Cudgen Agricultural Capacity Report

Prepared by Pinnacle Agriculture

Pinnacle Agriculture is an independent agronomic consultancy based in Gunnedah. With over 40 years combined experience advising clients on maximizing farm profitability and sustainability across a range of production systems and crop types. Pinnacle Agriculture aims to provide unbiased advice as to the best crop management and rotations available to our clients, incorporating the latest research and utilizing precision agricultural technologies.

Executive Summary

The site is located at 741 Cudgen Road, Cudgen and is adjacent to the newly developed Tweed Valley Hospital site. Whilst this site is currently considered farmland, this report reviews the agricultural capacity & viability of the site as a working farm given the notable constraints.

In New South Wales, the main framework used to assess & protect important agricultural resources is the Biophysical Strategic Agricultural Land (BSAL) assessment. To be designated as BSAL land, the subject site must be greater than 20ha and pass 12 criteria tests to be considered strategically important farmland – at 4.3ha, this site is significantly less than the minimum size and, in addition, fails 6 of the 12 criteria. Based on this test, the site is not strategically important farmland.

Whilst not identified as BSAL land, the subject site is identified as Important Farmland within the North Coast Regional Plan 2041. This designation stems back to the Northern Rivers Farmland Protection Project (NRFPP), which was established in the early 2000s by the NSW Government. The NRFPP considered multiple mapped biophysical criteria at various scales, as well as excluding land identified for other purposes, such as urban use or National Park. Being a site-specific review, this Report addresses the NRFPP as it relates to the consideration of agricultural capability and sustainability detailed within the North Coast Regional Plan 2041.

The site was also assessed for its viability & importance if it were to be a working farm using three criteria (summarized below):

- Site suitability & environmental restrictions –
    - The arable area of the site is 4.3ha which is much smaller than most commercial farms; the usable area is further reduced by the mandatory buffer zones required for agricultural chemicals which potentially restrict chemical use across ~80% of the site. The maximum extent of the buffers to minimize land use conflict incorporates an omni-directional buffer (30 m of open space and 10 m of vegetation) to reduce impacts on neighbours. Additionally, a downwind buffer zone is required for the use of agricultural chemicals, which can extend to 200 m from sensitive areas (including wetlands such as those to the north of the site).
    - Further to this, the soil testing results show that the soil physical and chemical properties at this site are not suited to high productivity agriculture. The slope of the site is quite severe which is problematic as the steep contours are impassable to the majority of machinery limiting the arable area of an already small site.

- Potential uses & production yields –

- Livestock – The small area would support 7-9 livestock however the steep gradient of the site would reduce the average weight gain of the stock. As no existing infrastructure is in place for livestock, this would only be suitable with a partnership with a neighbouring non-contiguous grazier.
- Agricultural (crops) – the site yield is very limited due to the size, soil quality, restriction on chemical use, site gradients, and challenges with finding machinery/contractors available for the site. Initial analysis indicate that the site *may* breakeven based on gross profit but excluding all fixed costs & initial capital outlay. Including all costs, the site would not be profitable.

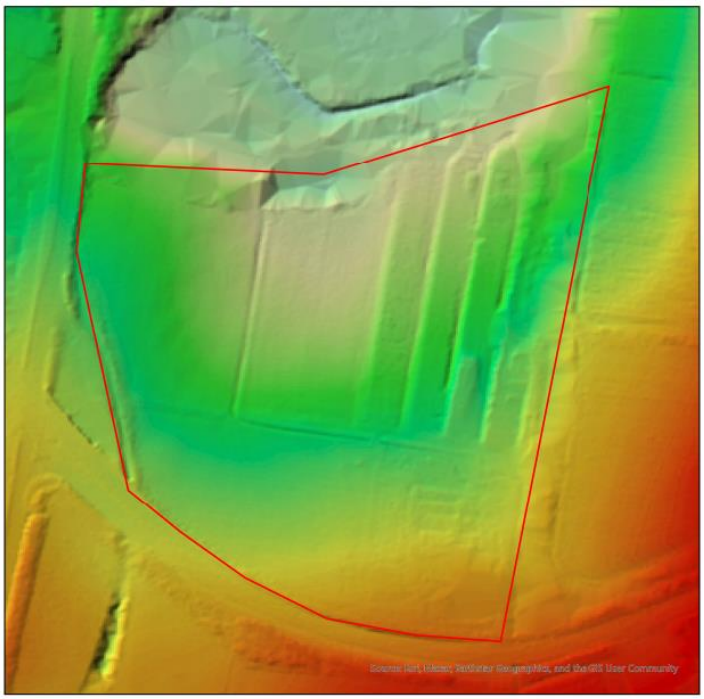
- Employment opportunities –
  - The size, scale, and financial viability of the site as a farm significantly limit the employment opportunities this site would provide to the community. It is expected that this site would provide <1 FTE as a farm.

The current site does not operate as a farm and therefore the site is not currently set up for modern agriculture (i.e. slope gradient, soil quality, water sources, infrastructure, access ways etc). To prepare the site would require significant capital investment, and based on the production potential, this outlay would not be recouped within any kind of reasonable period. The production potential on the Cudgen site represents less than 0.005% of the value of beef, 0.007% of nut production, 3.1% of sweet potato and 0.018% of the sugar production in the SA4 region. These numbers indicate that removing the site from agricultural production would not have a noticeable impact on the primary production of the region or the ability of the Tweed region to sustain a food bowl.

Previsit Research

In the early 2000s, the New South Wales government established the Northern Rivers Farmland Protection Project (NRFPP) to support strategic planning. As part of this review, ~500ha of land on the Cudgen Plateau was identified as state significant farmland. This site was zoned as part of the agricultural area at the time. However, since that classification residential and commercial development has proceeded in the area and as a result the site is now bordered by non-agricultural uses on three sides. There are also commonly soil constraints related to acidity and aluminium toxicity common to the region that make the area more suited to pasture than high value crops. Given the isolation and land constraints the site meets the criteria for Important Farmland Interim Variation Criteria, comprising less than 1% of mapped Cudgen Plateau farmland, it is clear the parcel cannot be considered important to farming into the future.

Based on aerial imagery from 09 October 2022 (Fig. 1) the total area of the site is 5.7 hectares, with only 4.31 ha considered arable once trees and buildings are taken into consideration. The site is bounded by a residential area to the West, a hospital construction site to the East, wetlands to the north and grazing and cropping to the South. Multi lane roads run along the Western and Southern boundaries. At its largest the site measures 255 m (~North to South) by 225 m (~ East to West). From LiDAR data the site appears to have been earth worked into a series of terraces to better manage the slope and drainage (Fig. 1)



Cudgen - shaded relief topography
Source: NSW Government Spatial Services LiDAR Survey 2013

Figure 1 - Elevation map for the Cudgen site.

The size of the site means that it will not be economical to acquire machinery for use exclusively on this site. Options to overcome this include share farming, the use of contractors or leasing/selling the land to a neighbour. However, all these options are constrained by the need to transit heavily trafficked public roads, which have either been upgraded under the infrastructure associated with the Tweed Valley Hospital development, or are planned to be upgraded to accommodate ongoing urban growth along the Tweed Coast. The road to the west of the site is Tweed Coast Road, which runs from Wooyung to Tweed Heads, connecting the smaller coastal towns to the regional center. As it passes the Cudgen site it is 5 lanes across, there is currently an ongoing project being undertaken by Tweed shire council to widen the road to cater for the current usage and projected increase. Cudgen Road, which runs along the sites southern boundary is currently only 2 lanes. However, it is the main access road to Kingscliff and as a result is highly trafficked as well.

Additionally, the small farmable area poses a concern with the application of agricultural chemicals in breach of their registration conditions with the Australian Pesticides and Veterinary Medicines Authority (APVMA) and creating land use conflicts with neighbours.

