

AUSTRALIAN MUNGBEAN INDUSTRY STRATEGIC PLAN 2015–2019





Liz Alexander


Blue Dog Agribusiness

PO Box 2240
EMERALD Q 4720

M: 0429 471 511

F: (07) 3054 4451

E: liz@bluedogag.com

 [bluedogagCQ](https://twitter.com/bluedogagCQ)



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1. INDUSTRY OVERVIEW

1.1. ABOUT THE AUSTRALIAN MUNGBEAN ASSOCIATION

The primary objective of the Australian Mungbean Association (AMA) is to work for the improvement and development of mungbeans in Australia.

The AMA is a non-profit organisation comprising all sectors of the Australian mungbean industry. It includes plant breeders, research agronomists, grain traders, seed graders and packers, crop consultants and representatives from a range of other government agencies and private sector enterprises.

The AMA is committed to developing effective networks and linkages between key stakeholders within the industry, and to ensuring that industry efforts and resources are maximised and ultimately aligned for the common good of the mungbean industry.

The association has a strong focus on ensuring:

- High levels of food safety and hygienic standards are maintained across the whole industry
- Quality assurance systems are adopted that improve traceability of our produce and market confidence in Australian mungbeans
- Superior mungbean cultivars are developed that will achieve both higher returns for producers and also meet overseas consumer demand for premium quality mungbeans
- Mungbean producers have ready access to the best available production, marketing and industry information

AMA activities are supported by the following Association Committees: Promotions; Seeds; Standards; Packer and Logistics; Research and Development.

1.2. PURPOSE OF THE STRATEGIC PLAN

This Strategic Plan is the fourth developed by the Australian Mungbean Association (AMA) for the industry; it commences from 1 January 2015 and covers the five year period to 2020. Like those previous plans, the Strategic Plan 2015 – 2019 is designed to respond to changing growing conditions and market environments, and create a path for industry development. It is a combined effort by all sectors of the industry who put individual interests aside for the benefit of the whole industry.

The Strategic Plan 2015-2019 has several key aims, these being:

- Document the achievements and results from the previous Strategic Plan
- Communicate a common understanding of the mungbean industry's potential and strategic priorities;
- Develop 5-year strategic priorities and key actions for the Australian Mungbean Association;
- Provide a mechanism to strengthen relationships between key organisations and people in the Australian mungbean industry; and to
- Provide the industry with accountability and evidence to accurately measure the success of planned actions.

The Strategic Plan will support the AMA to assist and represent the interests of the Australian Mungbean Industry.

1.3. HOW WAS THE PLAN DEVELOPED?

The Strategic Plan was developed with input from all sectors of the Australian mungbean value chain, and from all regions producing mungbean in Australia. Two key activities were undertaken as part of the process:

- An industry survey was conducted via Survey Money during the period from 20 April to 19 May 2014. A total of 131 fully completed survey responses were received, comprised of 33 growers farming a total of 49,203 ha of dry land cultivation and 4011 ha of irrigation, and 49 agronomists and/or advisers. Inclusion of the advisers expanded the grower sector represented by an additional 179

growers serviced by these respondents in 2013/14. 17 members of the processing and export sectors responded and 32 members of the RDE and lab sector.

- An Industry Strategic Planning workshop was held over two days in Brisbane on the 28 and 29 May 2014 and attended by 35 people, representing all sectors of the value chain and growing regions. During the workshop, participants reviewed the survey results and identified and prioritised projects and actions for the organization over the next five years.

This information was discussed and further reviewed by the members of the Australian Mungbean Association Committee via teleconference on 31 October 2014.

1.4. EXECUTIVE SUMMARY

For the consumer, Australian mungbean are a high protein food, which are clean, safe to eat and have the traceability and quality systems to prove and communicate these attributes to the market. For the grower, mungbean provides a valuable short season, summer legume option for northern cropping systems.

Cooperatively, the industry has achieved many of the goals set in the 2009 – 2014 Australian Mungbean Association (AMA) Strategic Plan. The National Mungbean Improvement Program (NMIP) has developed the Crystal and Jade AU varieties which have enjoyed a rapid and high level of adoption by growers. The success and suitability of these cultivars is evidenced by the perceived level of improvement in quality performance across all sectors of the value chain and the wide support for the levying of the point-of-sale seed royalty to fund the NMIP program. **Continued investment in innovation and improvement through the work of the NMIP and the wider research community** is a key priority area for the 2015-2019 Strategic Plan.

To capitalise on previous investment in the industry's robust traceability and quality systems the 2015 - 2019 Plan highlights as a priority the need to **secure strong market access through coordinated promotion to export markets and maintaining the industry's reputation a producer of clean and hygienic food**. The majority of industry members are familiar with traceability and quality programs and processes, but improved communication between the processing and growing sectors will support the full adoption of these systems, as well as building confidence in grading assessments.

Growers and agronomists reported average yields remain variable across regions, seasons and by water management. Mungbean remains an opportunity crop but plays an important rotation function in farming systems for double-cropping immediately following a winter crop, and by replace summer crops to combat Feather top Rhodes and/or grass weeds issues. Seasonal conditions significantly impact the nationally planted area and the industry aims to move towards a pillar crop status for growers. The industry will do this by **improving the on-farm performance of mungbean by establishing best management practices** for irrigation and nutrition, economic benchmarks, and the sustained foundation of the AMA Approved Seed Scheme.

From the 2014 survey results, the AMA and its partners have performed well in extending relevant and timely technical services and information for all industry sectors. **Continuing targeted industry extension and promotional activities capacity to improve the perceived value of mungbean as a crop choice** is also seen as a key industry priority over the next five years.

Underlining these priorities, the Australian Mungbean Association will also focus on its own operations and processes to ensure that the **organisation is credible and resourced to achieve the objectives of the industry** now and in the future.

The 2015 - 2019 Australian Mungbean Industry Strategic Plan demonstrates the collective energy and commitment by all partners of the value chain to growing and supporting the industry, and provides an accountable and achievable framework to achieve these goals.

1.5. THE AUSTRALIAN MUNGBEAN INDUSTRY'S STRATEGIC PLAN 2014 – 2019

The Australian Mungbean Association (AMA) aims to improve and develop the industry through the aligned collaboration of value chain members and other key stakeholders

VISION: By 2019, mungbean production will grow to produce an average 170,000 tonnes per annum through its permanent and prosperous fit in the farming system

Mungbean's Competitive Advantage: A summer legume that grows in less than 100 days supported by a versatile processing sector that can meet niche markets specific needs

Australian Mungbean's Value Proposition: A high protein food that is verified clean and safe to eat.

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Key Result Priority Outcomes:

Investment in innovation and improvement	Strong Market Access	Improved on-farm performance	Capacity & Promotion	AMA is a credible organisation
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Strategies and Key Performance Indicators

Innovate and improve through research investment	Secure and develop markets	Increase yields and reduce production risks	Improve industry capacity and perceived crop value	Run AMA effectively
<ul style="list-style-type: none"> National mungbean research network established New varieties developed and commercialised by the National Mungbean Improvement Program Critical levels for crop nutrition and physiological constraints established Determined optimal crop irrigation requirements Access to required chemistry secured and maintained Better understanding of weeds, pest and pathogens dynamics established International research collaboration occurs where relevant 	<ul style="list-style-type: none"> Awareness and adoption of traceability systems by all sectors of the value chain Effective liaison with related Government Agencies & industry market chain Improved reputation & commercial potential for Australian Mungbean Information provided to support adoption of traceability and assurance systems 	<ul style="list-style-type: none"> AMA Approved Seed Scheme continued Irrigation best management practices established Nutrition and physiological best management practices established Information available on economics and sustainability of rotations 	<ul style="list-style-type: none"> Continued delivery & development of accredited AMA Agronomist Program Industry technical capacity identified & secured Delivery & development of extension that services priority needs of growers & consultants Extension maximised through collaboration with other organisations Crop benefits promoted via suitable media at critical decision times for growers & advisers Current and responsive AMA website 	<ul style="list-style-type: none"> Strong working relationship with members Engaged and informed mungbean value chain Partnerships secure and valued by investors and key stakeholders AMA has a sound financial position Legal and regulatory compliance requirements are met Arbitration of disputes supported



