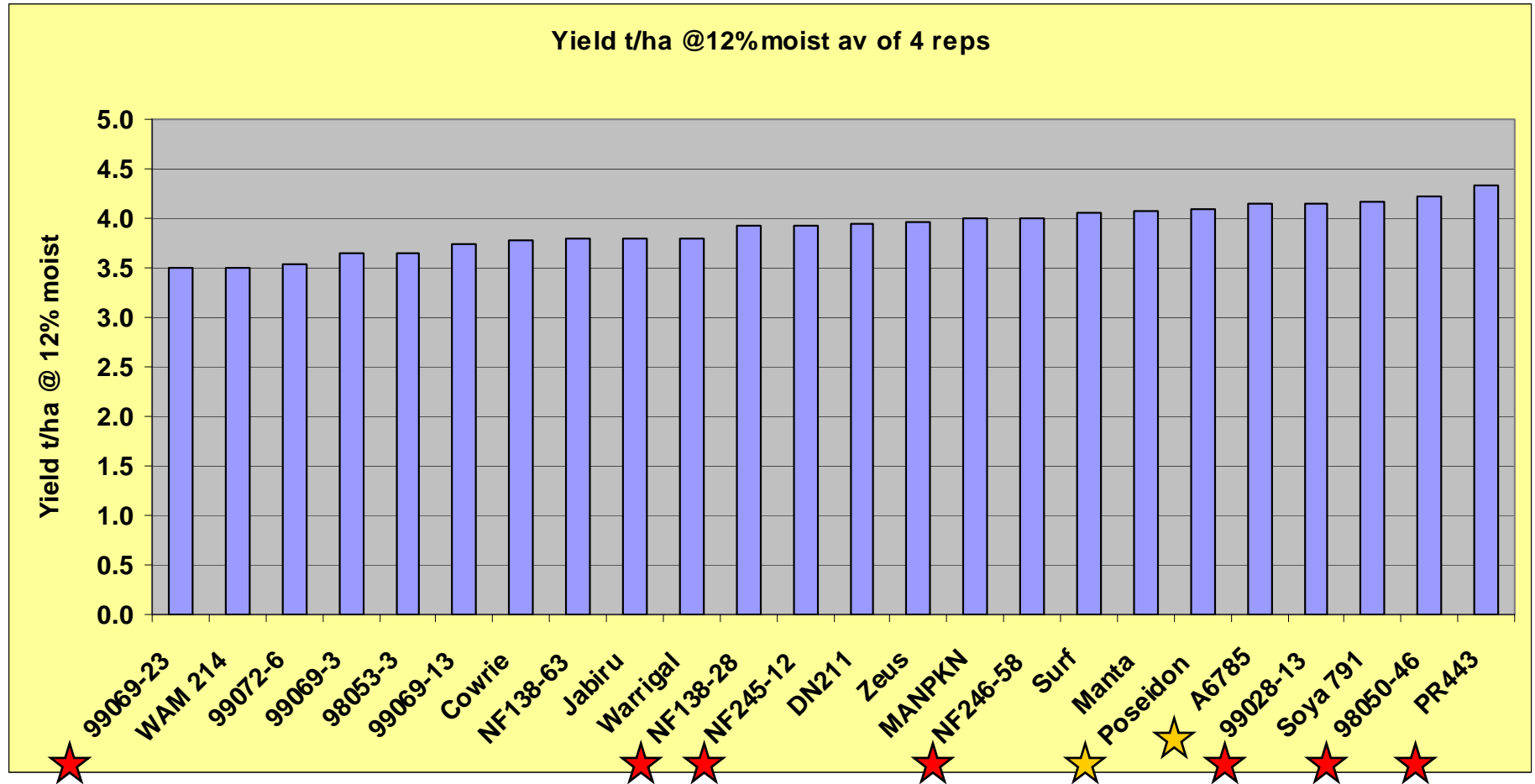
0.9

6.9 for contrasts with Zeus

Late variety trial 12 Jan – Maturity (days to P95)