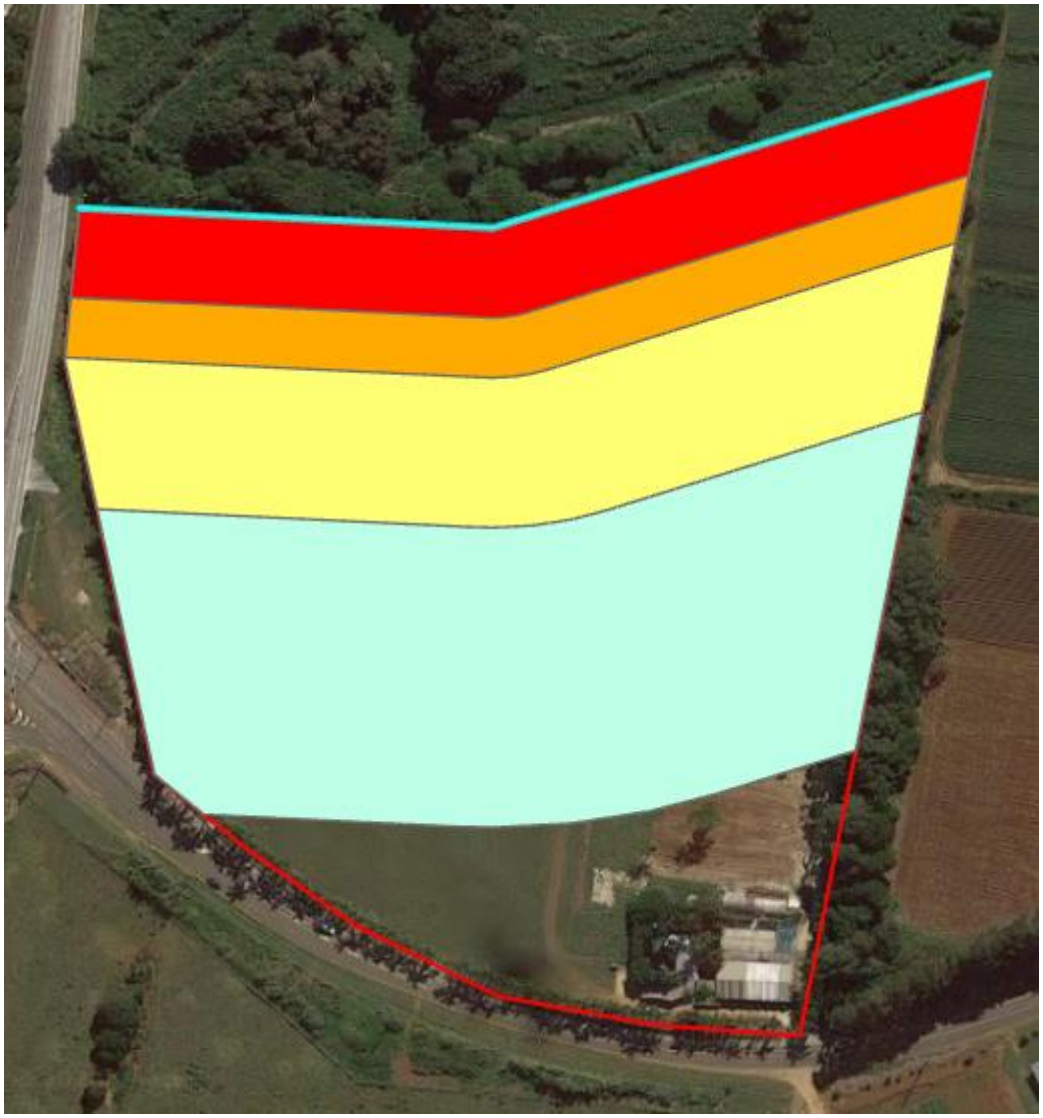


Figure 2. Mandatory downwind buffer zones from the ecologically sensitive vegetation to the north. Red: 30m / Orange: 50m / Yellow: 100m / Blue: 200m

Mandatory downwind buffer zones for commonly used agricultural chemicals range from 5 m to 200 m (though they can extend to 375 m) with wetland vegetation to the north being a particularly sensitive area (Fig. 2) . Recent updates to chemical registrations include a range of restraints on use to minimize the risk of off target impacts from their application, these criteria are substantially more detailed than previous chemical labels and will restrict usage at the site. This is part of the efforts of the APVMA to minimize off target impacts of agricultural chemicals and with the media focus on recent occurrences of spray drift the topic is under increasing scrutiny. Since 2019 new chemical labels have had an increased requirement to advise users of the minimum downwind buffer zones to a range of non-target areas; bystander areas, natural aquatic areas, pollinator areas, vegetation areas and livestock areas. For example, while glyphosate only requires a 30 m buffer to vegetation areas

(depending on application method). Diuron, a pre-emergent herbicide commonly used in cereal, cotton, banana and sugarcane crops requires a minimum 200 m downwind buffer zone for use in sugarcane such as at this site. If this critical first chemical application is not able to be applied there will need to be greater expense on chemicals and operations to try and control the weeds during the growth of the crop. Appendix 1 complies excerpts from a range of the chemical labels that would be required by the crops that could be grown on this site.

The prevailing wind conditions (Fig. 3) show that while the wind speed at 9 AM is generally acceptable for spraying the direction would put the wetland to the north at risk of off target impacts, requiring the largest buffer zone stated on the chemical label. While the 3 PM wind direction is more frequently blowing away from the wetland area, the increased wind speed would make spraying very hazardous and therefore not recommended as the movement of chemical would be increased and harder to control. These diagrams capture the annualized wind data from the Bureau of Meteorology's closet site as there would be a year round requirement for chemical applications during the fallow preparation prior to planting as well as during the growth of the crop up until harvesting. The combination of a boundary buffer zone and downwind buffer will greatly reduce the area that pesticide can be applied to; in the case of many cropping pesticides the application will not be feasible. Another concern is the slope of the site and the need to capture runoff water to prevent impacts on human or environmental health. While in future chemical usage may be able to be reduced in accordance with low input and organic production methodologies the current site condition and weed burden necessitates the use to chemicals to produce profitable yields.

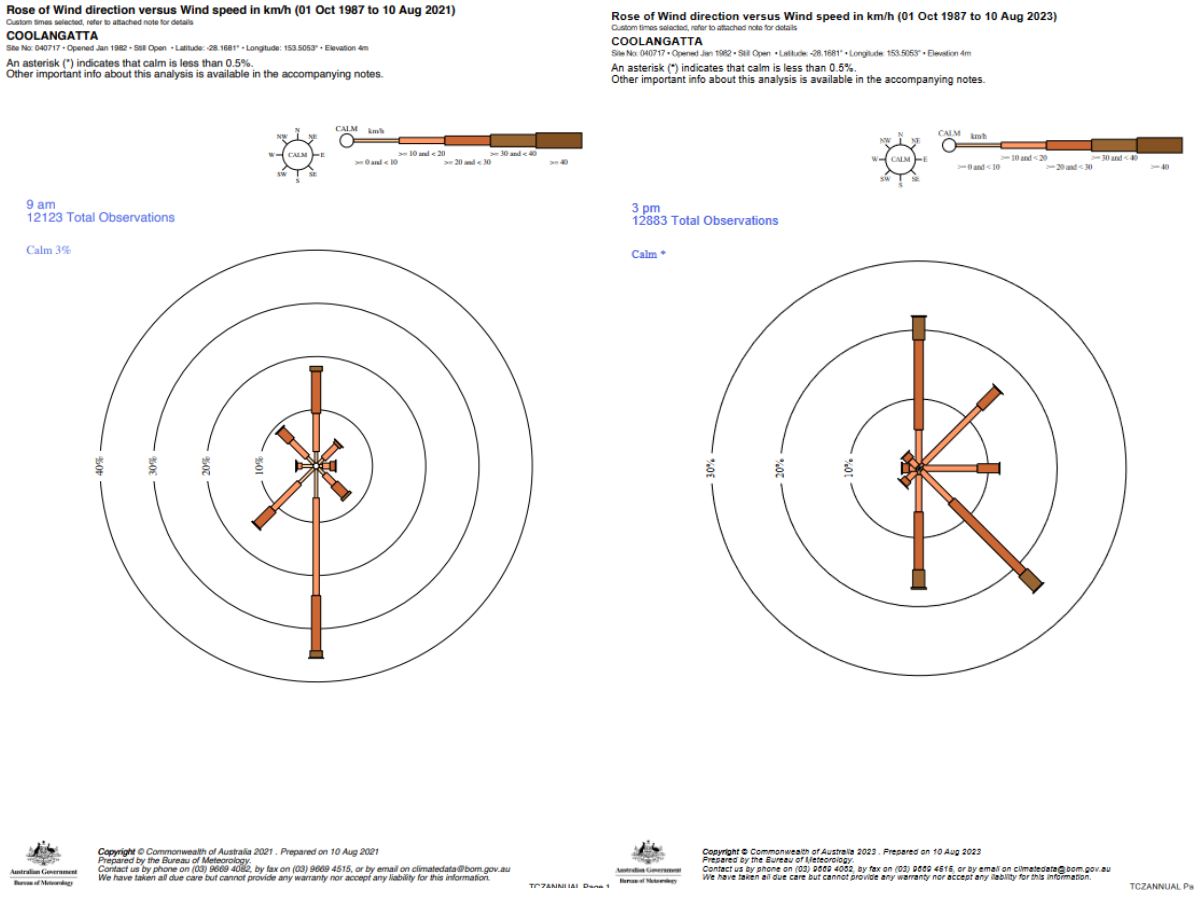


Figure 3 - Diagram representing the prevailing wind conditions annually for Coolangatta, the nearest Bureau of Meterology site to Cudgen which records this data

Prior soil samples taken by Gilbert & Sutherland were analysed at depths of 0 cm to 120 cm, 120 cm to 450 cm and 450 cm to 600 cm (Appendix 2). The single sample from 0 cm to 120 cm is unable to capture the variability of soil properties through the effective rooting depth of crop and pasture species. The sample does suggest several constraints that required further investigation through incremental soil sampling, this includes low Cation Exchange Capacity (CEC), an indicator or soils ability to retain and release plant nutrients. As a result major nutrients (e.g. Nitrogen and Potassium) required for agricultural production were below the levels required for crop production. The other concern was the high aluminium levels present which combined with the low pH result in a toxic level of soil availability to a wide range of pasture and crop species.

Full analysis and commentary included in the Soil Testing section of this document based on increased sample density and narrowed depths for analysis.

Site Visit

A site inspection was conducted on Friday 9th June 2023 by Pinnacle Agriculture employees to verify the remote sensed data, collect additional soil samples and determine the currently present vegetation species and weeds.

Figure 4 - Cudgen site, dominant groundcover of short grasses

The soil sampling is expanded upon in the Soil Testing section of this report.

The majority of the site has been slashed with the dominant ground cover being composed of short, vegetative sub tropical grass species (Fig. 4). Areas of the site that have not been slashed due to excessive slope or accessibility issues contain established wild cotton bush, sub tropical grasses going to seed, pine saplings, fire weed, fleabane, sugar cane and other weed species (Fig. 5).

Figure 5 - an example of established weeds at the Cudgen site where the slasher was unable to access

The site inspection confirmed many of the assumptions made during the research. However, the size and gradient of the banks (Fig. 6) was more severe than was estimated from remote sensed data. In the current configuration they are impassable by machinery. This raises several issues, it further reduces the arable area, it increases the time required to completed a mechanical operation over the site and the narrow steps in the North-East corner limit the working width of implements that can be used, which will be a major consideration for contractors and share farming. The slope and gully between steps will not be accessible by cultivation, slashing or planting implements and so will require more frequent chemical application to prevent excessive weed establishment as is being seen at present.

Figure 6 - one of the impassable contour banks at the Cudgen site.