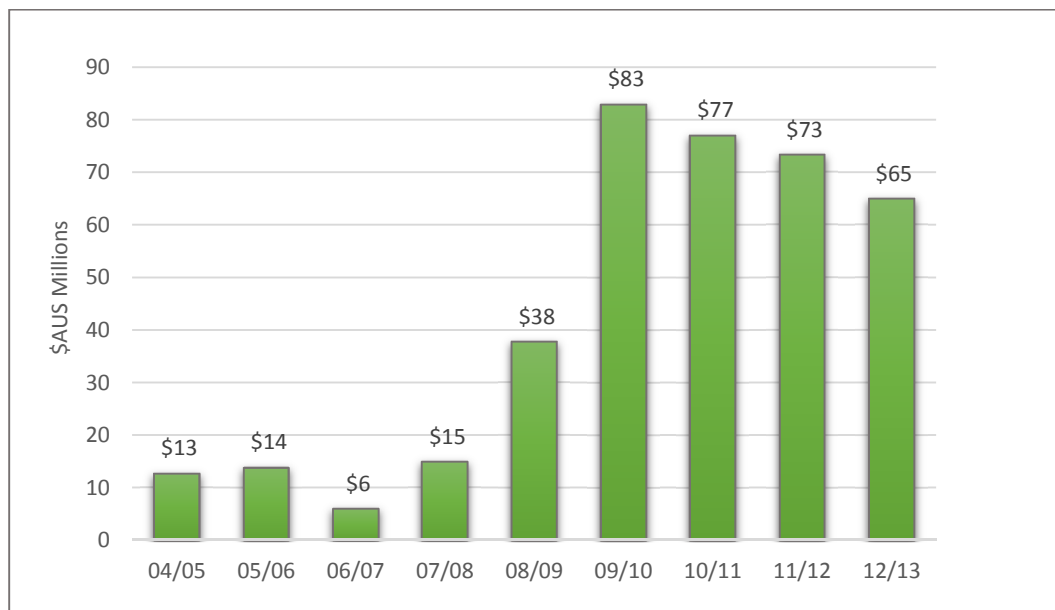
2. CHALLENGES AND OPPORTUNITIES

2.1. OVERVIEW OF THE INDUSTRY

Total Value of the Industry:

The average total value of the mungbean industry has risen considerably from \$42.6 million (2004/5 - 2008/9) to \$74.5 million (2009/10 – 2012/3) between publication of this Strategic Plan and the previous Plan. However, since 2009/10 there has been a steady decline based on reduced volume of production and increasing adverse climatic conditions (Figure 1).

Figure 1: Australian Mungbean Export Value FOB (\$AUS)

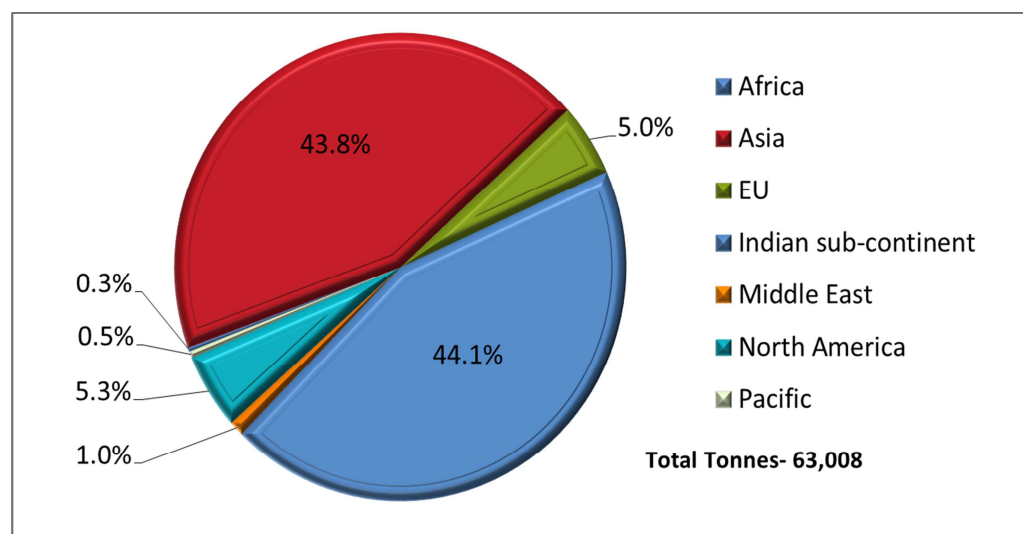


(ABARES Australian Commodity Statistics 2013)

Export Destinations and Growth:

Australian mungbeans are exported to a wide range of countries, however key export destinations remain Asia and the Indian sub-continent. Nearly 90% of Australian mungbean marketed to these regions (Figure 2).

Figure 2: Primary countries of destination as % of total Australian exports (Nov 2012 – Oct 2013)



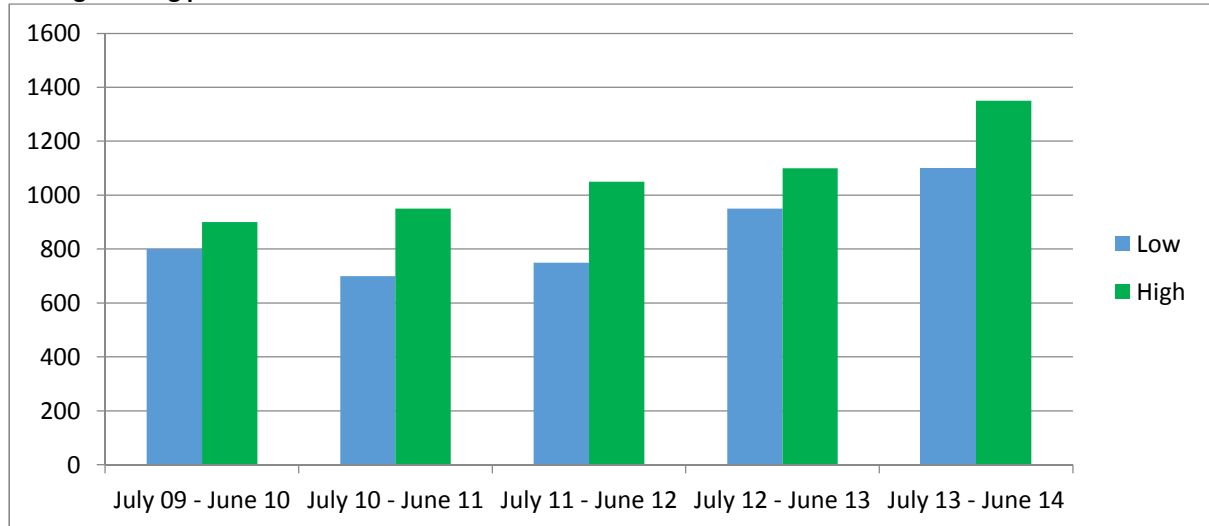
(Source James Hunt 2014)

Domestic Consumption:

Mungbean sprouts are the most commonly consumed bean sprouts in the Australian domestic market. Unlike ripe vegetables, whose nutritional value progressively decreases after they have been harvested, bean sprouts retain their nutritional properties until consumed. Mungbean sprouts and whole mungbeans destined for do-it-yourself sprouters are sent to all states of Australia (www.sprout.com.au 2014).

The value of the sprouting sector was additional to the mungbean export values shown in Figure 2; value and tonnage produced for the sprouting sector was not available.