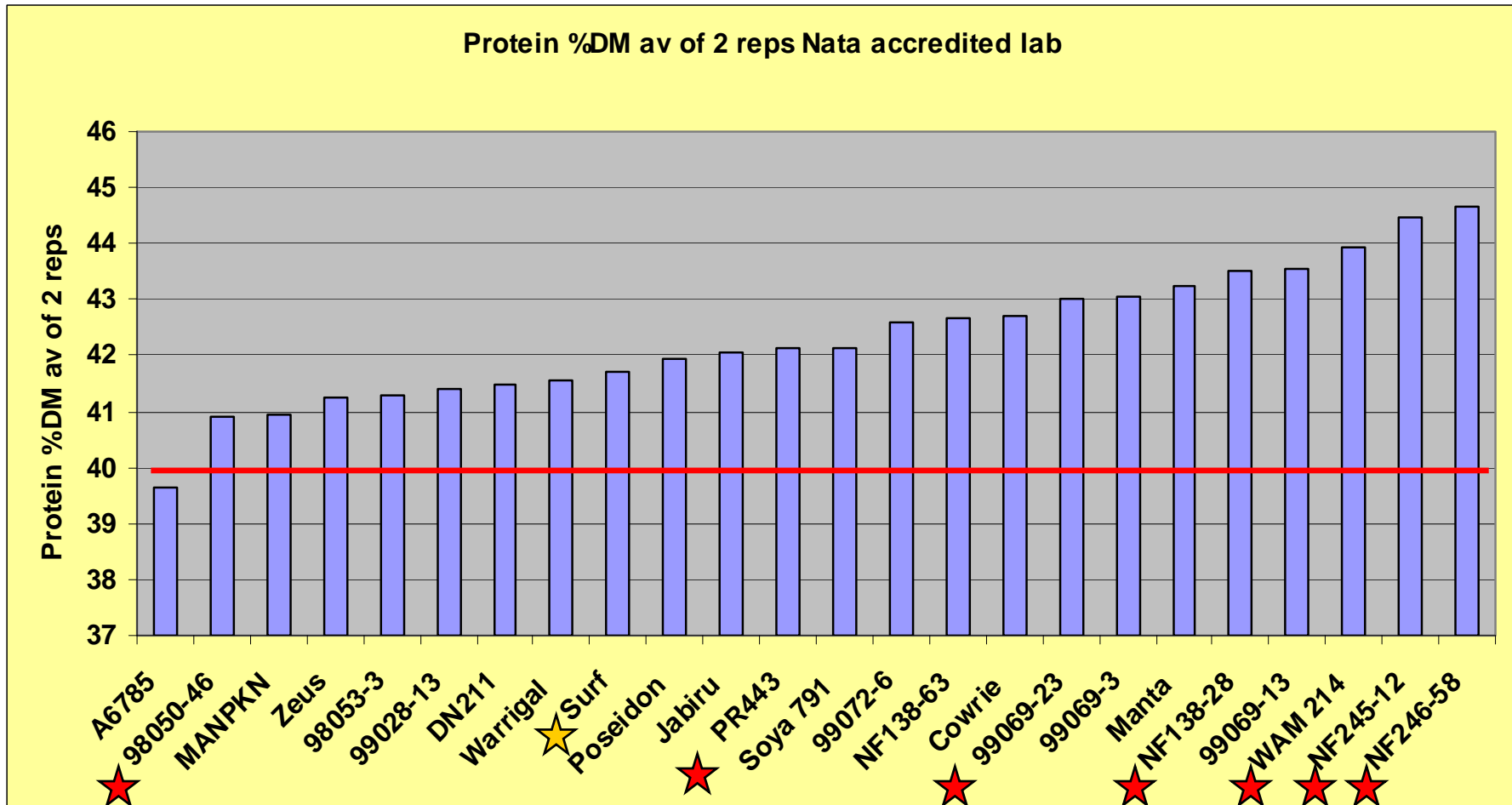


Late variety trial 12 Jan - Yield av of 4 reps



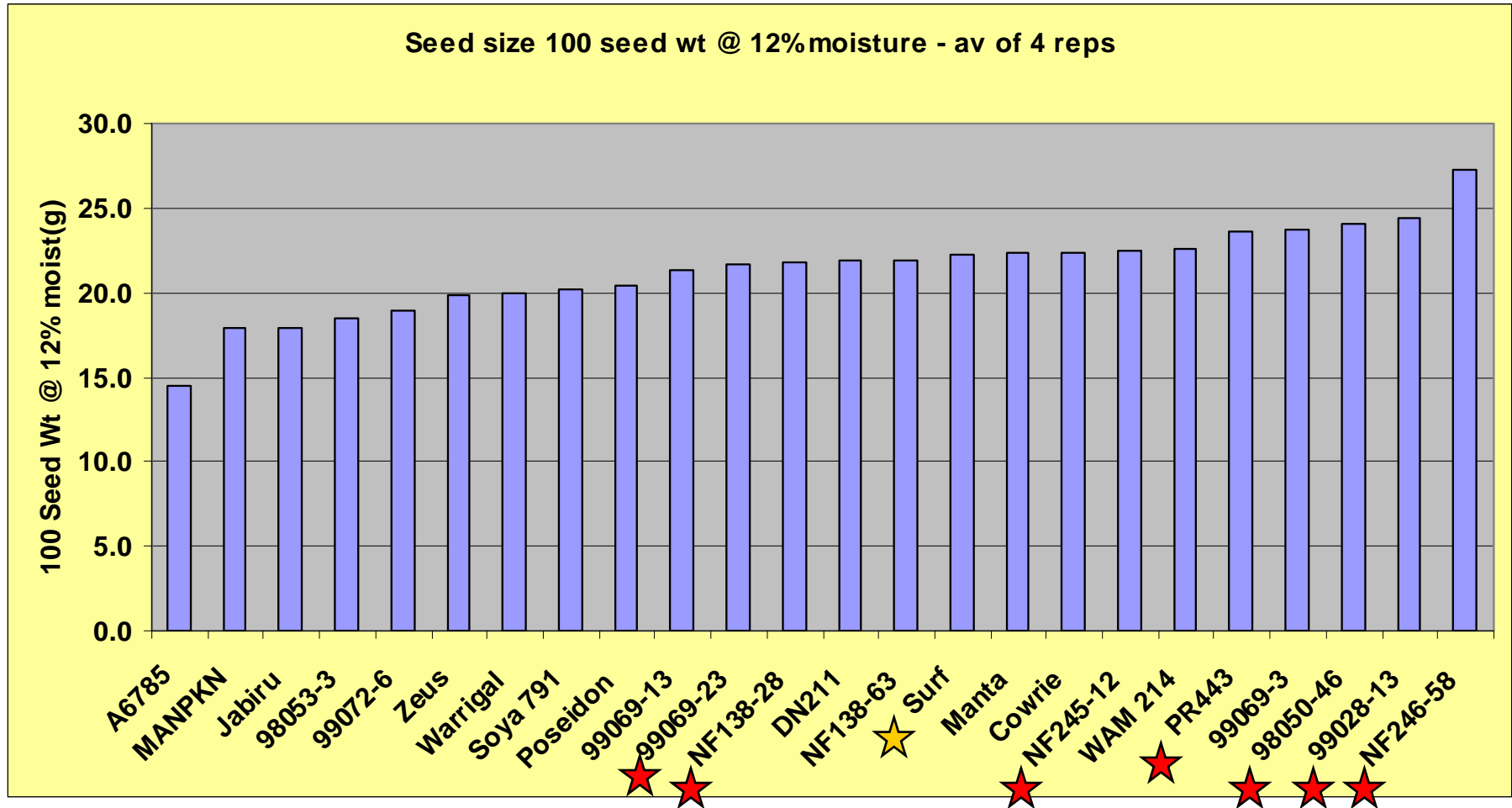
Late variety trial 12 Jan – Protein

Tested by Futari Grain Tech - NATA accredited Lab



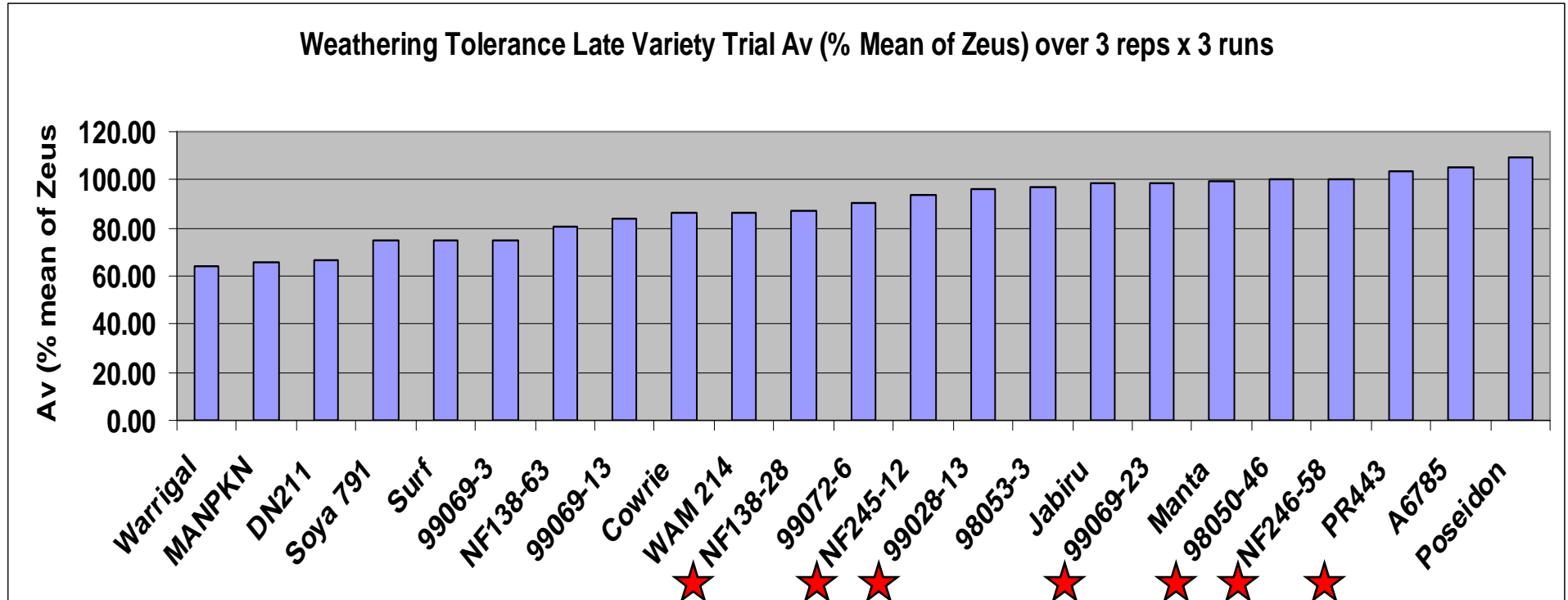
Late variety trial 12 Jan

Seed Size 100 seed wt (g) Av of 4 reps



Late variety trial 12 Jan - Weathering Tolerance

★ Benchmark Zeus = 100%



Late Variety Trial - Top Performers in 2005-06

	Yield t/ha @ 12% moisture	Protein %dry matter	Seed size g/100 seed	Weathering Tolerance (Zeus = 84.7)
PR443	4.38	42.7	21.5	81.6
99028-13	4.15	42.5	20.8	76.0
NF245-12	3.91	44.1	22.5	73.7
99069-23	3.51 X	42.7	21.9	77.4
Poseidon	4.04	43.2	20.4	85.6
Surf	4.08	42.1	22.2	58.7