Extensive earthworks would be required to remodel the site to maximise arable area and implement effective runoff management to prevent erosion and loss of water/soil into the wetland. Even with earthworks and the removal of all the trees not located on the boundary the total arable area would only be 4.6 hectares up from an estimated current arable area of 3.8 hectares, given the contours and overgrown areas which could not be assessed prior to the site visit. Although this is only an estimate and data from a machine performing and operation (e.g. tillage, sowing or slashing) would be required for a more accurate arable area at present. Even with these improvements the constraints outlined in the previous section relating to spray buffer zones would still be a significant limitation on the application area.

Soil Testing

Samples were collected at 5 sites during the inspection (Fig. 7). At each site 2 cores were taken and segmented at 30 cm, 60 cm and 90 cm. These samples were then transferred to plastic sample bags and refrigerated until being shipped to Nutrient Advantage Laboratory for processing. The aim of the 30 cm incremental sampling is to create a better understanding of the soil properties in the horizons plants are extracting nutrients from.

Figure 7 - Soil sample sites

The 5 sites were selected to give a better understanding of the variability of the site and what level of amelioration may be required as a blanket application or as a variable rate across the site to maximise yield.

The sites labelled “top” and “bottom” were selected to evaluate the difference in soil properties at the local minimum and maximum elevations. Often soil material will move downhill concentrating nutrients and contaminants lower on the slope and leaving the upper slope depleted.

“Road” was selected to represent the largest arable area, this “L” shaped section makes up over half the arable area of the current site configuration. Any blanket rates of fertilizer would likely be based of the values from this test.

The site labelled “middle” was selected to determine if there is a significant difference between the steps of elevation at the site and “old shed” is the site of a shed present in historical imagery appearing July 1989, revised in May 2010 and removed by May 2016 (Fig. 8). As the site of a building this area may have a higher level of contamination from building materials and/or a lower nutrient availability as it did not receive fertiliser or cycle organic matter for roughly 27 years.

Figure 8 - Left to right historical imagery from July 1989, May 2010 and May 2016.

Results

Across the site the soil texture ranges from clay loam to medium clay, the soil is chemically stable with no slaking or dispersion recorded and there was no site with sodicity. All sample sites were also non-saline. Overall, the site is acidic with extremely low fertility (cation exchange capacity) and low Nitrogen values. The low pH will also exacerbate nutritional deficiencies as the acidity prevents mineral nutrient uptake by the root systems. Low cation exchange capacity means the soil struggles to bind and retain nutrients so all the crops requirements will need to be applied with synthetic fertilizer. The phosphorus buffering index, a measure of how phosphorus is bound to soil and how much is available to plants, 80 is considered low and 350 is a high value for cropping areas. The values at the sample sites ranged from 1,000 to 2,000, this means that phosphorus will be strongly bound to the soil and fertilizer applications will be ineffective.

The combination of acid pH, high sulfate levels and extreme phosphorus levels are characteristic of acid sulfate soils, though the pH is not as extreme as is seen in cases where water quality of run off becomes a major environmental concern. However, the soil properties at this site are not suited to high productivity agriculture.

“Top”

No gravel inclusions, high organic matter topsoil, gradual colour change down the profile.

Strongly acid top soil (0-30 cm) to moderately acid at depth (60-90 cm), PBI over 1500 at all depths, Aluminium saturation >10% in top soil falling away to <1% at depth.

“Bottom”

Shallower organic rich layer, gravel inclusions from 20-40 cm

Strongly acid throughout profile (0-90 cm), high soil organic matter (>2%) throughout profile. Highest nitrogen values of the sites sampled, still very low for agricultural production.

“Middle”

Top soil dry to ~20cm with sound moisture down to a rock/gravel horizon at ~70 cm

Moderately acid top soil (0-30 cm) to slightly acid depth (60-90 cm), PBI from 1200 in top soil (0-30 cm) to 2000 in subsoil (30-60 cm), lowest nitrogen values at the site.

“Old Shed”

Profile more loam than others which have a higher clay percentage. Inclusions to 20 cm may be a remnant of building history

Lowest aluminium at the site, Nitrogen comparable to Bottom site. Top soil (0-30 cm) PBI lowest of site at 430, which is still very high for cropping area.

“Road”

Dark top soil with lower clay content to ~ 30 cm. Gravel inclusions ~60 cm.

Very strongly acid top soil (0-30 cm) to moderately acid at depth (60-90 cm). Very low nitrogen throughout the profile, very high Al in top soil (0-30 cm).

Full results are attached in Appendix 3

Production Potential

Given the results from the laboratory analysis of the soil samples taken across the site soil amelioration would be required to achieve profitable yields. The process would require heavy (>5 t/ha) rates of lime to counteract the acidity. This rate would require 2 passes across the site for application and would only be treating top soil. To attempt to remedy the low fertility a substantial rate of manure (either chook or cattle around 2 t/ha) could be applied before cropping with applications of half this amount applied on alternate years to improve soil quality over time. If the suggested earthworks were to be undertaken this would provide an opportunity to improve the profile to depth at an increased cost and complexity. However, this is likely the only option that would make the site productive in a sustainable manner

The table below contains the outlay, total yield in tonnes of sugar, peanuts, sweet potato and kilograms of beef and gross margin profit for the 4.2 ha site. This gross margin includes only the costs incurred by production (machinery passes, seed, fertiliser, chemicals), they do not take into consideration fixed costs (repayments on loans for the land, council rates, wages, etc.) which would be incurred even if production was not taking place. The production values are based on an average quality soil as the impact on yield of the soil chemical constraints of this site cannot be accurately estimated. Complete budgets detailed in Appendix 4. While other crops are grown in the region (e.g. macadamia nuts) they will be constrained by the same issues demonstrate by the 4 differing production systems chosen here.

	(A)	(B)	(C)	(D)	(E)	(F)	(G)	
	Total Cost ($)	**Total Yield (t) (High)**	**Total income ($) (High Income, High Yield))**	**Profit ($)**	**SA4 Gross Value ($)**	**% contribution to SA4 region (crop type)**	**% contribution to SA4 total agriculture**	**Comments**
	Appendix 4	**Appendix 4**	**Appendix 4**	**=C-A**	**Appendix 5**	**=C/E**	**=C/E (Total Agriculture)**	
Sugar	8,801	504	17,640	8,838	56,430,281	0.031	0.004	Not achievable due to chemicals being required
Peanuts	7,792	16.8	13,440	5,648	1,163,322	1.155	0.003	Not achievable due to chemicals being required
Forage (oats to feed cattle)	1,883	1,365 (kg)	6,825	4,941	109,282,725	0.006	0.001	Prior to planting a perennial pasture
Sweet Potato	36,401	84	71,400	34,998	1,080,539	6.608	0.014	Production will be compromised by heavy soil texture and low pH
Total agriculture					**501,319,408**			

The Richmond – Tweed SA4 region often referred to as the Northern Rivers is a highly productive agricultural area with a total local value of agriculture exceeding $500 million, of this number beef production accounts for $109 million, Nuts $90 million, Potatoes $1 million and Sugar cane $56 million (Appendix 5).

The production on the Cudgen site represents less than 0.005% of the value of beef, 0.007% of nut production, 3.1% of sweet potato and 0.018% of the sugar production in the SA4 region. These numbers indicate that removing the site from agricultural production would not have a noticeable impact on the primary production of the region or the ability of the Tweed region to sustain a food bowl. Additionally, these estimates are based off the gross margin budgets in Appendix 4, which present per hectare production potential without taking into account the constraints at this site.

Sweet potatoes appear, from pure economics to be the most desirable crop for the small area. However, sweet potatoes rely on quality to receive top prices. Having higher clay content in the soil restricts the development of the roots, not only does this limit yield it also prevents the uniform shape consumers prefer, resulting in downgrades. The local rainfall should be sufficient for dryland production, but fluctuations in soil moisture caused by inconsistent rainfall can result in cracked skins which further discounts the price received. Sweet potatoes require slightly alkaline to neutral soils with a minimum pH in Calcium Chloride of 5.8, all the points tests at the site had a pH lower than this, the acidity would cause nutrient access, establishment and growth issues throughout the crop lifecycle. Sweet potatoes also need well drained soil to grow productive crops, as most of the site is sloped this should only be a concern in the lowest point where water collect before running into the wetland. This would require further earthworks to improve drainage while not directing all water which may have picked up chemical residues into the ecologically sensitive neighbouring area. Financially the sweet potato crop also requires the greatest outlay prior to any cashflow is received, this is due in large part to the high requirement for manual labour in the planting, harvesting and packing stages, where other crops have largely automated these processes. Agriculture and particularly horticulture suffers from a ongoing labour shortage for this kind of manual work so the timely completion of operations may be difficult, jeopardizing the crop quality and yield, which is problematic given the significant investment.

While the mid profitability options, peanuts and sugarcane, have a large number of chemical applications required throughout their growing season that would likely not be achievable due to the constraints imposed by neighboring land uses. There is also a greater capital outlay associated with these crops increasing the risk for a return of under $10,000 in over 12 months of preparation and growth. Additionally, these crops require specialized machinery for their operations and finding a contractor willing to make the trip for the small area would be difficult and costly if one was able to be found.

Growing oats as a clean up phase ahead of sowing a perennial pasture has a reduced need for chemical and specialized machinery. However, the small area would only be able to support 7-9 fattening stock with a high risk of running short on feed. At present the site also lacks key infrastructure for maintaining livestock, including yards for loading and unloading from truck as well as husbandry procedures. The site also lacks any source of water for stock to drink, critical for welfare. Adding this infrastructure to the site along with the new fencing that would be required is a significant cost that would need to be incurred before stock could be run on the site. Further the steep contours would reduce average daily weight gains due to increased energy expenditure associated with movement on slopes. The only feasible way to run stock on this site would be to partner with a neighbouring grazier and use the site as one paddock in a larger rotation to ensure stock have access to adequate feed and the pasture has a chance to recover between grazings. In this instance the only option would be the property to the south which provides near contiguous grazing. Even this choice would require arrangements be made with local council regarding temporary road closures to enable stock to be moved to and from the site across Cudgen Road.