Average Pricing per Annum:

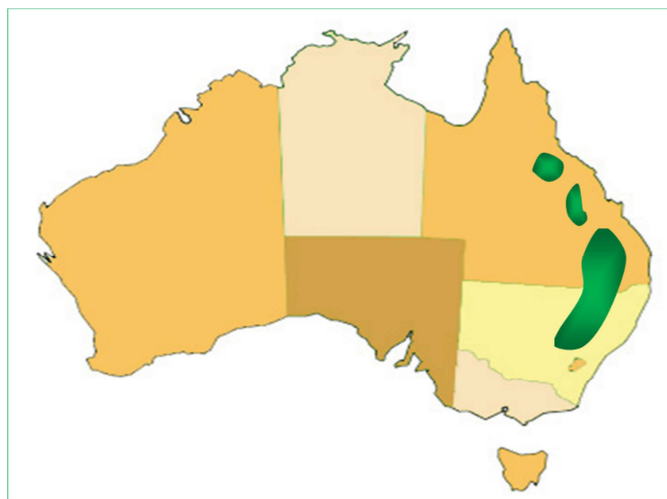


(Source James Hunt 2014)

Australian Production and Yields:

NSW and Queensland remain the key growing regions for mungbean production as shown in Figure 3 and Table 1.

Figure 3: Key mungbean growing areas in Australia



(AMA Industry Profile 2010)

Table 1: Australian area sown, yields and production of mungbean, by state

	Unit	NSW	Victoria	Queensland	South Australia	Australia
Area						
2008–09	'000 ha	8.5	0.0	36.2	0.1	44.8
2009–10	'000 ha	19.1	0.2	25.7	0.0	44.9
2010–11	'000 ha	31.4	0.1	54.6	0.2	86.4
2011–12	'000 ha	22.0	0.0	33.0	0.0	55.0
2012–13	'000 ha	10.0	0.0	28.0	0.0	38.0
Yield						
2008–09	t/ha	1.00	0.00	0.85	0.89	0.88
2009–10	t/ha	1.08	0.00	1.19	0.00	1.14
2010–11	t/ha	0.63	0.99	0.82	1.53	0.76
2011–12	t/ha	0.80	N/A	0.82	N/A	0.81
2012–13	t/ha	0.96	N/A	0.90	N/A	0.92
Production						
2008–09	kt	8.5	0.0	30.8	0.1	39.5
2009–10	kt	20.6	0.0	30.5	0.0	51.2
2010–11	kt	19.9	0.1	44.9	0.3	65.2
2011–12	kt	17.5	0.0	27.0	0.0	44.5
2012–13	kt	9.6	0.0	25.2	0.0	34.8

(ABARES Australian Commodity Statistics 2013)

Growers and advisers reported three key reasons they choose to grow mungbeans in the 2014 survey:

- Planting mungbeans as a double-crop opportunity immediately following a winter crop (e.g. wheat);
- To replace summer crops such as sorghum or corn to combat Feather top Rhodes and/or grass weeds; and
- As an opportunity crop shifting from a summer crop cycle to a winter crop cycle.

Nearly a third of growers surveyed (30%) used a summer mungbean as a double crop opportunity following wheat; this represented the key cropping scenario across all growing regions. 27% of respondents stated that they use mungbean as part of a rotational strategy to combat Feather top Rhodes/or grass weeds. Only 15% of growers responded that price was the most important driver in the decision to plant mungbeans. The survey indicated that mungbean is considered a 'pillar crop' by only a small section of the industry with 12% answering that they plant every year.

Inconsistency in yields shown in Table 1 was also reflected in the 2014 survey results from growers and advisers (Table 2), however growers reported higher average yields than those reported by ABARES. Table 2 also shows the inability to plant, primarily due to climatic conditions over the last three seasons (% growers planted).

Table 2a: Reported Yields & Planted Areas by Region by Growers

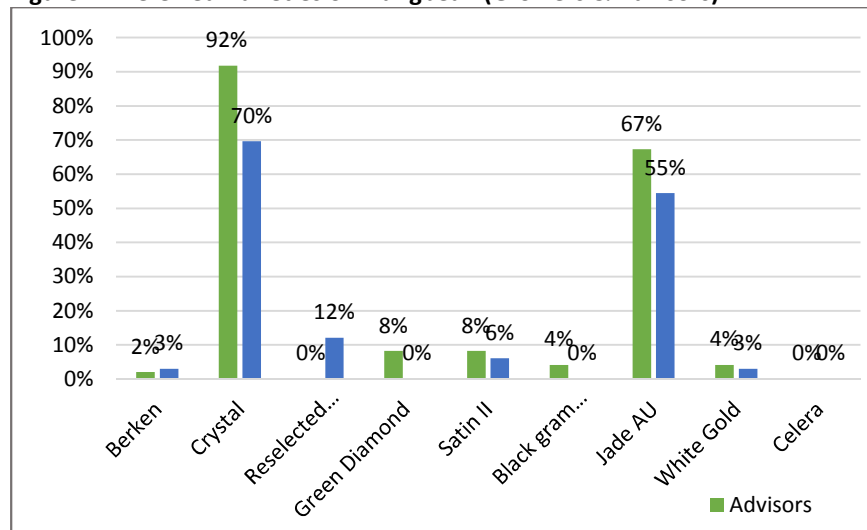
	2013/4 Total plant (ha)	2013/4 Average yield (t/ha)	2013/4 Growers planted (%)	2012/3 Total plant (ha)	2012/3 Average yield (t/ha)	2012/3 Growers planted (%)	2011/2 Total plant (ha)	2011/2 Average yield (t/ha)	2011/2 Growers planted (%)
ALL	3773	0.76	61%	4371	1.26	58%	5697	1.16	61%
CQ & NQ	2180	0.68	53%	1619	1.28	47%	4051	1.31	63%
SQ	1153	0.61	89%	1342	1.32	67%	846	1.31	44%
NSW	440	1.80	40%	1410	1.15	80%	800	0.54	80%

(AMA Industry Survey 2014)

Varietal Performance:

Both advisors and growers reported an improved yield performance from new varieties developed through the National Mungbean Improvement Program, as displayed in Figure 4. There was a clear preference for the Crystal variety, as well as strong support for the new variety Jade AU released in 2013.

Figure 4: Preferred Varieties of Mungbean (Growers & Advisors)



(AMA Industry Survey 2014)

AMA survey participants representing the Research Development and Extension (RD&E) and Laboratory sectors also reported observing some improvement to grading losses since the introduction of new varieties. However the areas of most improvement appeared to be the result of improved harvest management. These were Contamination by soil (80% observed some improvement), Insect damaged grain (67%) and moldy, bin-burnt grain (60%).

Very strong support for the research undertaken on mungbean cultivars to improve yield and suitability by the National Mungbean Improvement Program (NMIP) was demonstrated by the willingness of respondents to pay the point-of-sale seed royalty which funds this program. More than 80% supported the point-of-sale seed levy, with only 3 respondents not supporting the royalty. Support was consistently high across all sectors, with a small group either unsure or unaware of the program.

Traceability and Quality management systems:

Survey results indicate that the traceability and quality management systems that underpin the value proposition of the Australian Industry are still not consistently adopted by all sectors.

The new Grain Quality standards introduced in January 2013 have proven a valuable tool for the marketing sector; all processors and exporters reported that the Standards were assisting them with both purchasing mungbeans from suppliers, as well as marketing Australian mungbeans internationally. This contrast with the grower sector; only 59% of growers stated that they were familiar with the new Quality Standards. A third of growers reported that were more confident in the determination of quality due to the introduction of the new Standards. A small group (12.5%) were not more confident.

The use and frequency of Commodity Vendor forms was also mixed. Just under half of growers indicated that they always complete the Commodity Vendor Form, while exactly half completed the form when asked. Around half of the advisers surveyed were providing assistance to their grower clients to complete the Commodity Vendor Form requirements, but only 18% stated that their clients were requiring help regularly. 60% of processors stated that consistently request the Forms at delivery from growers, with 1 processor reporting that they had never requested a Commodity Vendor Form.

