Australian Mungbean Industry
Strategic Plan 2015–2019
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Cover image courtesy of Gordon Cummings, Pulse Australia
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.

### Key Result Priority Outcomes:

<table>
<thead>
<tr>
<th>Investment in innovation and improvement</th>
<th>Strong Market Access</th>
<th>Improved on-farm performance</th>
<th>Capacity &amp; Promotion</th>
<th>AMA is a credible organisation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Innovate and improve through research investment</strong></td>
<td><strong>Secure and develop markets</strong></td>
<td><strong>Increase yields and reduce production risks</strong></td>
<td><strong>Improve industry capacity and perceived crop value</strong></td>
<td><strong>Run AMA effectively</strong></td>
</tr>
<tr>
<td>National mungbean research network established</td>
<td>Awareness and adoption of traceability systems by all sectors of the value chain</td>
<td>AMA Approved Seed Scheme continued</td>
<td>Continued delivery &amp; development of accredited AMA Agronomist Program</td>
<td>Strong working relationship with members</td>
</tr>
<tr>
<td>New varieties developed and commercialised by the National Mungbean Improvement Program</td>
<td>Effective liaison with related Government Agencies &amp; industry market chain</td>
<td>Irrigation best management practices established</td>
<td>Industry technical capacity identified &amp; secured</td>
<td>Engaged and informed mungbean value chain</td>
</tr>
<tr>
<td>Critical levels for crop nutrition and physiological constraints established</td>
<td>Improved reputation &amp; commercial potential for Australian Mungbean</td>
<td>Nutrition and physiological best management practices established</td>
<td>Delivery &amp; development of extension that services priority needs of growers &amp; consultants</td>
<td>Partnerships secure and valued by investors and key stakeholders</td>
</tr>
<tr>
<td>Determined optimal crop irrigation requirements</td>
<td>Information provided to support adoption of traceability and assurance systems</td>
<td>Information available on economics and sustainability of rotations</td>
<td>Extension maximised through collaboration with other organisations</td>
<td>AMA has a sound financial position</td>
</tr>
<tr>
<td>Access to required chemistry secured and maintained</td>
<td>Better understanding of weeds, pest and pathogens dynamics established</td>
<td></td>
<td>Crop benefits promoted via suitable media at critical decision times for growers &amp; advisers</td>
<td>Legal and regulatory compliance requirements are met</td>
</tr>
<tr>
<td>Better understanding of weeds, pest and pathogens dynamics established</td>
<td>International research collaboration occurs where relevant</td>
<td></td>
<td>Current and responsive AMA website</td>
<td>Arbitration of disputes supported</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Strategies and Key Performance Indicators</th>
</tr>
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</tr>
<tr>
<td>Arbitration of disputes supported</td>
</tr>
</tbody>
</table>
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

<table>
<thead>
<tr>
<th>Unit</th>
<th>NSW</th>
<th>Victoria</th>
<th>Queensland</th>
<th>South Australia</th>
<th>Australia</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008–09 ‘000 ha</td>
<td>8.5</td>
<td>0.0</td>
<td>36.2</td>
<td>0.1</td>
<td>44.8</td>
</tr>
<tr>
<td>2009–10 ‘000 ha</td>
<td>19.1</td>
<td>0.2</td>
<td>25.7</td>
<td>0.0</td>
<td>44.9</td>
</tr>
<tr>
<td>2010–11 ‘000 ha</td>
<td>31.4</td>
<td>0.1</td>
<td>54.6</td>
<td>0.2</td>
<td>86.4</td>
</tr>
<tr>
<td>2011–12 ‘000 ha</td>
<td>22.0</td>
<td>0.0</td>
<td>33.0</td>
<td>0.0</td>
<td>55.0</td>
</tr>
<tr>
<td>2012–13 ‘000 ha</td>
<td>10.0</td>
<td>0.0</td>
<td>28.0</td>
<td>0.0</td>
<td>38.0</td>
</tr>
</tbody>
</table>