The labour required to operate this site as a farm would represent less than 1 full time employee (FTE), while the initial set up would require intensive work to remodel the earthworks on the site the management of crops or stock on this scale would not justify a full time employee, further the income from the site would not be sufficient to pay on going wages. This would require engaging contractors and casual labour to complete the majority of operations, given the small size and difficulty of access to this site it will not be appealing to contractor and therefore not prioritized. This can lead to delays in operation timing and further compromise the yield potential of the site.

Local businesses supporting agricultural production, including contract spray applicators, harvesters and planters as well as freight companies, processing plants and markets rely on consistent volumes of products to remain viable. In the Tweed LGA alone the volume of sugar cane produced is worth $35 million, the value of sugar can produced from this site would be under $9000 using best case production. Similarly Tweed produces $800,000 worth of nuts, $1 million worth of potatoes and $9.6 million worth of beef (Appendix 5). This sites production would be worth less than 1% of the LGA value of sugar, nuts and beef and only 3% of the value of potatoes provided that the soil constraints allowed sweet potato to be a viable crop. As a result removing the site from the agriculturally productive area within the Tweed LGA would have negligible impact on the off-farm agricultural infrastructure servicing the area (labour, supply chain and processing).

One of the frameworks used to assess and protect important agricultural resources in New South Wales is the Biophysical Strategic Agricultural Land (BSAL) assessment. The first limitation for this site is the minimum contiguous area to be considered is 20 hectares, prior to the neighbouring developments this site would have comprised a large enough are to be considered. However, the area directly east of the site has been developed from agricultural land into a commercial area. At present the road to the south of the site is a heavily trafficked 2 lane splitting into 5 lanes at the intersection at the south west corner of the site. This already poses a challenge to the movement of livestock and machinery from the agricultural land to the south, with the planned expansion of this road moving resources across would likely become unfeasible further isolating the site. This residential and commercial intensification around the site mean that over time it will only become more isolated exacerbating the challenges already posed by the sites size and location.

Once under consideration for BSAL designation the site must then go through 12 sequential assessments to become designated as BSAL (Fig. 9). Failure at any of these steps means the land is not considered BSAL. Based on our assessment the site does not meet the following BSAL requirements:

- There is slope greater than 10% present (1)
- There is slope greater than 5% present (5)
- The soil does not have moderate or high fertility (7)
- There is a physical barrier to rooting depth shallower that 750 mm (8)
- Areas within the site have a pH below 4.5 when measured in calcium chloride within the top 600 mm (10)
- There is a chemical barrier to rooting depth at less than 75 mm (12)

As a result it is not strategically important farmland.

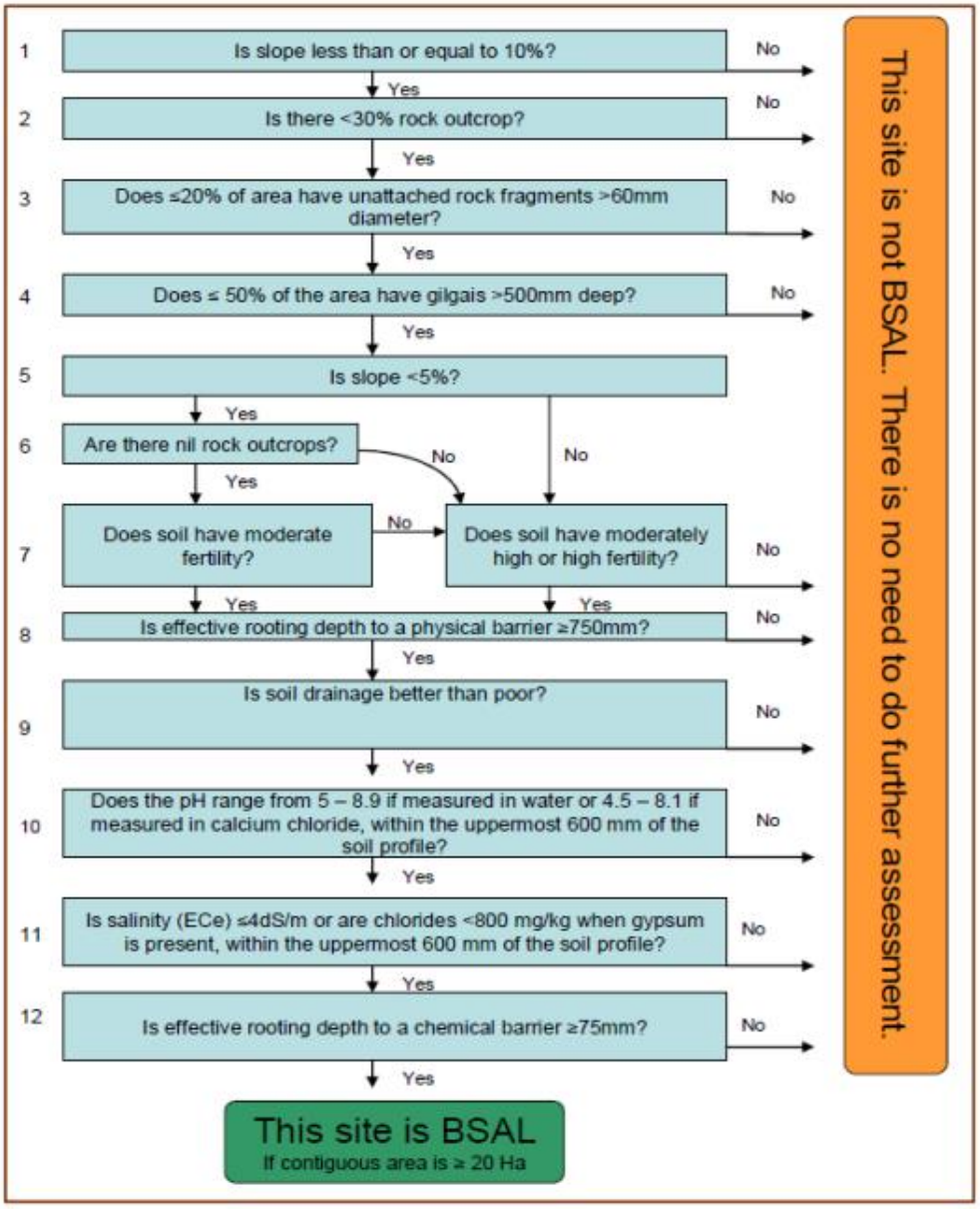


Figure 9 - BSAL criteria

Summary

Overall, the land may be capable of a limited level of agricultural production. However, the site faces a range of physical, chemical and social challenges.

The site is logistically compromised by the difficulty of access due to the major roadways to the west and south. The size of the site also limits the practicalities of farming as fixed costs such as machinery cannot be supported by the total income off such a small area. The small area also restricts the ability to use important pesticides due to regulation relating to minimal buffer zones to external land

uses, these buffer zones are especially difficult to manage given the wetland to the north. The wetlands are protected by the largest buffer zones to avoid environmental damage. The combination of these factors means that the site will have declining agricultural potential moving forward as the use of chemical and fertiliser inputs becomes more tightly regulated.

Physically the site is constrained by the soil chemical properties, which are severely limiting and require significant work and investment to rectify. The local relief of the site is also problematic as the steep contours are impassable to the majority of machinery limiting the arable area of an already small site.

Even if the soil fertility, slope and logistics of the site were ideally suited to agriculture there would still be the social and legal constraints of the conflicting neighbouring land uses with the hospital to the east and residential neighbourhood to the west.

Given the above constraints and challenges on the site, it is highly unlikely the site would achieve the economies of scale required in modern agriculture to achieve profitability. In addition to this, the site does not meet the requirements of BSAL to be considered strategically valuable farmland for the state.

APVMA registered pesticide labels spray drift restraints

Full labels are available from the manufacturer or the APVMA

Paradigm
Corteva

200 g/kg HALAUXIFEN as the methyl ester
200 g/kg FLORASULAM

SPRAY DRIFT RESTRAINTS

Specific definitions for terms used in this section of the label can be found at apvma.gov.au/spraydrift.

DO NOT allow bystanders to come into contact with the spray cloud.

DO NOT apply in a manner that may cause an unacceptable impact to native vegetation, agricultural crops, landscaped gardens and aquaculture production, or cause contamination of plant or livestock commodities, outside the application site from spray drift. The buffer zones in the relevant buffer zone table/s below provide guidance but may not be sufficient in all situations. Wherever possible, correctly use application equipment designed to reduce spray drift and apply when the wind direction is away from these sensitive areas.

DO NOT apply unless the wind speed is between three and 20 kilometres per hour at the application site during the time of application.

DO NOT apply if there are hazardous surface temperature inversion conditions present at the application site during the time of application. Surface temperature inversion conditions exist most evenings one to two hours before sunset and persist until one to two hours after sunrise.

DO NOT apply by a boom sprayer unless the following requirements are met:

- Spray droplets are not smaller than a COARSE spray droplet size category.
- Minimum distances between the application site and downwind sensitive areas are observed (see 'Mandatory buffer zones' section of the following table titled 'Buffer zones for boom sprayers').

Buffer zones for boom sprayers

Situation	Boom height above the target canopy	Mandatory downwind buffer zones	
		Natural aquatic areas	Vegetation areas
Paradigm® alone or tank mix with MCPA	0.5 m or lower	5 metres	30 metres
	1.0 m or lower	30 metres	80 metres
Tank mix with glyphosate	0.5 m or lower	5 metres	65 metres
	1.0 m or lower	30 metres	200 metres

Diuron 900 WDG

Adama

900 g/kg DIURON

SPRAY DRIFT RESTRAINTS

DO NOT apply by air.