Bunya	4.21	40.9	24.0 ?	78.6
Warrigal	3.83	41.3	20.0	50.2

LSD:

0.20

1.3

0.9

6.6 for contrasts with Zeus

2. Potential new variety release in 2006-2007

On farm evaluations

Evaluation of 98053-3 for early planting 200kg hand cleaned seed planted at Casino & Woodford Island

+ 250 kg planted for pure seed increase at Grafton

Further development of best lines

- Andrew James backcrossing clear hilum into WAM 214
- seed increase the best of the Early & Late Variety Trial lines in 2007-08
- Continue single plant seed increase of Surf (7 single plant lines selected from 81) to bulk at end of this season

98053-3



98053-3 at Casino 22nd March 2007



98053-3 at Woodford Island 8th Feb 2007



3. North Coast Oilseed Growers Association industry development priorities from AGM 2006

- **better varieties** – yield, weathering tolerance, wide range of sowing times & suitability to range of coastal farming systems, protein, clear hilum to access wider range of markets
- **protein** – 40% threshold to access higher value culinary markets – need better varieties + advice on better management to achieve high protein
- **investigate non-food uses** for soybean and other grains eg. bio fuels, plastics, ...
- **AOF** submission with priorities incl. national standard for protein testing in soybean grain



Cane & grain growers Alister McFarlane, Alan Munro, Brondwen McLean (GRDC) & David Newby (Pres NCOGA)

North Coast Oilseed Growers Association Soybean Crop Competition 2007