Yield

<table>
<thead>
<tr>
<th>Yield</th>
<th>2008–09 t/ha</th>
<th>1.00</th>
<th>0.00</th>
<th>0.85</th>
<th>0.89</th>
<th>0.88</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2009–10 t/ha</td>
<td>1.08</td>
<td>0.00</td>
<td>1.19</td>
<td>0.00</td>
<td>1.14</td>
</tr>
<tr>
<td></td>
<td>2010–11 t/ha</td>
<td>0.63</td>
<td>0.99</td>
<td>0.82</td>
<td>1.53</td>
<td>0.76</td>
</tr>
<tr>
<td></td>
<td>2011–12 t/ha</td>
<td>0.80</td>
<td>N/A</td>
<td>0.82</td>
<td>N/A</td>
<td>0.81</td>
</tr>
<tr>
<td></td>
<td>2012–13 t/ha</td>
<td>0.96</td>
<td>N/A</td>
<td>0.90</td>
<td>N/A</td>
<td>0.92</td>
</tr>
</tbody>
</table>

Production

<table>
<thead>
<tr>
<th>Production</th>
<th>2008–09 kt</th>
<th>8.5</th>
<th>0.0</th>
<th>30.8</th>
<th>0.1</th>
<th>39.5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2009–10 kt</td>
<td>20.6</td>
<td>0.0</td>
<td>30.5</td>
<td>0.0</td>
<td>51.2</td>
</tr>
<tr>
<td></td>
<td>2010–11 kt</td>
<td>19.9</td>
<td>0.1</td>
<td>44.9</td>
<td>0.3</td>
<td>65.2</td>
</tr>
<tr>
<td></td>
<td>2011–12 kt</td>
<td>17.5</td>
<td>0.0</td>
<td>27.0</td>
<td>0.0</td>
<td>44.5</td>
</tr>
<tr>
<td></td>
<td>2012–13 kt</td>
<td>9.6</td>
<td>0.0</td>
<td>25.2</td>
<td>0.0</td>
<td>34.8</td>
</tr>
</tbody>
</table>

(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

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

(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)

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

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**

<table>
<thead>
<tr>
<th>Experience</th>
<th>Advisers</th>
<th>RDE &amp; Labs</th>
</tr>
</thead>
<tbody>
<tr>
<td>20+ years</td>
<td>22.5%</td>
<td>22%</td>
</tr>
<tr>
<td>10-19 years</td>
<td>33%</td>
<td>34%</td>
</tr>
<tr>
<td>5-9 years</td>
<td>24.5%</td>
<td>25%</td>
</tr>
<tr>
<td>0-4 years</td>
<td>20%</td>
<td>19%</td>
</tr>
<tr>
<td>Total</td>
<td>49</td>
<td>32</td>
</tr>
</tbody>
</table>

*(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
- 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

### Weeds, pests and pathogens
- Altocor worked well this year for bean pod borer and heliothis
- Develop fungicide options to reduce risk of resistance

### Grower & Adviser Skills
- 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

### Product Quality & Traceability
- Value adding in seed (disease screening, certification, etc.)
- Secure knowledge base – trainee graders

### New Growing Regions
- Growth in Northern Australia (Flinders Gilbert region)
- Target irrigation
- Support irrigation with research on mungbean in irrigation systems

