Seednet Factsheet

Hayman

VARIETY SUMMARY

- Hayman is a unique variety that delivers different benefits to producers in different regions.
- **For hay and silage in NSW:** In the North Coast and northern Tablelands regions of NSW and in southern QLD, Hayman provides outstanding performance in hay and silage production for sheep and dairy producers. Hayman produces up to 25% greater biomass per hectare than Asgrow A6785 whilst maintaining the same feed values and less lodging.
- Hayman is resistant to Powdery Mildew and highly tolerant to manganese toxicity, which is common in coastal soils.
- **For grain in QLD:** From the Darling Downs and Lockyer Valley northwards to the Burnett and Mackay regions of QLD, Hayman provides outstanding grain yield potential with better disease resistance and protein than Soya 791 and Bunya.
- Excellent grain qualities of Hayman including clear hilum, high protein and large seed size suit higher value culinary markets. Hayman possesses the 11sA4 protein null (like Bunya) that is valued by tofu processors for its gelling qualities.
- In the North Coast region of NSW, Hayman can be considered for grain production in the latest planting window (eg. end Jan to early Feb). It is not recommended for grain production at the early or mid season planting windows in the North Coast region due to its large biomass.

BREEDING

Hayman (NK55C-32) was bred by Dr Andrew James, CSIRO Brisbane and evaluated by Dr Ian Rose, NSW DPI Narrabri and Dr Natalie Moore, NSW DPI Grafton as part of the Australian Soybean Breeding Program. This breeding program is funded by grain grower levies, GRDC, CSIRO and NSW DPI.

Pedigree: NK55 = (Cowrie/97056-17)/Poseidon. 97056-17 = (He Dian 22/Melrose). He Dian 22 is a culinary variety from far north east China.

SOIL TYPE

Hayman is broadly adapted to most soil types including acidic soils common in coastal production areas.

MATURITY

In the southern production regions of QLD such as the Darling Downs and Lockyer Valley, Hayman maturity is around 130 days. As the variety is moved northwards, the days to reach maturity decrease. In the Burnett region of QLD the maturity of Hayman is around 120 days.

In hay and silage production regions of the North Coast and northern Tablelands of NSW, Hayman matures more slowly than A6785 (approx 10-14 days, Figure 1). This longer period in the pod filling phase provides a wider opportunity to complete hay and silage operations. This is beneficial in coastal areas where delays due to wet weather are common.

Figure 1. This replicated trial conducted by NSW DPI at Grafton demonstrates the increased biomass of Hayman (right) compared to A6785 (left) and the longer maturity of Hayman (approx 10-14 days). Hayman's longer maturity allows a wider window for making hay and silage.

Photo N Moore, NSW DPI

PLANT CHARACTERISTICS

Hayman is a tall, high biomass, long season variety with superior lodging resistance to A6785, Soya 791 and Warrigal. It is a semi-determinate type with an upright stature and good branching ability (Figure 2). Hayman should be the first choice for growers seeking high biomass production. For recommended regions and sowing times refer to the map and Table 4 at the end of this factsheet.

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GRAIN QUALITY

- Hayman has large seed with a clear hilum and readily produces protein levels above 43% dry matter basis. These traits provide growers with wider market options including the higher value human consumption markets as well as crushing markets.
- Hayman possesses the 11sA4 protein null (like Bunya) that is valued by tofu processors.

Figure 2. For grain production Hayman is best adapted from the Darling Downs northwards to the Burnett and Mackay regions of QLD (see map below).

Photo N Moore, NSW DPI

YIELD

Hayman has performed consistently well compared with other current soybean varieties in trials over several seasons. In QLD Hayman provides a high yielding alternative to Bunya and Soya 791 with better disease resistance and less lodging (Table 3).

DISEASE RESISTANCE

Hayman is resistant to Powdery Mildew, has high tolerance to manganese toxicity, which is common in coastal soils. In NSW DPI trials Hayman has demonstrated similar weathering tolerance to A6785.

FEED VALUE ANALYSIS

Hayman has performed consistently well in hay and silage trials conducted on research facilities and farms in northern NSW over several seasons. Under the same field conditions Hayman (11 t/ha dry matter) produced 25% more biomass than A6785 (8.7 t/ha dry matter) (Table 1) whilst maintaining the same feed value analysis (Table 2).