The majority of Processors and Exporters (82.4%) reported compliance with AMA Code of Hygienic Practice for Mungbeans in the AMA Industry Survey. The same respondents also stated that they were registered with the AMA AQIS Grain Program, and were using in-house food safety or Quality Assurance (QA) measures. Examples of these measures provided included: HACCP ISO 9001, HACCAP ISO 22000, the employment of a full time Quality Assurance Officer and/or Quality Assurance Consultant, affiliation with a number of QA programs, and

the SQF edition 7 quality program. Nearly one fifth of the respondents were not aware of the Code of Hygienic Practice, the AQIS program and were not employing in-house food safety or QA programs.

Information and Advice for Growers:

Nearly all industry members (92.5%) believe that they can access a range of high quality technical services, information and support required for mungbean production. Most used sources of information are shown in Table 4.

Table 4: Helpful Sources of Information (All Sectors)

Sources of Information	% Respondents Using
Pulse Australia newsletters and emails	88%
GRDC Grower & Advisor updates	81%
Australian Mungbean Association website (www.ama.org.au)	80%
Pulse Australia website (www.pulseaus.com.au)	80%
Queensland Department of Agriculture website including the BeatSheet (www.daff.qld.edu.au)	73%
One-on-one advice from private or sales agronomists	68%
NSW DPI or QDAFF extension/field days	67%
One-on-one advice from Certified Mungbean advisers	66%
Certified Mungbean Agronomy Manual/Course	66%
GRDC website (www.grdc.com.au)	63%
Processor market email update	40%
NSW DPI website (www.dpi.nsw.gov.au)	38%

(AMA Industry Survey 2014)

While some extension tools are used across the value chain, the individual sectors appear to be able to access technical information in a format suited to their specific needs. Growers listed the AMA website (39%), the Pulse Australia website (29%) and Pulse Australia newsletters and emails (14%) as the most useful. Advisers also identified the Pulse Australia newsletters and emails (41%) as a core tool and the Queensland Government Beat Sheet published by DAFF Entomology team (15%). Processors and exporters placed most reliance on the GRDC Grower and Adviser Updates (53%), the AMA website (15%) and individual advice from agronomists (13%). The RD&E sector received most value from GRDC Grower and Adviser Updates (26%), Pulse Australia newsletters and emails (16%) and the GRDC website (13%).

From the survey participants, 57% of advisers reported that they were certified by the Australian Mungbean Association, with only 6% unaware of the certified program.

The high satisfaction with technical advice and information did not extend to communication between the processing sector and growers. Only just under a quarter of growers surveyed had visited their processor in the last three seasons, only 10% felt they received adequate information on grading and pricing from their processor.

Priority Areas of New Research and RD&E Capacity:

The successful outcomes of the National Mungbean Improvement Program were further supported by survey respondents' prioritisation of areas of future research and development. The top four priority areas were:

- Better crop yield by genetic improvement of mungbean varieties
- Effective and sustainable management of weeds, pests and pathogens
- Crop and variety selection aligned with market requirements
- Strengthening the skills and abilities of agronomists and advisers

A run of retirements and pending retirements by senior technical personnel had raised concern amongst the industry. Fortunately the adviser, RD&E and laboratory sectors appear to be well positioned for the next five years. 92% of agronomy advisers stated that would still be working in the mungbean industry for the next five years. 77% of RD&E and lab respondents identified that they would remain in the industry, the remainder

uncertain due to funding availability. Expertise and corporate knowledge is also building in technical people servicing the industry as displayed in Table 5.

Table 5: Experience in the mungbean industry

	Advisers	RDE & Labs
20+ years	22.5%	22%
10-19 years	33%	34%
5-9 years	24.5%	25%
0-4 years	20%	19%
Total	49	32

(AMA Industry Survey 2014)

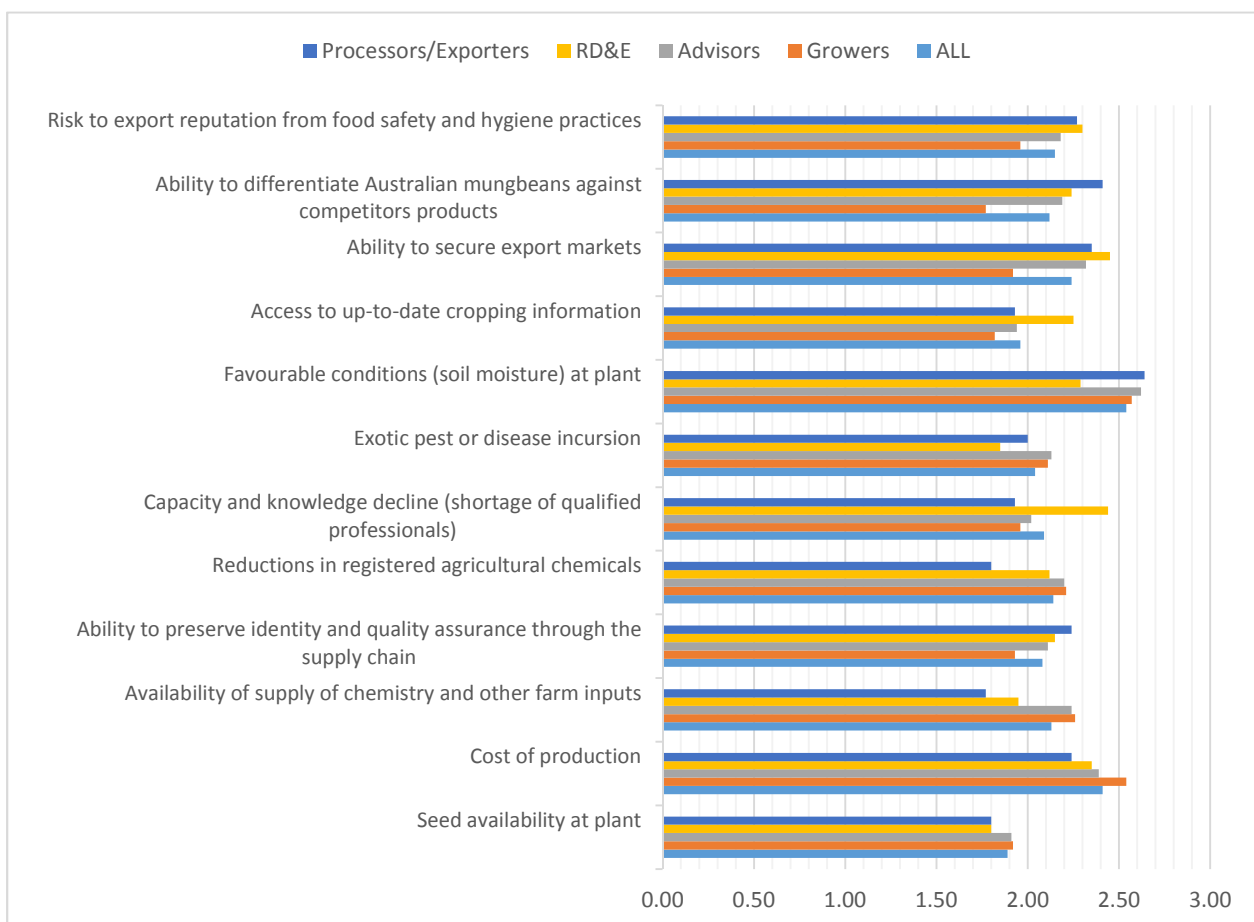
2.2. KEY CHALLENGES AND OPPORTUNITIES FOR THE AUSTRALIAN MUNGBEAN INDUSTRY

The mungbean industry analyzed the opportunities and challenges for growing mungbean production. All survey participants identified the following three issues as of most importance to them in the next five years:

- Favourable conditions (soil moisture) at plant
- Cost of production
- Ability to secure export markets

Growers specifically identified the availability of supply of chemistry and other farm inputs as a critical issue for their sectors. Capacity and knowledge decline (shortage of qualified professionals) was identified as one of the top three issues faced by the industry by the RD&E sector. The export and processing sector also highlighted the importance of the industry’s ability to differentiate Australian mungbeans against its competitors’ products as significant (Figure 4).