DO NOT apply with spray droplets smaller than COARSE spray droplet size category according to nozzle manufacturer specifications that refer to the ASAE S572 Standard or the BCPC Guideline.

DO NOT apply when wind speed is less than 3 or more than 20 kilometres per hour as measured at the application site.

Users of this product MUST make an accurate written record of the details of each spray application within 24 hours following application and KEEP this record for a minimum of 2 years. The spray applications that must be recorded are:

1. Data with start and finish times of application;
2. Location address and paddock/s sprayed;
3. Full name of this product;
4. Amount of products used per hectare and number of hectares applied to;
5. Crop/situation and weed/pest;
6. Wind speed and direction during application;
7. Air temperature and relative humidity during application;
8. Nozzle brand, type, spray angle, nozzle capacity and spray system pressure measured during application;
9. Name and address of person applying this product. (Additional record details may be required by the State or Territory where this product is used).

ADAMA

MANDATORY NO-SPRAY ZONES

DO NOT apply when there is non-target vegetation downwind from the application area and within the mandatory no-spray zones shown in table below.

DO NOT apply when there are aquatic and wetland areas including aquacultural ponds, surface streams and rivers downwind from the application area and within the mandatory no-spray zones shown in table below.

Situation	Rate ac/ha	Downwind buffer zone (m)	
		Aquatic	Terrestrial
Wheat, barley, triticale, cereal rye, oats (WA only)	250 - 500	30	60
Wheat, barley, triticale and oats (WA only)	180 - 250	15	30
Wheat, barley, oats (NSW, ACT, Vic, SA only)	450	25	50
Wheat and barley (SA only)	640 - 880	50	100
Wheat and barley (NSW, ACT, Vic, SA only)	250	15	30
Summer fallows (SA only)			
Cotton	900 - 1800	100	200
Lucerne	750	50	100
Lupins (WA only)	990	30	80
Pulses – incorporated by sowing	750 - 990		
Pulses – post-sowing pre-emergent	495 - 750	50	100
Bananas	250 - 450	25	50
Sugarcane	1800	100	200
Asparagus			

Thiodan EC

Bayer

350 g/L ENDOSULFAN

Downwind No-Spray Zone A zone of higher risk for spray drift effects where spraying cannot take place unless written consent to waive the zone is obtained from the downwind neighbour as specified under "OBTAINING WRITTEN CONSENT TO WAIVE THE DOWNWIND NO-SPRAY ZONE". Its width is determined by the endosulfan formulation (EC) and by the application method (by air or by ground). The widths are 750 metres for EC applied by aircraft and 200 metres for EC applied by ground equipment. The no-spray zone begins at the nearest downwind property boundary or residence and, depending upon the distance between the property boundary or residence and the cotton field, extends toward or into the cotton field to be sprayed.

Estercide Extra 680

Nufarm

680 g/L 2,4-D present as the 2-ethylhexyl ester

SPRAY DRIFT RESTRAINTS

DO NOT apply by a vertical sprayer.

Specific definitions for terms used in this section of the label can be found at www.apvma.gov.au/spraydrift

DO NOT allow **bystanders** to come into contact with the spray cloud.

DO NOT apply in a manner that may cause an **unacceptable impact** to **native vegetation**, **agricultural crops**, **landscaped gardens** and **aquaculture production**, or cause contamination of plant or livestock commodities, outside the application site from **spray drift**. The **buffer zones** in the relevant buffer zone table/s below provide guidance but may not be sufficient in all situations. Wherever possible, correctly use application equipment designed to reduce spray drift and apply when the wind direction is away from these sensitive areas.

DO NOT apply unless the **wind speed** is between 3 and 20 kilometres per hour at the **application site** during the time of application.

DO NOT apply if there are **hazardous surface temperature inversion** conditions present at the **application site** during the time of application. **Surface temperature inversion conditions** exist most evenings one to two hours before sunset and persist until one to two hours after sunrise.

BOOM SPRAYERS

DO NOT apply by a boom sprayer unless the following requirements are met:

- Spray droplets are not smaller than a VERY COARSE **spray droplet size category**
- Minimum distances between the **application site** and downwind **sensitive areas** (see '**Mandatory buffer zones**' section of the following table titled 'Buffer zones for boom sprayers') are observed.

Buffer Zones for Boom Sprayers

Application rate	Boom Height above target canopy	Mandatory buffer zones (distances given in metres)				
		Bystander Areas	Natural Aquatic Areas	Pollinator Areas	Vegetation Areas	Livestock Areas
Up to 820 mL/ha	0.5m or lower	0	10	0	25	0
	1.0m or lower		40		55	
Up to 1.7 L/ha	0.5m or lower		30		35	
	1.0m or lower		60		100	
Up to 2.4 L/ha	0.5m or lower		30		45	
	1.0m or lower		80		140	
Up to 4.7 L/ha	0.5m or lower		50		100	
	1.0m or lower		160		375	
Up to 6.6 L/ha	0.5m or lower		75		150	
	1.0m or lower		Not supported		Not supported	

Crucial Nufarm

600g/L GLYPHOSATE

Spray Drift Restraints

Specific definitions for terms used in this section of the label can be found at apvma.gov.au/spraydrift

DO NOT allow bystanders to come into contact with the spray cloud.

DO NOT apply in a manner that may cause an unacceptable impact to native vegetation, agricultural crops, landscaped gardens and aquaculture production, or cause contamination of plant or livestock commodities, outside the application site from spray drift. The buffer zones in the buffer zone table below provide guidance but may not be sufficient in all situations. Wherever possible, correctly use application equipment designed to reduce spray drift and apply when the wind direction is away from these sensitive areas.

DO NOT apply unless the wind speed is between 3 and 20 kilometres per hour at the application site during the time of application.

DO NOT apply if there are hazardous surface temperature inversion conditions present at the application site during the time of application. Surface temperature inversion conditions exist most evenings one to two hours before sunset and persist until one to two hours after sunrise.

When applying in a tank mix with Terrad'or, **DO NOT** apply by a boom sprayer unless the following requirements are met:

- Spray droplets are not smaller than a **COARSE** spray droplet size category
- Minimum distances between the application site and downwind sensitive areas are observed (see mandatory downwind buffer zones in the table titled 'Buffer zones for boom sprayers' below).

Buffer zones for boom sprayers

Application Rate	Boom height above the target canopy	Mandatory downwind buffer zones				
		Bystander areas	Natural aquatic areas	Pollinator areas	Vegetation areas	Livestock areas
Tank mix with Terrad'or	0.5 m or lower	0 metres	0 metres	0 metres	5 metres	0 metres
	1.0 m or lower	0 metres	20 metres	0 metres	30 metres	0 metres

Dual Gold
Syngenta
960 g/L S-METOLACHLOR

Spray Drift Restraints
Specific definitions for terms used in this section of the label can be found at apvma.gov.au/spraydrift.

DO NOT allow bystanders to come into contact with the spray cloud.

DO NOT apply in a manner that may cause an unacceptable impact to native vegetation, agricultural crops, landscaped gardens and aquaculture production, or cause contamination of plant or livestock commodities, outside the application site from spray drift. Wherever possible, correctly use application equipment designed to reduce spray drift and apply when the wind direction is away from these sensitive areas.

DO NOT apply unless the wind speed is between 3 and 20 kilometres per hour at the application site during the time of application.

DO NOT apply if there are hazardous surface temperature inversion conditions present at the application site during the time of application. Surface temperature inversion conditions exist most evenings 1 to 2 hours before sunset and persist until 1 to 2 hours after sunrise.

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Analysis Results (SOIL)

Customer GILBERT & SUTHERLAND

Distributor GILBERT & SUTHERLAND PTY LTD - ROBINA
SUITE 12 /140 ROBINA
ROBINA
QLD

Sample Ref AG2 LOWER SLOPE 0-120

Date Received 26/11/2020 (Date Issued: 01/12/2020) (Date Sampled: 25/11/2020)

Sample No B120542A / SCK2882

Crop NO CROP STATED

Analysis	Result
pH [1:5 H2O]	5.8
pH [1:5 CaCl2]	4.6
Organic Matter (%)	15.9
CEC (meq/100g)	6.43
EC [1:5 H2O] (dS/m)	0.02
NO3-N (ppm)	2.0
NH4/N (ppm)	< 1.0
Phosphorus [Olsen] (ppm)	20
Potassium[Am. Acet.] (meq/100g)	0.37
Calcium[Am. Acet.] (meq/100g)	2.85
Magnesium[Am. Acet.] (meq/100g)	2.80
Sulphur [MCP] (ppm)	50
Boron[CaCl2] (ppm)	1.2
Copper [DTPA] (ppm)	3.5
Iron [DTPA] (ppm)	173
Manganese [DTPA] (ppm)	45.7
Zinc [DTPA] (ppm)	10.5
Sodium[Am. Acet.] (meq/100g)	0.1
Aluminium[KCl] (meq/100g)	0.29
Chloride (ppm)	9
Ca base saturation (%)	44.2

ASPAC CERTIFIED

Quality Checked: per Rob Cirocco (Lab Manager) – RC

Accredited for compliance with ISO/IEC 17025 – Testing
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QLD

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Date Received 26/11/2020 (Date Issued: 01/12/2020) (Date Sampled: 25/11/2020)

Sample No B120542A / SCK2882

Crop NO CROP STATED

Analysis	Result
K base saturation (%)	5.8
Mg base saturation (%)	43.5
Na base saturation (%)	1.9
Al base saturation (%)	4.60
Ca:Mg Ratio	1.0
Texture	LOAM
Colour	BROWN
Aluminium (ppm)	26.0
Sodium (ppm)	28.0
Calcium (ppm)	569.0
Magnesium (ppm)	336.0
Potassium (ppm)	146.0
Lime Requirement (t/ha)	< 0.50

Additional Comments

Soil analyses performed and reported on samples dried at 40°C and sieved to <2mm; Plant tissue analyses performed and reported on samples dried at 70°C and ground (NB/ Fruit, Fruitlet & Tuber reported on fresh weight basis)