### GROW: Challenges and Barriers

#### Weather variability
- 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)

#### Grower Perception Reward vs Risk
- 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

#### Weeds, pests and pathogens
- “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
<table>
<thead>
<tr>
<th>FIT: Opportunities and Drivers</th>
<th>FIT: Challenges and Barriers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Market Demand</strong></td>
<td><strong>Opportunity Crop</strong></td>
</tr>
<tr>
<td>• Market demand larger than current crop</td>
<td>• Yield and price dictate area planted (opportunity crop)</td>
</tr>
<tr>
<td><strong>Opportunity Crop</strong></td>
<td>• Just one option for summer crop</td>
</tr>
<tr>
<td>• Summer mungbean plant as a double-crop opportunity immediately following a winter crop (e.g. wheat)</td>
<td>• Also impacted by choice of winter crop (e.g. glean, ally residuals in wheat)</td>
</tr>
<tr>
<td>• To replace summer crops such as sorghum or corn to combat Feather top Rhodes and/or grass weeds</td>
<td>• It must compete on returns and comparative advantage to other crops.</td>
</tr>
<tr>
<td>• As an opportunity crop shifting from a summer crop cycle to a winter crop cycle</td>
<td><strong>Product Quality</strong></td>
</tr>
<tr>
<td>• When the soil moisture profile is sub-optimal for other summer crops</td>
<td>• Other crops such as Sorghum with Haloxofop resistance are our biggest threat.</td>
</tr>
<tr>
<td>• As an alternative to soy between harvesting and planting cane, when not ratooning the cane</td>
<td><strong>Financial</strong></td>
</tr>
<tr>
<td>• Planting window fit (especially CQ)</td>
<td>• Limits of access to crop credit</td>
</tr>
<tr>
<td>• No-till practices &amp; crop rotations assisting management of limited soil moisture</td>
<td>• Profitability vs other summer crop options</td>
</tr>
<tr>
<td>• Spreads risk</td>
<td>• Input costs are increasing whilst the price of the commodity produced on farm is similar to that received 4 decades ago</td>
</tr>
<tr>
<td><strong>RDE Capacity</strong></td>
<td><strong>RDE Capacity</strong></td>
</tr>
<tr>
<td>• Maintain strong links between growers, researchers (uni) and industry</td>
<td>• Better custodianship of the HBR genes</td>
</tr>
<tr>
<td>• Partnerships across industries and sectors</td>
<td>• Research effort getting bigger than crop value requires</td>
</tr>
<tr>
<td>• RDE matrix identifying key people/skills</td>
<td>• Decline in public sector support for agricultural research, 'outsourcing' to universities.</td>
</tr>
<tr>
<td>• Succession planning</td>
<td>• Ageing population of agronomists and farmers is the biggest threat to our industry</td>
</tr>
<tr>
<td>• Assess + economic return from breeding &amp; RDE programs</td>
<td>• Agronomists: Difficult to recruit young ag professionals as employees</td>
</tr>
<tr>
<td>• Consider Genetics x Environment x Management together</td>
<td>• Lack of qualified professionals affects the industry ability to deal with new challenges and problems.</td>
</tr>
<tr>
<td><strong>New Growing Regions / RDE Partnerships</strong></td>
<td>• 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.</td>
</tr>
<tr>
<td>• Centre for Excellence for Tropical Pulses</td>
<td><strong>Economic Return – New Rules of Thumb / Metrics to allow comparison with other crops</strong></td>
</tr>
<tr>
<td>• Potential AgNorth CRC</td>
<td>• $/mm PAW (WUE)</td>
</tr>
<tr>
<td>• Genetics developed that suit respond under irrigation</td>
<td>• $/days in the ground</td>
</tr>
<tr>
<td></td>
<td>• $/ML</td>
</tr>
<tr>
<td></td>
<td>• $/ha</td>
</tr>
<tr>
<td></td>
<td>• Across 3 -5 year rotations</td>
</tr>
<tr>
<td>SELL: Opportunities and Drivers</td>
<td>SELL: Challenges and Barriers</td>
</tr>
<tr>
<td>------------------------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Quality &amp; Traceability of Production</strong></td>
<td><strong>Volume of Production/Supply</strong></td>
</tr>
<tr>
<td>• AMA is a leader in development and standards (international)</td>
<td>• Main restriction is inconsistent supply of mungbeans from Australia.</td>
</tr>
<tr>
<td>• Growing demand for all Australian varieties due to high quality</td>
<td>• Due to low production, prices would be too high to sell into the international markets.</td>
</tr>
<tr>
<td>• Australia’s clean, green, quality driven image; need to maintain</td>
<td>• 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.</td>
</tr>
<tr>
<td>• Value adding in product (standards development).</td>
<td>• Need to be seen as being able to supply 12 months of the year.</td>
</tr>
<tr>
<td>• Increased scrutiny on food safety</td>
<td>• High cost of domestic grading and packing.</td>
</tr>
<tr>
<td>• Increased demand for premium product</td>
<td></td>
</tr>
<tr>
<td>• Australian Mungbeans should differentiate over countries with traceability and Vendor Declarations</td>
<td></td>
</tr>
<tr>
<td>• QA could attract a premium or secure multi-year contracts</td>
<td></td>
</tr>
<tr>
<td><strong>Cost Efficiencies</strong></td>
<td><strong>Increasing Competition</strong></td>
</tr>
<tr>
<td>• 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.</td>
<td>• African exporters</td>
</tr>
<tr>
<td>• No end-point royalty</td>
<td>• Burma/Argentina/Africa</td>
</tr>
<tr>
<td>• Create relationships with our neighbours to improve efficiencies and decrease freight costs</td>
<td>• 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.</td>
</tr>
<tr>
<td><strong>Match Product to Export Requirements</strong></td>
<td>• 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.</td>
</tr>
<tr>
<td>• Strong export markets exist for Australian mungbeans, however, market research, marketing and securing export markets are of paramount importance</td>
<td>• Competing against other counties whose Governments subsidise farmers making our product more expensive than other countries</td>
</tr>
<tr>
<td>• Main demand is for no 1 processors, sprouting quality into EU food market and mung dhal</td>
<td>• From other crops; High world grain prices have an effect on the commitment from Australian growers.</td>
</tr>
<tr>
<td><strong>Increasing Demand</strong></td>
<td>• Free Trade Agreement development in Asia</td>
</tr>
<tr>
<td>• 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.</td>
<td></td>
</tr>
<tr>
<td>• Increasing demand from subcontinent especially India</td>
<td><strong>Increasing Scrutiny on Food Safety</strong></td>
</tr>
<tr>
<td>• Increased demand for split product</td>
<td>• Food Safety is becoming a significant global issue; need to be able to supply product which meets the increasingly strict criteria from overseas countries.</td>
</tr>
<tr>
<td>• New domestic market development</td>
<td>• Residue issues in recent years has and may continue to jeopardise market access in some areas</td>
</tr>
<tr>
<td><strong>Communication</strong></td>
<td>• Export of Farmer Dressed bulk Mungbeans: risks of contamination (also impacts a large number of jobs)</td>
</tr>
<tr>
<td>• Improve communication and transparency with growers and processors</td>
<td>• Need to maintain the high quality niche in order to achieve farm gate prices</td>
</tr>
<tr>
<td>• Establish and promote health benefits</td>
<td></td>
</tr>
</tbody>
</table>