Figure 4: The most important issues facing businesses in the next 12 months to 3 years by Total and Sector (Participant Survey)



From the industry survey, all activities listed were grouped into the following categories and reviewed during the Strategic Planning workshop:

- Grow – including on-farm agronomic activities, and seed breeding and production
- Fit – how mungbean sequences with other crops within the farm
- Sell – describing issues around quality, marketing and accumulation, and end-users

GROW: Opportunities and Drivers	GROW: Challenges and Barriers
<ul style="list-style-type: none"> • Price is high • A pillar spring and/or summer crop • Crop rotation (general benefits) • Profitability / Return per ha / Gross Margin potential • Short duration / quick maturing crop • Quick \$ return / cash crop • Nutrition benefits: Rotate to legume/ Low fert requirements/ nutrient removal return / nitrogen fixation • Opportunity crop / double cropping • Water use efficiency/shallow moisture profile/ utilise soil moisture • Being able to plant at right time is key <p>Weeds, pests and pathogens</p> <ul style="list-style-type: none"> • Altacor worked well this year for bean pod borer and heliothis • Develop fungicide options to reduce risk of resistance <p>Grower & Adviser Skills</p> <ul style="list-style-type: none"> • Mungbean highly specialised: Need to have plenty of people around who understand the whole industry not just individual segments. • Pulse Australia is doing a good job – field days, information days & emails need to be continued • Information must be timely and trusted • Secure knowledge base • Develop variety specific agronomy packages • Increase grower knowledge of processing and exporting • AMA funded student scholarships <p>Product Quality & Traceability</p> <ul style="list-style-type: none"> • Value adding in seed (disease screening, certification, etc.) • Secure knowledge base – trainee graders <p>New Growing Regions</p> <ul style="list-style-type: none"> • Growth in Northern Australia (Flinders Gilbert region) • Target irrigation • Support irrigation with research on mungbean in irrigation systems 	<p>Weather variability</p> <ul style="list-style-type: none"> • Another predicted El Nino / climate variability and long term impact on total volumes and quality • Season variability increasing / irregular summer rains / lack of sub-soil moisture • No weather tolerance at harvest: downgrading • Impact of adverse seasons and in-crop weather events. (Numerous crop losses noted including: flood, 47 degree day, crop unable to be harvested due to small seed; varietal late emergence-frost) <p>Grower Perception Reward vs Risk</p> <ul style="list-style-type: none"> • Mungs have a bad reputation with many growers mainly due to the frequency of downgrading and the impact this has on gross margins • Cost price squeeze, risk level associated with achieving economic yields / Fast closing (if not already closed) profit gap • Seed cost too high/ high input costs /high chemical costs • Seed growers not paid enough • Not knowing price prior to planting • Growers follow best practice on farm & then are “done over” by processors/marketers • Hard to find good agronomists <p>Weeds, pests and pathogens</p> <ul style="list-style-type: none"> • “Making do” / Registrations for chemical are not extensive enough and permits are often too late or not consistent • Lack of new or effective chemistry limits uptake and reliability of the crop • Lack of registered herbicides for efficient broadleaf weed management • No satisfactory alternative at present to Dimethoate • Chem manufacturers/importers are struggling to secure product supply / Supply companies run short of products such as Steward • Several new diseases now present some seed borne • Changing of hard to kill weeds and the pressure of losing herbicides. • Ability to source quality disease free accredited seed • High reliance on insecticides and fungicides to grow the crop successfully / chemical control of insects and diseases is critical when breeding resolutions don’t exist • An incursion of SLW transmitted Mungbean yellow mosaic virus has potential to reduce yields significantly. Difficult to predict potential impact but has caused crop failures in sub-continent. We have vector but virus is not seed transmitted so incursion risk should be relatively low. Would also affect other legume crops. • Puffy pod disorder • Risk of exotic disease incursion to industry • Risk of chemical resistance developing in available products

FIT: Opportunities and Drivers	FIT: Challenges and Barriers
<p>Market Demand</p> <ul style="list-style-type: none"> Market demand larger than current crop <p>Opportunity Crop</p> <ul style="list-style-type: none"> Summer mungbean plant as a double-crop opportunity immediately following a winter crop (e.g. wheat) To replace summer crops such as sorghum or corn to combat Feather top Rhodes and/or grass weeds As an opportunity crop shifting from a summer crop cycle to a winter crop cycle When the soil moisture profile is sub-optimal for other summer crops As an alternative to soy between harvesting and planting cane, when not ratooning the cane Planting window fit (especially CQ) No-till practices & crop rotations assisting management of limited soil moisture Spreads risk <p>RDE Capacity</p> <ul style="list-style-type: none"> Maintain strong links between growers, researchers (uni) and industry Partnerships across industries and sectors RDE matrix identifying key people/skills Succession planning Assess + economic return from breeding & RDE programs Consider Genetics x Environment x Management together <p>New Growing Regions / RDE Partnerships</p> <ul style="list-style-type: none"> Centre for Excellence for Tropical Pulses Potential AgNorth CRC Genetics developed that suit respond under irrigation <p>Economic Return – New Rules of Thumb / Metrics to allow comparison with other crops</p> <ul style="list-style-type: none"> \$/mm PAW (WUE) \$/days in the ground \$/ML \$/ha Across 3 -5 year rotations 	<p>Opportunity Crop</p> <ul style="list-style-type: none"> Yield and price dictate area planted (opportunity crop) Just one option for summer crop Also impacted by choice of winter crop (e.g. glean, ally residuals in wheat) It must compete on returns and comparative advantage to other crops. <p>Product Quality</p> <ul style="list-style-type: none"> Other crops such as Sorghum with Haloxofop resistance are our biggest threat. <p>Financial</p> <ul style="list-style-type: none"> Limits of access to crop credit Profitability vs other summer crop options Input costs are increasing whilst the price of the commodity produced on farm is similar to that received 4 decades ago <p>RDE Capacity</p> <ul style="list-style-type: none"> Better custodianship of the HBR genes Research effort getting bigger than crop value requires Decline in public sector support for agricultural research, 'outsourcing' to universities. Ageing population of agronomists and farmers is the biggest threat to our industry Agronomists: Difficult to recruit young ag professionals as employees Lack of qualified professionals affects the industry ability to deal with new challenges and problems. As people in the industry (particularly the government side) lose their jobs or head to retirement we don't have the knowledge base coming through behind them to fill the gap.