Please Note

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Customer GILBERT & SUTHERLAND

Distributor GILBERT & SUTHERLAND PTY LTD - ROBINA

Sample Ref AG2 LOWER SLOPE 0-120

Date Received 26/11/2020 (Date Issued: 01/12/2020) (Date Sampled: 25/11/2020)

Sample No B120542A / SCK2882

Crop NO CROP STATED

Phosyn Analytical Pty Ltd - Lab Methods

Soil Analysis - *Analysis performed on samples dried at 40°C and ground to <2mm*	Method Code
Ammonium-N	03-S04
Boron (CaCl2) *^	03-S08
CEC (Cation Exchange Capacity) ^	03-S06
Chloride ^	03-S04
Colour and Texture	03-S15
Phosphorus BSES *^	03-S12
Phosphorus Colwell *^	03-S13
Phosphorus Olsen *^	03-S11
PBI unadjusted *^	03-S14
EC (1:5 H2O) ^	03-S02
Exchangeable Aluminium (1M KCl)	03-S10
Exchangeable Calcium (1M Ammonium Acetate) *^	03-S06
Exchangeable Magnesium (1M Ammonium Acetate) *^	03-S06
Exchangeable Potassium (1M Ammonium Acetate) *^	03-S06
Exchangeable Sodium (1M Ammonium Acetate) *^	03-S06
Extractable Copper (DTPA) *^	03-S07
Extractable Iron (DTPA) *^	03-S07
Extractable Manganese (DTPA) *^	03-S07
Extractable Zinc (DTPA) *^	03-S07
Extractable Sulphur (MCP) *^	03-S09
Nitrate-N *^	03-S04
Organic Matter *	03-S01
pH (1:5 CaCl2) *^	03-S03
pH (1:5 H2O) *^	03-S02
Total N ^	03-S16

Plant Analsyis - *Analysis performed on plant tissue dried at 70°C and ground*	Method Code
Aluminium *^	03-P01
Boron *^	03-P01
Calcium *^	03-P01
Cobalt	03-P01
Copper	03-P01
Iron	03-P01
Magnesium *^	03-P01
Manganese	03-P01
Molybdenum	03-P01
Nitrogen *^	03-P02
Phosphorus *^	03-P01
Potassium *^	03-P01
Sodium	03-P01
Sulphur ^	03-P02
Zinc *	03-P01
Chloride	03-S04
Nitrate-N *	03-S04

1. ASPAC certified tests are demonstrated and highlighted with an asterisk (*); 2. NATA accredited tests are demonstrated and highlighted with a hat (^)

CERTIFIED

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Analysis Results (SOIL)

Customer GILBERT & SUTHERLAND

Distributor GILBERT & SUTHERLAND PTY LTD - ROBINA
SUITE 12 /140 ROBINA
ROBINA
QLD

Sample Ref AG2 LOWER SLOPE 120-450

Date Received 26/11/2020 (Date Issued: 01/12/2020) (Date Sampled: 25/11/2020)

Sample No B120542B / SCK2883

Crop NO CROP STATED

Analysis	Result
pH [1:5 H2O]	4.8
pH [1:5 CaCl2]	4.2
Organic Matter (%)	12.7
CEC (meq/100g)	1.87
EC [1:5 H2O] (dS/m)	0.04
NO3-N (ppm)	< 1.0
NH4/N (ppm)	< 1.0
Phosphorus [Olsen] (ppm)	18
Potassium[Am. Acet.] (meq/100g)	0.08
Calcium[Am. Acet.] (meq/100g)	0.34
Magnesium[Am. Acet.] (meq/100g)	0.24
Sulphur [MCP] (ppm)	230
Boron[CaCl2] (ppm)	0.3
Copper [DTPA] (ppm)	0.9
Iron [DTPA] (ppm)	34
Manganese [DTPA] (ppm)	4.8
Zinc [DTPA] (ppm)	0.7
Sodium[Am. Acet.] (meq/100g)	< 0.1
Aluminium[KCl] (meq/100g)	1.17
Chloride (ppm)	12
Ca base saturation (%)	18.2

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ROBINA
QLD

Sample Ref AG2 LOWER SLOPE 120-450

Date Received 26/11/2020 (Date Issued: 01/12/2020) (Date Sampled: 25/11/2020)

Sample No B120542B / SCK2883

Crop NO CROP STATED

Analysis	Result
K base saturation (%)	4.4
Mg base saturation (%)	13.0
Na base saturation (%)	1.9
Al base saturation (%)	62.60
Ca:Mg Ratio	1.4
Texture	LOAM
Colour	BROWN
Aluminium (ppm)	105.0
Sodium (ppm)	< 18.4
Calcium (ppm)	68.0
Magnesium (ppm)	29.0
Potassium (ppm)	32.0
Lime Requirement (t/ha)	1.40

Additional Comments

Soil analyses performed and reported on samples dried at 40°C and sieved to <2mm; Plant tissue analyses performed and reported on samples dried at 70°C and ground (NB/ Fruit, Fruitlet & Tuber reported on fresh weight basis)

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Date Received 26/11/2020 (Date Issued: 01/12/2020) (Date Sampled: 25/11/2020)

Sample No B120542B / SCK2883

Crop NO CROP STATED

Phosyn Analytical Pty Ltd - Lab Methods

Soil Analysis - *Analysis performed on samples dried at 40°C and ground to <2mm*	Method Code
Ammonium-N	03-S04
Boron (CaCl2) *^	03-S08
CEC (Cation Exchange Capacity) ^	03-S06
Chloride ^	03-S04
Colour and Texture	03-S15
Phosphorus BSES *^	03-S12
Phosphorus Colwell *^	03-S13
Phosphorus Olsen *^	03-S11
PBI unadjusted *^	03-S14
EC (1:5 H2O) ^	03-S02
Exchangeable Aluminium (1M KCl)	03-S10
Exchangeable Calcium (1M Ammonium Acetate) *^	03-S06
Exchangeable Magnesium (1M Ammonium Acetate) *^	03-S06
Exchangeable Potassium (1M Ammonium Acetate) *^	03-S06
Exchangeable Sodium (1M Ammonium Acetate) *^	03-S06
Extractable Copper (DTPA) *^	03-S07
Extractable Iron (DTPA) *^	03-S07
Extractable Manganese (DTPA) *^	03-S07
Extractable Zinc (DTPA) *^	03-S07
Extractable Sulphur (MCP) *^	03-S09
Nitrate-N *^	03-S04
Organic Matter *	03-S01
pH (1:5 CaCl2) *^	03-S03
pH (1:5 H2O) *^	03-S02
Total N ^	03-S16

Plant Analsyis - *Analysis performed on plant tissue dried at 70°C and ground*	Method Code
Aluminium *^	03-P01
Boron *^	03-P01
Calcium *^	03-P01
Cobalt	03-P01
Copper	03-P01
Iron	03-P01
Magnesium *^	03-P01
Manganese	03-P01
Molybdenum	03-P01
Nitrogen *^	03-P02
Phosphorus *^	03-P01
Potassium *^	03-P01
Sodium	03-P01
Sulphur ^	03-P02
Zinc *	03-P01
Chloride	03-S04
Nitrate-N *	03-S04

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Analysis Results (SOIL)

Customer GILBERT & SUTHERLAND

Distributor GILBERT & SUTHERLAND PTY LTD - ROBINA
SUITE 12 /140 ROBINA
ROBINA
QLD

Sample Ref AG2 LOWER SLOPE 450-600

Date Received 26/11/2020 (Date Issued: 01/12/2020) (Date Sampled: 25/11/2020)

Sample No B120542C / SCK2884

Crop NO CROP STATED

Analysis	Result
pH [1:5 H2O]	5.1
pH [1:5 CaCl2]	4.3
Organic Matter (%)	11.7
CEC (meq/100g)	1.47
EC [1:5 H2O] (dS/m)	0.03
NO3-N (ppm)	< 1.0
NH4/N (ppm)	1.0
Phosphorus [Olsen] (ppm)	23
Potassium[Am. Acet.] (meq/100g)	0.05
Calcium[Am. Acet.] (meq/100g)	0.71
Magnesium[Am. Acet.] (meq/100g)	0.34
Sulphur [MCP] (ppm)	237
Boron[CaCl2] (ppm)	0.5
Copper [DTPA] (ppm)	0.6
Iron [DTPA] (ppm)	23
Manganese [DTPA] (ppm)	11.5
Zinc [DTPA] (ppm)	1.1
Sodium[Am. Acet.] (meq/100g)	0.1
Aluminium[KCl] (meq/100g)	0.29
Chloride (ppm)	14
Ca base saturation (%)	48.4

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SUITE 12 /140 ROBINA
ROBINA
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Sample Ref AG2 LOWER SLOPE 450-600

Date Received 26/11/2020 (Date Issued: 01/12/2020) (Date Sampled: 25/11/2020)

Sample No B120542C / SCK2884

Crop NO CROP STATED

Analysis	Result
K base saturation (%)	3.2
Mg base saturation (%)	23.0
Na base saturation (%)	5.5
Al base saturation (%)	20.00
Ca:Mg Ratio	2.1
Texture	LOAM
Colour	BROWN
Aluminium (ppm)	26.0
Sodium (ppm)	19.0
Calcium (ppm)	142.0
Magnesium (ppm)	41.0
Potassium (ppm)	18.0
Lime Requirement (t/ha)	< 0.50

Additional Comments

Soil analyses performed and reported on samples dried at 40°C and sieved to <2mm; Plant tissue analyses performed and reported on samples dried at 70°C and ground (NB/ Fruit, Fruitlet & Tuber reported on fresh weight basis)

Please Note

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Sample No B120542C / SCK2884