**Value Chain Communication**

• 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

<table>
<thead>
<tr>
<th>Description</th>
<th>Indicator</th>
<th>Sources of Verification</th>
<th>Primary Responsibility</th>
<th>Assumptions</th>
</tr>
</thead>
</table>
| Innovate and improve through research investment | • Increased yield and income for mungbean for growers  
• Consistent yields and quality of harvested product | • ABARES Crop Reports  
• AMA Industry Survey | | • 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 | • RD&E matrix completed 2015 and updated annually  
• Network membership and charter established by 2016  
• Research prioritised and collaboration enhanced through network | • RDE Matrix  
• Network established | Pulse Australia  
AMA | • Adequate resourcing by organisations to participate in network |

#### 1.2 New varieties developed and commercialised by the National Mungbean Improvement Program

| | • 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 | • Map of new growing areas  
• New variety launched / seed promotional brochures  
• NMIP progress report  
• GRDC project progress reports  
• AMA approved seed sales | AMA Technical Committee & QAAFI (APSIM model)  
NMIP & AMA  
NMIP & AMA  
Pulse Australia/AMA/NMIP Seeds Committee | • 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

| | • 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 | • Project progress report  
• Project progress report  
• Project progress report  
• Project progress report | GRDC Project  
Nth Pulse Agronomy Project  
GRDC Project  
GRDC Project | • 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

| | • Irrigation scheduling recommendations developed to maximise crop yield and profitability | • Recommendations developed | Nth Pulse Agronomy Project | |

#### 1.5 Better understanding of weeds, pest and pathogens dynamics established

| | • Pest surveillance data set of mirids analysed  
• Improved ability to identify seed-borne disease | • Possible use of innovate industry support technologies i.e. PestPoint | DAFF Qld Entomology  
DAFF Qld Pathology / QUT / QAAFI | • 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

| | • Altacor registered for been pod borer and heliothis by 2015 | • Altacor registration | Pulse Australia  
AMA Technical | Suitable chemistry can be identified  
Suitable funding can be secured for |
and maintained

<table>
<thead>
<tr>
<th>Committee</th>
<th>Fungicide registration</th>
<th>New fungicide options (other than reliance on Tebuconozole) date to be determined</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Desiccant registration</td>
<td>Dessicant with greater and quicker efficacy identified and registered by date to be determined</td>
</tr>
<tr>
<td></td>
<td>Post-emergent herbicide registration</td>
<td>Post-emergent herbicide alternatives to Blazer and Spinnaker secured by date to be determined</td>
</tr>
<tr>
<td></td>
<td>APVMA registration of Minor Use Permits.</td>
<td>Existing product registrations maintained where appropriate</td>
</tr>
</tbody>
</table>