SELL: Opportunities and Drivers	SELL: Challenges and Barriers
<p>Quality & Traceability of Production</p> <ul style="list-style-type: none"> • AMA is a leader in development and standards (international) • Growing demand for all Australian varieties due to high quality • Australia's clean, green, quality driven image; need to maintain • Value adding in product (standards development). • Increased scrutiny on food safety • Increased demand for premium product • Australian Mungbeans should differentiate over countries with traceability and Vender Declarations • QA could attract a premium or secure multi-year contracts <p>Cost Efficiencies</p> <ul style="list-style-type: none"> • Improve Price: we need to work out a way to be able to ship bulk in container to save cost and be more competitive especially for processing and manufacturing grade. • No end-point royalty • Create relationships with our neighbours to improve efficiencies and decrease freight costs <p>Match Product to Export Requirements</p> <ul style="list-style-type: none"> • Strong export markets exist for Australian mungbeans, however, market research, marketing and securing export markets are of paramount importance • Main demand is for no 1 processors, sprouting quality into EU food market and mung dhal <p>Increasing Demand</p> <ul style="list-style-type: none"> • United Nations has declared 2016 as an international year of pulses, FAO might release funds for international research, promote consumption and the nutrition aspect of pulses, and their vision is to double the all pulses production. • Increasing demand from subcontinent especially India • Increased demand for split product • New domestic market development <p>Communication</p> <ul style="list-style-type: none"> • Improve communication and transparency with growers and processors • Establish and promote health benefits 	<p>Volume of Production/Supply</p> <ul style="list-style-type: none"> • Main restriction is inconsistent supply of mungbeans from Australia. • Due to low production, prices would be too high to sell into the international markets. • Crop yield and crop quality: 2013/14 season example of having significant demand but have not been able to offer due to lack of available product and poor quality of what is available. • Need to be seen as being able to supply 12 months of the year. • High cost of domestic grading and packing. <p>Increasing Competition</p> <ul style="list-style-type: none"> • African exporters • Burma/Argentina/Africa • In next 1 to 5 years: India might open-up the ban on Pulse exports (currently pulses export is under ban) because of new government. In that case India can be a big importer from Myanmar (due to cheaper prices) then re-process by grading and polishing and then can export to various countries. • Due to good international prices, there will be lot of competition from countries like Myanmar, India, Argentina, China, Tanzania, can emerge and improve their yields and total production. • Competing against other counties whose Governments subsidise farmers making our product more expensive than other countries • From other crops; High world grain prices have an effect on the commitment from Australian growers. • Free Trade Agreement development in Asia <p>Increasing Scrutiny on Food Safety</p> <ul style="list-style-type: none"> • Food Safety is becoming a significant global issue; need to be able to supply product which meets the increasingly strict criteria from overseas countries. • Residue issues in recent years has and may continue to jeopardise market access in some areas • Export of Farmer Dressed bulk Mungbeans: risks of contamination (also impacts a large number of jobs) • Need to maintain the high quality niche in order to achieve farm gate prices <p>Value Chain Communication</p> <ul style="list-style-type: none"> • Export demand dictates price for growers • Cropping Information is vital so that we can trade the market appropriately, reports that many traders forward sold too many No 1 Processors this season and couldn't deliver. • As an exporter, it will be good to know that product we are working with will be suitable for international market

3. INDUSTRY GOALS AND PRIORITIES

3.1. INDUSTRY GOALS

By 2019, mungbean production will grow to produce an average 170,000 tonnes per annum through its permanent and prosperous fit in the farming system.

Regionally, this will be comprised as follows: Committee needs to look at the yields and production areas from the ABARES report and breakdown how this will be done – including noting where irrigation or new growing areas will play a part – remember this is a goal

- Central Queensland:
- Southern Queensland:
- Northern NSW:
- Southern NSW & Victoria:

3.2. AUSTRALIAN MUNGBEAN'S VALUE PROPOSITION

- Mungbean is a high protein food
- Australian mungbeans are safe to eat
- Australian mungbeans are clean
- The Australian mungbean industry has the traceability and quality systems to prove and communicate these values

3.3. THE COMPETITIVE ADVANTAGE OF AUSTRALIAN MUNGBEAN

- Australian mungbean provides a summer legume option for northern cropping systems
- Total growing time is less than 100 days
- \$/day is higher than other summer crops
- \$/ML is higher than other summer crops – but require evidence
- The industry is serviced by a nimble processing system not a monolith bulk handler

3.4. INDUSTRY PRIORITIES

During strategic planning workshop, industry members assessed actions suggested from the survey and prioritised them according to Impact (How will this add value / improve Australian Mungbean Industry productivity and profitability of yours and/or your clients' business) and Likelihood (Likelihood of this being applicable/useful – number of growers or businesses impacted and how often).

The following ten actions were ranked very high for both categories and providing greatest value for the industry:

- Seek investment from all research partners in dedicated and co-ordinated pre-commercialisation projects; pathology, nematology, rhizobia, physiology; for all varieties developed via the National Mungbean Improvement Program.
- Optimise the performance of new genetics through agronomic practices across all varieties and growing regions, applying improved understanding of the physiology of mungbean to address growing challenges and opportunities.
- Increase the land area dedicated to mungbean production annually through the development of varieties suited to new areas and greater utilisation of mungbean in rotations in current growing regions.

- Support ongoing entomology work to understand pest populations and biology, particularly mirids, to provide growers with thresholds, strategies and tools for successfully managing pest incursions.
- Identify the best management farm practices to achieve consistent, high-yielding mungbean production of over 2.5t/ha.
- Secure and sustain domestic infrastructure and realise growing demand in export markets by achieving more consistent national production of greater than 80,000 tonnes.
- Improve grower perceptions of processing sector integrity, and increase knowledge of the specific pricing mechanism for mungbeans.
- Increase the accuracy and consistency of assessments between laboratories by continuing to improve the assessment process for grading of quality standards.
- Target the growing markets of China and India with focused, coordinated industry promotional activities and publications.

4. ACTIONS TO ADDRESS PRIORITIES

4.1. INVESTMENT IN INNOVATION AND IMPROVEMENT

Description	Indicator	Sources of Verification	Primary Responsibility	Assumptions
Innovate and improve through research investment	<ul style="list-style-type: none"> Increased yield and income for mungbean for growers Consistent yields and quality of harvested product 	<ul style="list-style-type: none"> ABARES Crop Reports AMA Industry Survey 		<ul style="list-style-type: none"> Demand remains at the same or higher levels Pricing will impact on area planted and gross margins
Results/outputs/ deliverables:				
1.1 National mungbean research network established	<ul style="list-style-type: none"> RD&E matrix completed 2015 and updated annually Network membership and charter established by 2016 Research prioritised and collaboration enhanced through network 	<ul style="list-style-type: none"> RDE Matrix Network established 	<ul style="list-style-type: none"> Pulse Australia AMA 	<ul style="list-style-type: none"> Adequate resourcing by organisations to participate in network
1.2 New varieties developed and commercialised by the National Mungbean Improvement Program	<ul style="list-style-type: none"> Potential new growing areas identified via modelling of suitable soil, rainfall, temperature and day length for mungbean undertaken by 2016 Prioritised development of bold, shiny types; regional types; halo blight resistance NMIP releases supported by dedicated pre-commercialisation projects; pathology, nematology, rhizobia, physiology Measured adoption of Celera II-AU and other new varieties annually 	<ul style="list-style-type: none"> Map of new growing areas New variety launched / seed promotional brochures NMIP progress report GRDC project progress reports AMA approved seed sales 	<ul style="list-style-type: none"> AMA Technical Committee & QAAFI (APSIM model) NMIP & AMA NMIP & AMA Pulse Australia/AMA/NMIP AMA Seeds Committee 	<ul style="list-style-type: none"> All breeding efforts and focus is driven by/in collaboration with the AMA and industry identified needs Sub-optimal climatic conditions may impede or prevent trial plantings and results The ability to access adequate capacity of physical resources and extension will impact on outcomes
1.3 Critical levels for crop nutrition and physiological constraints established	<ul style="list-style-type: none"> Nutritional drivers established Physiological constraints on NMIP varieties defined Factors identified that determine and/or limit high yield of different varieties Impact of soil constraints on yield understood 	<ul style="list-style-type: none"> Project progress report Project progress report Project progress report Project progress report 	<ul style="list-style-type: none"> GRDC Project Nth Pulse Agronomy GRDC Project GRDC Project GRDC Project 	<ul style="list-style-type: none"> Sub-optimal climatic conditions may impede or prevent trial plantings and results Suitable co-operator and trial site may unavailable due to weather or economic conditions
1.4 Determined optimal irrigation requirements	<ul style="list-style-type: none"> Irrigation scheduling recommendations developed to maximise crop yield and profitability 	<ul style="list-style-type: none"> Recommendations developed 	<ul style="list-style-type: none"> Nth Pulse Agronomy Project 	
1.5 Better understanding of weeds, pest and pathogens dynamics established	<ul style="list-style-type: none"> Pest surveillance data set of mirids analysed Improved ability to identify seed-borne disease 	<ul style="list-style-type: none"> Possible use of innovate industry support technologies i.e. PestPoint 	<ul style="list-style-type: none"> DAFF Qld Entomology DAFF Qld Pathology / QUT / QAAFI 	<ul style="list-style-type: none"> Sub-optimal climatic conditions may impede or prevent trial plantings and results The ability to access adequate capacity of physical resources and extension will impact on outcomes
1.6 Access to improved chemistry secured	<ul style="list-style-type: none"> Altacor registered for been pod borer and heliothis by 2015 	<ul style="list-style-type: none"> Altacor registration 	<ul style="list-style-type: none"> Pulse Australia AMA Technical 	<ul style="list-style-type: none"> Suitable chemistry can be identified Suitable funding can be secured for