Crop NO CROP STATED

Phosyn Analytical Pty Ltd - Lab Methods

Soil Analysis - *Analysis performed on samples dried at 40°C and ground to <2mm*	Method Code
Ammonium-N	03-S04
Boron (CaCl2) *^	03-S08
CEC (Cation Exchange Capacity) ^	03-S06
Chloride ^	03-S04
Colour and Texture	03-S15
Phosphorus BSES *^	03-S12
Phosphorus Colwell *^	03-S13
Phosphorus Olsen *^	03-S11
PBI unadjusted *^	03-S14
EC (1:5 H2O) ^	03-S02
Exchangeable Aluminium (1M KCl)	03-S10
Exchangeable Calcium (1M Ammonium Acetate) *^	03-S06
Exchangeable Magnesium (1M Ammonium Acetate) *^	03-S06
Exchangeable Potassium (1M Ammonium Acetate) *^	03-S06
Exchangeable Sodium (1M Ammonium Acetate) *^	03-S06
Extractable Copper (DTPA) *^	03-S07
Extractable Iron (DTPA) *^	03-S07
Extractable Manganese (DTPA) *^	03-S07
Extractable Zinc (DTPA) *^	03-S07
Extractable Sulphur (MCP) *^	03-S09
Nitrate-N *^	03-S04
Organic Matter *	03-S01
pH (1:5 CaCl2) *^	03-S03
pH (1:5 H2O) *^	03-S02
Total N ^	03-S16

Plant Analsyis - *Analysis performed on plant tissue dried at 70°C and ground*	Method Code
Aluminium *^	03-P01
Boron *^	03-P01
Calcium *^	03-P01
Cobalt	03-P01
Copper	03-P01
Iron	03-P01
Magnesium *^	03-P01
Manganese	03-P01
Molybdenum	03-P01
Nitrogen *^	03-P02
Phosphorus *^	03-P01
Potassium *^	03-P01
Sodium	03-P01
Sulphur ^	03-P02
Zinc *	03-P01
Chloride	03-S04
Nitrate-N *	03-S04

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SUITE 12 /140 ROBINA
ROBINA
QLD

Sample Ref AG1 UPPER SLOPE 0-100

Date Received 26/11/2020 (Date Issued: 01/12/2020) (Date Sampled: 25/11/2020)

Sample No B120542D / SCK2885

Crop NO CROP STATED

Analysis	Result
pH [1:5 H2O]	5.4
pH [1:5 CaCl2]	4.4
Organic Matter (%)	13.9
CEC (meq/100g)	4.32
EC [1:5 H2O] (dS/m)	0.04
NO3-N (ppm)	< 1.0
NH4/N (ppm)	1.0
Phosphorus [Olsen] (ppm)	32
Potassium[Am. Acet.] (meq/100g)	0.19
Calcium[Am. Acet.] (meq/100g)	2.09
Magnesium[Am. Acet.] (meq/100g)	1.43
Sulphur [MCP] (ppm)	50
Boron[CaCl2] (ppm)	0.3
Copper [DTPA] (ppm)	1.3
Iron [DTPA] (ppm)	53
Manganese [DTPA] (ppm)	17.8
Zinc [DTPA] (ppm)	2.3
Sodium[Am. Acet.] (meq/100g)	< 0.1
Aluminium[KCl] (meq/100g)	0.54
Chloride (ppm)	21
Ca base saturation (%)	48.3

ASPAC CERTIFIED

Quality Checked: per Rob Cirocco (Lab Manager) – RC

Accredited for compliance with ISO/IEC 17025 – Testing
NATA ACCREDITED FOR TECHNICAL COMPETENCE

Date Printed : 01/12/2020

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Andrews, Queensland 4220, Australia
Tel: +61 7 5568 8700
Fax: +61 7 5522 0720
Email: phosynanalytical@phosyn.com.au

Analysis Results (SOIL)

Customer GILBERT & SUTHERLAND

Distributor GILBERT & SUTHERLAND PTY LTD - ROBINA
SUITE 12 /140 ROBINA
ROBINA
QLD

Sample Ref AG1 UPPER SLOPE 0-100

Date Received 26/11/2020 (Date Issued: 01/12/2020) (Date Sampled: 25/11/2020)

Sample No B120542D / SCK2885

Crop NO CROP STATED

Analysis	Result
K base saturation (%)	4.3
Mg base saturation (%)	33.0
Na base saturation (%)	1.8
Al base saturation (%)	12.60
Ca:Mg Ratio	1.5
Texture	LOAM
Colour	BROWN
Aluminium (ppm)	49.0
Sodium (ppm)	< 18.4
Calcium (ppm)	418.0
Magnesium (ppm)	171.0
Potassium (ppm)	73.0
Lime Requirement (t/ha)	< 0.50

Additional Comments

Soil analyses performed and reported on samples dried at 40°C and sieved to <2mm; Plant tissue analyses performed and reported on samples dried at 70°C and ground (NB/ Fruit, Fruitlet & Tuber reported on fresh weight basis)

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Analysis Results (SOIL)

Customer GILBERT & SUTHERLAND

Distributor GILBERT & SUTHERLAND PTY LTD - ROBINA

Sample Ref AG1 UPPER SLOPE 0-100

Date Received 26/11/2020 (Date Issued: 01/12/2020) (Date Sampled: 25/11/2020)

Sample No B120542D / SCK2885

Crop NO CROP STATED

Phosyn Analytical Pty Ltd - Lab Methods

Soil Analysis - *Analysis performed on samples dried at 40°C and ground to <2mm*	Method Code
Ammonium-N	03-S04
Boron (CaCl2) *^	03-S08
CEC (Cation Exchange Capacity) ^	03-S06
Chloride ^	03-S04
Colour and Texture	03-S15
Phosphorus BSES *^	03-S12
Phosphorus Colwell *^	03-S13
Phosphorus Olsen *^	03-S11
PBI unadjusted *^	03-S14
EC (1:5 H2O) ^	03-S02
Exchangeable Aluminium (1M KCl)	03-S10
Exchangeable Calcium (1M Ammonium Acetate) *^	03-S06
Exchangeable Magnesium (1M Ammonium Acetate) *^	03-S06
Exchangeable Potassium (1M Ammonium Acetate) *^	03-S06
Exchangeable Sodium (1M Ammonium Acetate) *^	03-S06
Extractable Copper (DTPA) *^	03-S07
Extractable Iron (DTPA) *^	03-S07
Extractable Manganese (DTPA) *^	03-S07
Extractable Zinc (DTPA) *^	03-S07
Extractable Sulphur (MCP) *^	03-S09
Nitrate-N *^	03-S04
Organic Matter *	03-S01
pH (1:5 CaCl2) *^	03-S03
pH (1:5 H2O) *^	03-S02
Total N ^	03-S16

Plant Analsyis - *Analysis performed on plant tissue dried at 70°C and ground*	Method Code
Aluminium *^	03-P01
Boron *^	03-P01
Calcium *^	03-P01
Cobalt	03-P01
Copper	03-P01
Iron	03-P01
Magnesium *^	03-P01
Manganese	03-P01
Molybdenum	03-P01
Nitrogen *^	03-P02
Phosphorus *^	03-P01
Potassium *^	03-P01
Sodium	03-P01
Sulphur ^	03-P02
Zinc *	03-P01
Chloride	03-S04
Nitrate-N *	03-S04

1. ASPAC certified tests are demonstrated and highlighted with an asterisk (*); 2. NATA accredited tests are demonstrated and highlighted with a hat (^)

CERTIFIED

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Analysis Results (SOIL)

Customer GILBERT & SUTHERLAND

Distributor GILBERT & SUTHERLAND PTY LTD - ROBINA
SUITE 12 /140 ROBINA
ROBINA
QLD

Sample Ref AG1 UPPER SLOPE 100-500

Date Received 26/11/2020 (Date Issued: 01/12/2020) (Date Sampled: 25/11/2020)

Sample No B120542E / SCK2886

Crop NO CROP STATED

Analysis	Result
pH [1:5 H2O]	5.0
pH [1:5 CaCl2]	4.3
Organic Matter (%)	10.2
CEC (meq/100g)	1.67
EC [1:5 H2O] (dS/m)	0.02
NO3-N (ppm)	< 1.0
NH4/N (ppm)	< 1.0
Phosphorus [Olsen] (ppm)	22
Potassium[Am. Acet.] (meq/100g)	0.02
Calcium[Am. Acet.] (meq/100g)	0.62
Magnesium[Am. Acet.] (meq/100g)	0.22
Sulphur [MCP] (ppm)	219
Boron[CaCl2] (ppm)	0.2
Copper [DTPA] (ppm)	0.3
Iron [DTPA] (ppm)	16
Manganese [DTPA] (ppm)	1.4
Zinc [DTPA] (ppm)	0.3
Sodium[Am. Acet.] (meq/100g)	< 0.1
Aluminium[KCl] (meq/100g)	0.77
Chloride (ppm)	8
Ca base saturation (%)	37.1

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Analysis Results (SOIL)

Customer GILBERT & SUTHERLAND

Distributor GILBERT & SUTHERLAND PTY LTD - ROBINA
SUITE 12 /140 ROBINA
ROBINA
QLD

Sample Ref AG1 UPPER SLOPE 100-500

Date Received 26/11/2020 (Date Issued: 01/12/2020) (Date Sampled: 25/11/2020)

Sample No B120542E / SCK2886

Crop NO CROP STATED

Analysis	Result
K base saturation (%)	1.4
Mg base saturation (%)	13.2
Na base saturation (%)	2.2
Al base saturation (%)	46.20
Ca:Mg Ratio	2.8
Texture	LOAM
Colour	BROWN
Aluminium (ppm)	70.0
Sodium (ppm)	< 18.4
Calcium (ppm)	124.0
Magnesium (ppm)	26.0
Potassium (ppm)	9.0
Lime Requirement (t/ha)	0.90