1.7 International research collaboration occurs where relevant

| Researchers Parent Organisation | Published papers | Researchers are supported to present papers at international venues |
| Committee                       | Successful visits | Support provided to assist visiting international specialists |
|                                  | AMA              | Presentations are part of professional development |
|                                  |                 | Reductions in research professional development budgets may limit participation |
### 4.2. Strong market access

<table>
<thead>
<tr>
<th>Description</th>
<th>Indicator</th>
<th>Sources of Verification</th>
<th>Primary Responsibility</th>
<th>Assumptions</th>
</tr>
</thead>
</table>
| **Secure and develop markets** | • 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 | • ABARES data | • AMA AQUIS/ Packers/ Logistics Committee  
• AMA representation on GPPEICC (Grains & Plant Product Export Industry Consultative Committee) | • 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 | • 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 | • Absence of contamination reported in export product  
• 100% awareness and compliance in AMA Industry Survey | • AMA | • 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 | • 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 | • Government policy & legislation amended to address current traceability loopholes | • AMA AQUIS/ Packers/ Logistics Committee | • 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 | • 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 | • Export customer survey / processor feedback (need to be recorded)  
• ABARES  
• Promotional package  
• Campaign report | • AMA  
• Export members | • 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 | • 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 | • Campaign report  
• Campaign report  
• Feedback forms collected via processors  
• Extension package (Mungbean Manual) | • AMA  
• AQUIS/Packers/Logistics Committee  
• Promotions and Training Committee | • 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

<table>
<thead>
<tr>
<th>Description</th>
<th>Indicator</th>
<th>Sources of Verification</th>
<th>Primary Responsibility</th>
<th>Assumptions</th>
</tr>
</thead>
</table>
| Increase yields and reduce production risks | • 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 | • ABARES Crop Reports  
• AMA Industry Survey | | • Demand remains at the same or higher levels  
• Pricing will impact on area planted and gross margins |

**Results/outputs/deliverables:**

1. AMA Approved Seed Scheme continued

<table>
<thead>
<tr>
<th>Sources of Verification</th>
<th>Primary Responsibility</th>
<th>Assumptions</th>
</tr>
</thead>
</table>
| • Annual Seed sales  
• No Seed quality complaints? | AMA Seeds Committee  
AMA Seeds Committee | Robust traceability of seed scheme continues |

1.1 AMA Approved Seed Scheme continued

<table>
<thead>
<tr>
<th>Sources of Verification</th>
<th>Primary Responsibility</th>
<th>Assumptions</th>
</tr>
</thead>
</table>
| • Nth Pulse Agronomy Project / AMA Technical Committee  
• National Rhizobium project / Pulse Australia  
• QAAFI / AMA technical Committee  
• Pulse Australia/AMA technical Committee | | 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 |

1.2 Nutrition and physiological best management practices established

<table>
<thead>
<tr>
<th>Sources of Verification</th>
<th>Primary Responsibility</th>
<th>Assumptions</th>
</tr>
</thead>
</table>
| • Best Practice Recommendations Developed  
• Agronomy Manual & Fact sheets up to date  
• Extension package available (Mungbean manual)  
• Fact Sheets | Nth Pulse Agronomy Project / AMA Technical Committee  
AMA Seeds Committee  
AMA Seeds Committee | |

1.3 Irrigation best management practices established

<table>
<thead>
<tr>
<th>Sources of Verification</th>
<th>Primary Responsibility</th>
<th>Assumptions</th>
</tr>
</thead>
</table>
| • Extension package available (Mungbean manual)  
• Fact Sheets | Pulse Australia/AMA technical Committee | Sub-optimal climatic conditions may impede or prevent trial plantings and results |

1.4 Information available on economics and sustainability of rotations

<table>
<thead>
<tr>
<th>Sources of Verification</th>
<th>Primary Responsibility</th>
<th>Assumptions</th>
</tr>
</thead>
</table>
| • Guidelines established  
• Metrics published | AMA  
AMA | 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