and maintained	<ul style="list-style-type: none"> • New fungicide options (other than reliance on Tebuconazole) date to be determined • Dessicant with greater and quicker efficacy identified and registered by date to be determined • Post-emergent herbicide alternatives to Blazer and Spinnaker secured by date to be determined • Existing product registrations maintained where appropriate 	<ul style="list-style-type: none"> • Fungicide registration • Desiccant registration • Post-emergent herbicide registration • APVMA registration of Minor Use Permits. 	Committee	<ul style="list-style-type: none"> • field trials (Chemical Companies, GRDC, AMA) • Risk to international trade can be addressed (i.e. suitable MRLs in destination countries)
1.7 International research collaboration occurs where relevant	<ul style="list-style-type: none"> • Researchers are supported to present papers at international venues • Support provided to assist visiting international specialists 	<ul style="list-style-type: none"> • Published papers • Successful visits 	<ul style="list-style-type: none"> • Researchers Parent Organisation • AMA 	<ul style="list-style-type: none"> • Presentations are part of professional development • Reductions in research professional development budgets may limit participation

4.2. STRONG MARKET ACCESS

Description	Indicator	Sources of Verification	Primary Responsibility	Assumptions
Secure and develop markets	<ul style="list-style-type: none"> Australia maintains its reputation as a producer of clean and hygienic foodstuffs for the domestic and export markets Increased desirability of mungbean products for the export market 	<ul style="list-style-type: none"> ABARES data 	<ul style="list-style-type: none"> AMA AQUIS/ Packers/ Logistics Committee AMA representation on GPPEICC (Grains & Plant Product Export Industry Consultative Committee) 	<ul style="list-style-type: none"> Adverse conditions such as drought will reduce crop in both planted area and yield
Results/outputs/ deliverables:				
1.1 Awareness and adoption of traceability systems by all sectors of the value chain	<ul style="list-style-type: none"> AMA's traceability and quality management systems continued All exporters comply with AMA Code of Hygiene Practice All exporters comply with AQIS Grains Program All growers complete Commodity Vendor Declaration forms 	<ul style="list-style-type: none"> Absence of contamination reported in export product 100% awareness and compliance in AMA Industry Survey 	<ul style="list-style-type: none"> AMA 	<ul style="list-style-type: none"> Traceability and quality systems are not seriously compromised by non-participation or major incident
1.2 Effective liaison with related Government Agencies & industry market chain	<ul style="list-style-type: none"> AMA negotiates and collaborates with Federal and State Government stakeholders to ensure policy and legislation supports industry traceability AMA negotiates and collaborates with industry market chain to support industry traceability Support provided when new domestic opportunities are identified by individual businesses 	<ul style="list-style-type: none"> Government policy & legislation amended to address current traceability loopholes 	<ul style="list-style-type: none"> AMA AQUIS/ Packers/ Logistics Committee 	<ul style="list-style-type: none"> Industry market chain sufficiently engaged, aware and resourced to participate fully Individual business contact AMA for support
1.3 Improved reputation & commercial potential for Australian Mungbean	<ul style="list-style-type: none"> Customer expectations on quality and traceability monitored and communicated New target export markets identified Australian Mungbeans differentiated from other export competitors through traceability & standards Promotional package developed to showcase Australian mungbean product Campaign undertaken to promote Australian mungbean in target export markets 	<ul style="list-style-type: none"> Export customer survey / processor feedback (need to be recorded) ABARES Promotional package Campaign report 	<ul style="list-style-type: none"> AMA Export members 	<ul style="list-style-type: none"> Industry able to meet production requirements The ability to access adequate capacity of physical resources and extension will impact on outcomes
1.4 Information provided to support adoption of traceability and assurance systems	<ul style="list-style-type: none"> Campaign to communicate economic and stewardship value of traceability systems undertaken Campaign to explain and support Grain Quality Standards to growers and advisors undertaken Processors provide tours of grading process to support information campaign Developed extension material to support best practice on-farm and packing shed storage 	<ul style="list-style-type: none"> Campaign report Campaign report Feedback forms collected via processors Extension package (Mungbean Manual) 	<ul style="list-style-type: none"> AMA AQUIS/Packers/Logistics Committee Promotions and Training Committee 	<ul style="list-style-type: none"> Climatic conditions and pricing will reduce number of growers and advisers actively engaged within industry The ability to access adequate capacity of physical resources and extension will impact on outcomes

4.3. IMPROVED ON-FARM PERFORMANCE

Description	Indicator	Sources of Verification	Primary Responsibility	Assumptions
Increase yields and reduce production risks	<ul style="list-style-type: none"> • Increase in mungbean area sown across Australia • Increased yield and income for mungbean for growers • Consistent yields and quality of harvested product • Consistent quality of planting seed 	<ul style="list-style-type: none"> • ABARES Crop Reports • AMA Industry Survey 		<ul style="list-style-type: none"> • Demand remains at the same or higher levels • Pricing will impact on area planted and gross margins
Results/outputs/ deliverables: 1.1 AMA Approved Seed Scheme continued	<ul style="list-style-type: none"> • AMA Approved Seed Scheme continued • Scheme delivered rigid varieties with market suitability 	<ul style="list-style-type: none"> • Annual Seed sales • No Seed quality complaints? 	<ul style="list-style-type: none"> • AMA Seeds Committee • AMA Seeds Committee 	<ul style="list-style-type: none"> • Robust traceability of seed scheme continues
1.2 Nutrition and physiological best management practices established	<ul style="list-style-type: none"> • Optimal nutrition strategies developed to substitute liberal fertiliser application • Establish best practice rhizobium management to maximise N fixation • Assess “knock on” effects on winter cereals (RLN, soil water etc) • Development of extension package for improved nutrition management 	<ul style="list-style-type: none"> • Best Practice Recommendations Developed • Agronomy Manual & Fact sheets up to date • ? • Extension package available (Mungbean manual) • Fact Sheets 	<ul style="list-style-type: none"> • Nth Pulse Agronomy Project / AMA Technical Committee • National Rhizobium project / Pulse Australia • QAAFI / AMA technical Committee • Pulse Australia/AMA technical Committee 	<ul style="list-style-type: none"> • Sub-optimal climatic conditions may impede or prevent trial plantings and results • The ability to access adequate capacity of physical resources and extension will impact on outcomes
1.3 Irrigation best management practices established	<ul style="list-style-type: none"> • Established irrigation practices for the successful 2nd flush loading on plants • Row spacing configurations determined • Development of extension package for high yielding irrigated production 	<ul style="list-style-type: none"> • Extension package available (Mungbean manual) • Fact Sheets 	<ul style="list-style-type: none"> • Pulse Australia/AMA technical Committee 	<ul style="list-style-type: none"> • Sub-optimal climatic conditions may impede or prevent trial plantings and results
1.4 Information available on economics and sustainability of rotations	<ul style="list-style-type: none"> • Delivery of 3-5 year rotational guidelines to achieve economic and system benefits of including mungbean across all growing regions • Specific metrics established and published on mungbean production 	<ul style="list-style-type: none"> • Guidelines established • Metrics published 	<ul style="list-style-type: none"> • AMA • AMA 	<ul style="list-style-type: none"> • Commission of suitable studies • Pricing will impact on area planted • The seasonal opportunity to plant will impact on hectares planted • The ability to access adequate capacity of physical resources and extension will impact on outcomes