Table 1. Hayman biomass and grain production trial results, NSW DPI Grafton

Biomass and grain production trial data Data from 3 field replicates, NSW DPI Grafton			
	Unit	Hayman	A6785
Plant height	cm	124	103.6
Biomass (shoot biomass at mid pod-fill)	t dry matter/ha	11	8.7
Lodging	Score 1 - 5	1.5	2.5
Downy Mildew	Score 1 – 5	1	2.2
Flowering (days to F50)	days after planting	57	51
Maturity (days to P95)	days after planting	136	120
Grain yield	t/ha @ 12% moisture	4.4	4.3
Grain protein	% dry matter	45.5	41.6
Seed size	g/100 seed @ 12% moisture	24.6	15
Grain protein	% dry matter	45.5	41.6
Hilum colour		clear	brown

Table 2. Hayman feed value analysis

Feed Value Analysis NSW DPI Feed Quality Laboratory, Wagga Wagga			
Feed Value	Unit	Hayman	A6785
Neutral Detergent Fibre	%	34	36
Acid Detergent Fibre	%	23	24
Crude Protein	%	27	27
Inorganic Ash	%	12	12
Organic Matter	%	88	88
DMD (Dry Matter Digestibility)	%	67	67
DOMD (Digestible Organic Matter in the Dry Matter)	%	63	63
Metabolisable Energy	MJ/kg Dry Matter	10	10

Table 3. Plant characteristics and disease resistance of Hayman soybean in comparison to other varieties

Variety	Hilum colour	Yield t/ha @ 12% moisture 2007-13	Protein % dry matter basis 07-13	Seed size seeds per kg	Manganese tolerance	Phytophthora root rot Race resistance				Powdery Mildew	Weathering tolerance 2007-13 % unweathered grain
						1	4	15	25		
Hayman	Clear	4.2	44.4	4150	High	Y	Y	Y	Y	R	82
A6785	Brown	4.0	39.4	6660	Low	Y	Y	Y	Y	R	83
Soya 791	Tan	4.2	41.6	5260	Low	Y	Y	N	Y	S	54
Bunya (2006)	Clear	4.2	40.7	4000	Mid	Y	Y	Y	Y	S	72

AGRONOMIC GUIDELINES

Sowing

Seed should be sown into moist soil to a depth of no more than 5 cm. Dryland soybean should be planted into a full profile of soil moisture. For example, 100–120 cm wet soil in the Northern slopes of NSW and 60–80 cm of wet soil in the NSW Tablelands.

Irrigated soybean fields should be irrigated before sowing and allow a budget of 6–8 ML/ha. Planting at the optimum time for the variety maximises yield potential and grain quality by taking full advantage of daylight/heat units and avoids damage from early frosts.

Establishing the correct plant population for local conditions is critical to achieving yield potential. Optimum seeding rates vary widely across regions and should be calculated based on seed size, the target plant population appropriate for the region, row spacing and sowing time. Consult your local agronomist to determine the correct plant population for your area and farming system. Consult your state agriculture department for more information about soybean production (in NSW refer to the NSW DPI Summer Crop Production Guide).

Use the following formula to calculate sowing rates. An establishment rate of 85% suits most situations.

1000 Seed Weight (grams)	x	Target Plant Population	÷	100	÷	Establishment % x Germination % .....

= Your Seeding Rate.....kg/ha

Nutrition

Always inoculate seed correctly using the soybean-specific strain of Group H inoculant (strain CB 1809). In most situations soybean requires little to no ‘starter’ nitrogen. Too much nitrogen at planting (>25kg N/ha) will interfere with nodulation and may result in low residual N benefits from the soybean crop for the following crop or pasture.

As Hayman is a high biomass variety it is important to provide adequate nutrition to the crop. Critical nutrients for soybean production include phosphorous (P), potassium (K), sulfur (S), and trace elements including zinc (Zn) on heavy grey clay soils and molybdenum (Mo) on acid soils of the NSW tablelands and coast. Nutrient budgets should be calculated on the basis of a recent soil test.

Weed and insect management

Controlling weeds in the early stages of crop growth before canopy closure will remove competition and improve yield. A wide range of pre and post-emergent herbicides are available.

Soybean crops generally host a wide range of beneficial insects making them ideal for Integrated Pest Management (IPM) practices. Inspect crops for insect pests and beneficial insects at least once a week before flowering and then twice a week from flowering to maturity.

Harvest and grain handling

Harvest soybean crops as soon as mature to reduce the risk of weather damage or harvest losses from over-dry grain. Soybean has a delicate seed coat and should be treated with care to avoid dropping seed.

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Where should I grow Hayman?