<table>
<thead>
<tr>
<th>Description</th>
<th>Indicator</th>
<th>Sources of Verification</th>
<th>Primary Responsibility</th>
<th>Assumptions</th>
</tr>
</thead>
</table>
| Improve industry capacity and perceived crop value | ▪ Increase in mungbean area sown across Australia  
▪ Increased yield and income for mungbean for growers  
▪ Consistent yields and quality of harvested product | ▪ ABARES Crop Reports  
▪ AMA Industry Survey | ▪ AMA | ▪ 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**  
▪ 3-4 AMA agronomist accreditation program delivered every 2 years  
▪ 2 Refresher course instituted and delivered for accredited agronomists as required  
▪ Manual updated  

**Sources of Verification:** ▪ Matrix available  
▪ Audit available  
▪ Maintaining of effective R&D teams within NSW DPI & QDAFF  

**Primary Responsibility:** ▪ Pulse Australia  

**Assumptions:** ▪ Research technical skills will remain with NSW DPI & QDAFF  
▪ Export, AQUIS, trade skills to remain with AMA.  

**1.2 Industry technical capacity identified & secured**  
▪ Mungbean RD&E activity matrix developed and updated  
▪ Industry skill/capacity audit to be completed  
▪ Succession planning for critical technical skills instigated where identified  

**Sources of Verification:** ▪ Matrix available  
▪ Audit available  

**Primary Responsibility:** ▪ Pulse Australia  

**Assumptions:** ▪ 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**  
▪ Extension via yield trials  
▪ “State of the Industry” update provided annually  
▪ Extension event undertaken annually in each regional area with all value chain stakeholders  

**Sources of Verification:** ▪ Newsletters  
▪ Update completed  

**Primary Responsibility:** ▪ AMA/Pulse Australia  

**Assumptions:** ▪ Data provided by NMIP, Newsletter developed and extended by AMA promotions committee.  

**1.4 Extension maximised through collaboration with other organisations**  
▪ 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  

**Sources of Verification:** ▪ DAFF Entomology reports  
▪ Newsletters  
▪ Log of emails  
▪ Update agendas  
▪ Beat sheet content  

**Primary Responsibility:** ▪ DAAF Entomology  

**Assumptions:** ▪ 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**  
▪ “Profile of mungbean agronomic benefits” information package created  
▪ Increased road visibility of crop though 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  

**Sources of Verification:** ▪ Package available  
▪ Promotions Committee  
▪ Media monitors  
▪ $ total of annual sponsorship  

**Primary Responsibility:** ▪ AMA Promotions Committee  

**Assumptions:** ▪ Activities to be decided upon and implemented by the AMA Promotions Committee.  

**1.6 Current and responsive AMA website**  
▪ 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  

**Sources of Verification:** ▪ Website  

**Primary Responsibility:** ▪ AMA Promotions & Technical Committee  

**Assumptions:** ▪ Regional support of activities by AMA members.
### Immediate objective: Run AMA Effectively
- **AMA is a credible, resourced organisation that achieves the objects of the AMA Constitution**
  - AMA Constitution
  - AMA Industry Survey
  - **AMA**
  - **AMA**

### Results/outputs/ deliverables:

#### 1.1 Strong working relationship with members
- 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
  - **AMA Minutes**
  - **AMA Minutes**
  - Absence of complaints / AMA Minutes
  - Industry events & meetings
  - **AMA**

#### Assumptions
- 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
- 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
  - Membership categories and costs reviewed
  - Export promotional campaign undertaken
  - AMA / Pulse Australia database
  - **AMA**

#### Assumptions
- 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
- 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
  - Newsletters, website
  - Mungbean research network established
  - AMA minutes
  - Number of projects
  - **AMA / Pulse Australia**

#### Assumptions
- The ability to access adequate capacity of physical resources and extension will impact on outcomes

#### 1.4 AMA has a sound financial position
- Income covers all expenditure and liabilities
- Equity maintained and increased
- Tenders submitted for relevant external funding contracts
  - AMA financial statements
  - AMA bank statements
  - Tenders submitted
  - **AMA**

#### Assumptions
- No unforeseen liabilities

#### 1.5 Legal and regulatory compliance requirements are met
- All financial and organisational recording and reporting maintained and submitted as required by legislation and members
  - AMA Annual Report & auditor declaration
  - **AMA**

#### 1.6 Arbitration of disputes supported
- Processes for dispute arbitration were accessible and understood
- Unresolved disputes from business transactions arising between members are investigated
  - Feedback report from dispute participants
  - **AMA**