4.4. CAPACITY AND PROMOTION

Description	Indicator	Sources of Verification	Primary Responsibility	Assumptions
Improve industry capacity and perceived crop value	<ul style="list-style-type: none"> Increase in mungbean area sown across Australia Increased yield and income for mungbean for growers Consistent yields and quality of harvested product 	<ul style="list-style-type: none"> ABARES Crop Reports AMA Industry Survey 	<ul style="list-style-type: none"> AMA 	<ul style="list-style-type: none"> Adverse conditions such as drought will reduce crop in both planted area and yield
Results/outputs/ deliverables: 1.1 Continued delivery & development of accredited AMA Agronomist Program	<ul style="list-style-type: none"> 3-4 AMA agronomist accreditation program delivered every 2 years 2 Refresher course instituted and delivered for accredited agronomists as required Manual updated 	<ul style="list-style-type: none"> GRDC Australian Break Crop Initiative progress reports Manual available 	<ul style="list-style-type: none"> Pulse Australia 	
1.2 Industry technical capacity identified & secured	<ul style="list-style-type: none"> Mungbean RD&E activity matrix developed and updated Industry skill/capacity audit to be completed Succession planning for critical technical skills instigated where identified 	<ul style="list-style-type: none"> Matrix available Audit available Maintaining of effective R&D Teams within NSW DPI & QDAFF 	<ul style="list-style-type: none"> Pulse Australia AMA AMA Pulse Australia 	<ul style="list-style-type: none"> Research technical skills will remain with NSW DPI & QDAFF Export, AQUIS, trade skills to remain with AMA.
1.3 Delivery & development of extension that services priority needs of growers & consultants	<ul style="list-style-type: none"> Extension via yield trials “State of the Industry” update provided annually Extension event undertaken annually in each regional area with all value chain stakeholders 	<ul style="list-style-type: none"> Newsletters Update completed GRDC Australian Break Crop Initiative progress reports 	<ul style="list-style-type: none"> AMA/Pulse Australia AMA Pulse Australia 	<ul style="list-style-type: none"> Data provided by NMIP, Newsletter developed and extended by AMA promotions committee.
1.4 Extension maximised through collaboration with other organisations	<ul style="list-style-type: none"> Sustainable pest management courses delivered to growers Regular newsletter/update provided to existing growers and advisors via Pulse Australia Continued collaboration with and leverage from GRDC Grower & Adviser Updates Continued collaboration where relevant with DAFFQ Beat Sheet 	<ul style="list-style-type: none"> DAFF Entomology reports Newsletters Log of emails Update agendas Beat sheet content 	<ul style="list-style-type: none"> DAFF Entomology Pulse Australia Pulse Australia/ICAN Pulse Australia / DAFF Entomology 	<ul style="list-style-type: none"> As part of the “Decision making for Insect Management in grain crops” project. Timely distribution of email notifications and updated information.
1.5 Crop benefits promoted via suitable media at critical decision times for growers & advisers	<ul style="list-style-type: none"> “Profile of mungbean agronomic benefits” information package created Increased road visibility of crop through commercial plantings, trials and signage Positive media coverage of mungbean production regularly targeted to regional areas Industry activities and events sponsored to consistently raise crop profile 	<ul style="list-style-type: none"> Package available Promotions Committee Media monitors \$ total of annual sponsorship 	<ul style="list-style-type: none"> AMA Promotions Committee AMA Promotions Committee AMA Promotions Committee AMA Promotions Committee 	<ul style="list-style-type: none"> Activities to be decided upon and implemented by the AMA Promotions Committee Annual budget to be set by AMA Promotions Committee Regional support of activities by AMA members
1.6 Current and responsive AMA website	<ul style="list-style-type: none"> Website expanded to provide research updates, Q&A forum & blog to support existing and new growers NMIP page summarising achievements & innovation pipeline created “Profile of mungbean agronomic benefits” information available on website “Profile of mungbean health benefits” information available on website 	<ul style="list-style-type: none"> Website 	<ul style="list-style-type: none"> AMA Promotions & Technical Committee 	

4.5. AUSTRALIAN MUNGBEAN ASSOCIATION IS RUN EFFECTIVELY

Description	Indicator	Sources of Verification	Primary Responsibility	Assumptions
Immediate objective: Run AMA Effectively	<ul style="list-style-type: none"> AMA is a credible, resourced organisation that achieves the objects of the AMA Constitution 	<ul style="list-style-type: none"> AMA Constitution AMA Industry Survey 	<ul style="list-style-type: none"> AMA 	<ul style="list-style-type: none"> Demand for mungbean continues to drive industry production, processing and marketing in Australia
Results/outputs/ deliverables: 1.1 Strong working relationship with members	<ul style="list-style-type: none"> Skilled Committee members retained and secured Committee members attend 75% of meetings and teleconferences. Positions on the Promotions; Seeds; Standards; Packer & Logistics; and Australian Summer Grains Conference Committees are filled Members are aware and have abided by the AMA Code of Ethics Continued contribution of sensitive or commercial in confidence information for industry advocacy and support Continued engagement and support for members 	<ul style="list-style-type: none"> AMA Minutes AMA Minutes Absence of complaints / AMA Minutes Industry events & meetings 	<ul style="list-style-type: none"> AMA 	<ul style="list-style-type: none"> Industry size and geographic locations will influence number and representation on Committee ASGC is run tri-annually Mungbean remains a member of ASGC joint venture
1.2 Engaged and informed mungbean value chain	<ul style="list-style-type: none"> Greater input from value chain members Engagement with international end-users and domestic retailers Increased number of industry members from all sectors receiving mungbean communications 	<ul style="list-style-type: none"> Membership categories and costs reviewed Export promotional campaign undertaken AMA / Pulse Australia database 	<ul style="list-style-type: none"> AMA 	<ul style="list-style-type: none"> Climatic conditions and pricing will reduce number of growers and advisers actively engaged within industry
1.3 Partnerships secure and valued by investors and key stakeholders	<ul style="list-style-type: none"> Continued strong communication with industry to identify priorities for R&D work Number of meetings/communications with investment partners Number of projects developed and funded Number of projects developed and not funded 	<ul style="list-style-type: none"> Newsletters, website Mungbean research network established AMA minutes Number of projects 	<ul style="list-style-type: none"> AMA / Pulse Australia 	<ul style="list-style-type: none"> The ability to access adequate capacity of physical resources and extension will impact on outcomes
1.4 AMA has a sound financial position	<ul style="list-style-type: none"> Income covers all expenditure and liabilities Equity maintained and increased Tenders submitted for relevant external funding contracts 	<ul style="list-style-type: none"> AMA financial statements AMA bank statements Tenders submitted 	<ul style="list-style-type: none"> AMA 	<ul style="list-style-type: none"> No unforeseen liabilities
1.5 Legal and regulatory compliance requirements are met	<ul style="list-style-type: none"> All financial and organisational recording and reporting maintained and submitted as required by legislation and members 	<ul style="list-style-type: none"> AMA Annual Report & auditor declaration 	<ul style="list-style-type: none"> AMA 	
1.6 Arbitration of disputes supported	<ul style="list-style-type: none"> Processes for dispute arbitration were accessible and understood Unresolved disputes from business transactions arising between members are investigated 	<ul style="list-style-type: none"> Feedback report from dispute participants 	<ul style="list-style-type: none"> AMA 	