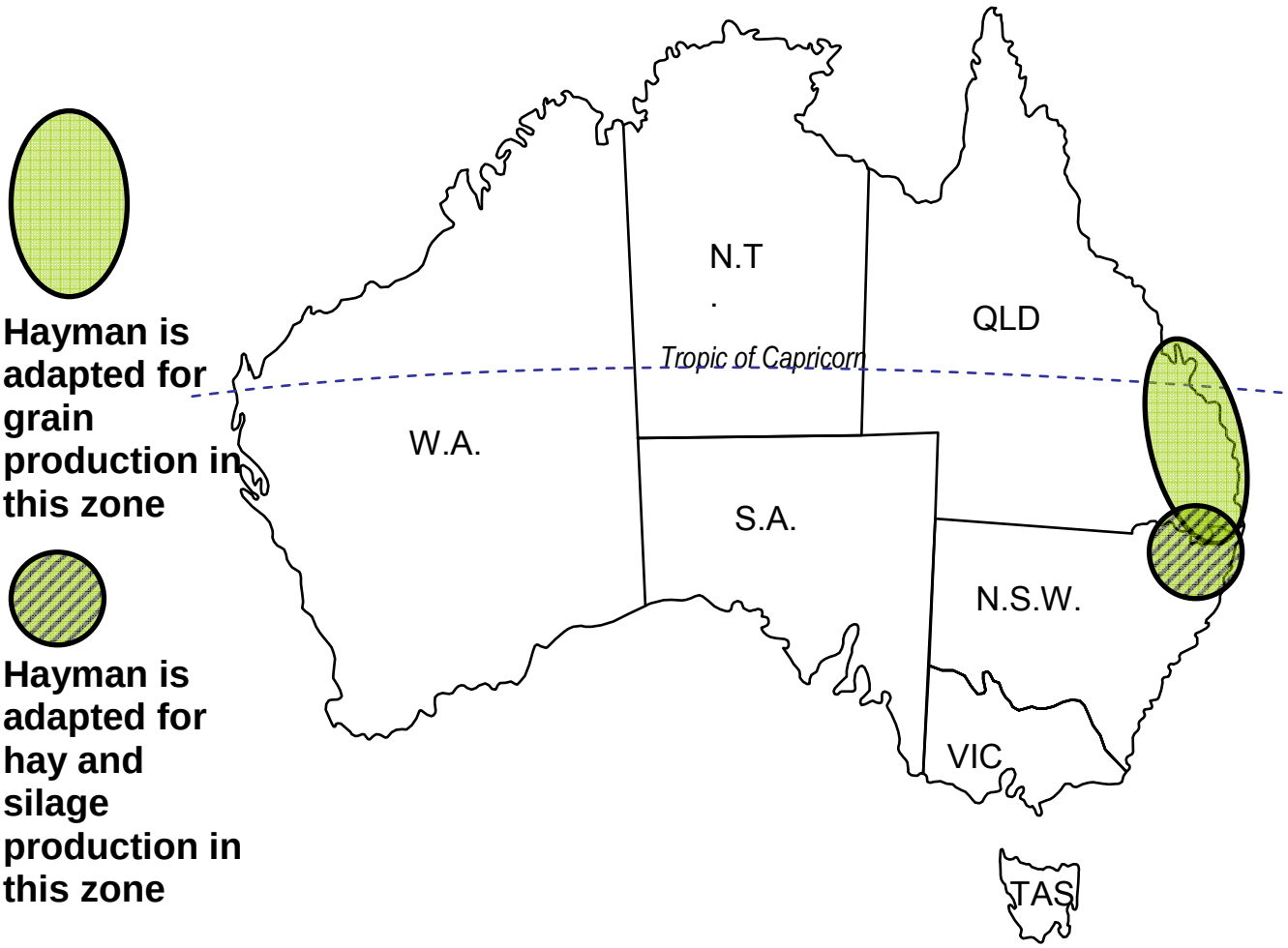

Table 4. Sowing time recommendations for Hayman according to production region and intended use

Region	For hay, silage or green manure production	For grain production
QLD Northern (Mackay)	Late Nov to Mid Dec for all regions	Early Dec
QLD Central Coast & Burnett		Mid Dec - mid Jan
QLD Darling Downs & Lockyer Valley		Mid Dec - early Jan
NSW Tablelands & Northern Slopes		To avoid frost risk choose a shorter season variety for grain production in this region (eg. Richmond)
NSW North Coast		Late Jan – early Feb

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GRDC Grains Research & Development Corporation | CSIRO | NSW Government Department of Primary Industries

For more information call the Seednet Growers Line on 1300 799 246
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