Additional Comments

Soil analyses performed and reported on samples dried at 40°C and sieved to <2mm; Plant tissue analyses performed and reported on samples dried at 70°C and ground (NB/ Fruit, Fruitlet & Tuber reported on fresh weight basis)

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Analysis Results (SOIL)

Customer GILBERT & SUTHERLAND

Distributor GILBERT & SUTHERLAND PTY LTD - ROBINA

Sample Ref AG1 UPPER SLOPE 100-500

Date Received 26/11/2020 (Date Issued: 01/12/2020) (Date Sampled: 25/11/2020)

Sample No B120542E / SCK2886

Crop NO CROP STATED

Phosyn Analytical Pty Ltd - Lab Methods

Soil Analysis - *Analysis performed on samples dried at 40°C and ground to <2mm*	Method Code
Ammonium-N	03-S04
Boron (CaCl2) *^	03-S08
CEC (Cation Exchange Capacity) ^	03-S06
Chloride ^	03-S04
Colour and Texture	03-S15
Phosphorus BSES *^	03-S12
Phosphorus Colwell *^	03-S13
Phosphorus Olsen *^	03-S11
PBI unadjusted *^	03-S14
EC (1:5 H2O) ^	03-S02
Exchangeable Aluminium (1M KCl)	03-S10
Exchangeable Calcium (1M Ammonium Acetate) *^	03-S06
Exchangeable Magnesium (1M Ammonium Acetate) *^	03-S06
Exchangeable Potassium (1M Ammonium Acetate) *^	03-S06
Exchangeable Sodium (1M Ammonium Acetate) *^	03-S06
Extractable Copper (DTPA) *^	03-S07
Extractable Iron (DTPA) *^	03-S07
Extractable Manganese (DTPA) *^	03-S07
Extractable Zinc (DTPA) *^	03-S07
Extractable Sulphur (MCP) *^	03-S09
Nitrate-N *^	03-S04
Organic Matter *	03-S01
pH (1:5 CaCl2) *^	03-S03
pH (1:5 H2O) *^	03-S02
Total N ^	03-S16

Plant Analsyis - *Analysis performed on plant tissue dried at 70°C and ground*	Method Code
Aluminium *^	03-P01
Boron *^	03-P01
Calcium *^	03-P01
Cobalt	03-P01
Copper	03-P01
Iron	03-P01
Magnesium *^	03-P01
Manganese	03-P01
Molybdenum	03-P01
Nitrogen *^	03-P02
Phosphorus *^	03-P01
Potassium *^	03-P01
Sodium	03-P01
Sulphur ^	03-P02
Zinc *	03-P01
Chloride	03-S04
Nitrate-N *	03-S04

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Analysis Results (SOIL)

Customer GILBERT & SUTHERLAND

Distributor GILBERT & SUTHERLAND PTY LTD - ROBINA
SUITE 12 /140 ROBINA
ROBINA
QLD

Sample Ref AG1 UPPER SLOPE 500-700

Date Received 26/11/2020 (Date Issued: 01/12/2020)

Sample No B120542F / SCK2887

Crop NO CROP STATED

Analysis	Result
pH [1:5 H2O]	6.1
pH [1:5 CaCl2]	5.7
Organic Matter (%)	5.3
CEC (meq/100g)	4.69
EC [1:5 H2O] (dS/m)	0.02
NO3-N (ppm)	< 1.0
NH4/N (ppm)	< 1.0
Phosphorus [Olsen] (ppm)	10
Potassium[Am. Acet.] (meq/100g)	0.01
Calcium[Am. Acet.] (meq/100g)	3.39
Magnesium[Am. Acet.] (meq/100g)	0.70
Sulphur [MCP] (ppm)	143
Boron[CaCl2] (ppm)	0.2
Copper [DTPA] (ppm)	0.1
Iron [DTPA] (ppm)	3
Manganese [DTPA] (ppm)	0.3
Zinc [DTPA] (ppm)	0.2
Sodium[Am. Acet.] (meq/100g)	0.1
Aluminium[KCl] (meq/100g)	0.49
Chloride (ppm)	12
Ca base saturation (%)	72.3
K base saturation (%)	0.3

ASPAC CERTIFIED

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Analysis Results (SOIL)

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Distributor GILBERT & SUTHERLAND PTY LTD - ROBINA
SUITE 12 /140 ROBINA
ROBINA
QLD

Sample Ref AG1 UPPER SLOPE 500-700

Date Received 26/11/2020 (Date Issued: 01/12/2020)

Sample No B120542F / SCK2887

Crop NO CROP STATED

Analysis	Result
Mg base saturation (%)	14.9
Na base saturation (%)	2.1
Al base saturation (%)	10.40
Ca:Mg Ratio	4.9
Texture	SILTY LOAM
Colour	GREY BROWN
Aluminium (ppm)	44.0
Sodium (ppm)	22.0
Calcium (ppm)	679.0
Magnesium (ppm)	84.0
Potassium (ppm)	6.0
Lime Requirement (t/ha)	< 0.50

Additional Comments

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Date Received 26/11/2020 (Date Issued: 01/12/2020)

Sample No B120542F / SCK2887

Crop NO CROP STATED

Phosyn Analytical Pty Ltd - Lab Methods

Soil Analysis - *Analysis performed on samples dried at 40°C and ground to <2mm*	Method Code
Ammonium-N	03-S04
Boron (CaCl2) *^	03-S08
CEC (Cation Exchange Capacity) ^	03-S06
Chloride ^	03-S04
Colour and Texture	03-S15
Phosphorus BSES *^	03-S12
Phosphorus Colwell *^	03-S13
Phosphorus Olsen *^	03-S11
PBI unadjusted *^	03-S14
EC (1:5 H2O) ^	03-S02
Exchangeable Aluminium (1M KCl)	03-S10
Exchangeable Calcium (1M Ammonium Acetate) *^	03-S06
Exchangeable Magnesium (1M Ammonium Acetate) *^	03-S06
Exchangeable Potassium (1M Ammonium Acetate) *^	03-S06
Exchangeable Sodium (1M Ammonium Acetate) *^	03-S06
Extractable Copper (DTPA) *^	03-S07
Extractable Iron (DTPA) *^	03-S07
Extractable Manganese (DTPA) *^	03-S07
Extractable Zinc (DTPA) *^	03-S07
Extractable Sulphur (MCP) *^	03-S09
Nitrate-N *^	03-S04
Organic Matter *	03-S01
pH (1:5 CaCl2) *^	03-S03
pH (1:5 H2O) *^	03-S02
Total N ^	03-S16

Plant Analsyis - *Analysis performed on plant tissue dried at 70°C and ground*	Method Code
Aluminium *^	03-P01
Boron *^	03-P01
Calcium *^	03-P01
Cobalt	03-P01
Copper	03-P01
Iron	03-P01
Magnesium *^	03-P01
Manganese	03-P01
Molybdenum	03-P01
Nitrogen *^	03-P02
Phosphorus *^	03-P01
Potassium *^	03-P01
Sodium	03-P01
Sulphur ^	03-P02
Zinc *	03-P01
Chloride	03-S04
Nitrate-N *	03-S04

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CERTIFIED

Quality Checked: per Rob Cirocco (Lab Manager) – RC

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Date Printed : 01/12/2020

LABORATORY ANALYSIS RESULTS

TRADING NAME: Centuria
FARM NAME: Cudgen
PADDOCK NAME: Top
PADDOCK AREA: Not Provided

DATE: 23 Jun 2023
ADVISER NAME: Glen Pinn
PHONE:
MOBILE: 0458 421 483
EMAIL: pinnacleagriculture@bigpond.

SAMPLING DATE: 09 Jun 2023
RECEIVED DATE: 15 Jun 2023
ANALYSIS DATE: 22 Jun 2023

CROP: Not Provided

LABORATORY: Nutrient Advantage Lab

ANALYSIS			*LABORATORY RESULT*
Sample Depth (cm)	0.0 - 30.0	30.0 - 60.0	60.0 - 90.0
Sample Barcode	070292125	070292124	070292123
Laboratory Report No.	73881143	73881042	7387375
Product Code	IP-SNB-26	IP-SNB-26	IP-SNB-04
Soil Colour	Brown	Brown	
Soil Texture	Medium Clay	Medium Clay	
pH (1:5 H2O)	5.5	6.0	6.4
pH (1:5 CaCl2)	5.0	5.6	6.0
EC (1:5 H2O) dS/m	0.03	0.02	0.03
Chloride (1:5 H2O) mg/kg	14	13	18
Organic carbon (Walkley Black) %	1.54	0.99	
Nitrate nitrogen (KCl) mg/kg	1	<0.50	<0.50
Ammonium nitrogen (KCl) mg/kg	2	1	1
Phosphorus (Colwell) mg/kg	41	25	
Phosphorus (BSES) mg/kg	21	14	
Potassium (Amm-Acet.) cmol+/kg	0.04	0.02	
Potassium % of CEC	2.5	0.8	
Sulfate-S (KCl40) mg/kg	49.0	48.0	180.0
Calcium (Amm-Acet) cmol+/kg	0.9	2.0	
Calcium % of CEC	57.5	82.2	
Magnesium (Amm-Acet.) cmol+/kg	0.4	0.4	
Calcium:Magnesium Ratio (cmol+/kg)	2.2	5.4	
Sodium (Amm-Acet.) cmol+/kg	0.05	0.04	
Dispersion Index (Loveday/Pyle)	0	0	
Slaking	Partial	Partial	
Aluminium (KCl) (prewash) cmol+/kg	0.16	<0.10	
Aluminium Saturation %	10.3	<1	
Copper (DTPA) mg/kg	0.10	<0.010	
Zinc (DTPA) mg/kg	0.15	<0.020	
Manganese (DTPA) mg/kg	0.6	0.1	
Iron (DTPA) mg/kg	14.0	6.0	
Boron (hot CaCl2) (mg/kg)	0.3	0.3	

CALCULATED			*CALCULATED RESULT*
EC (se) (dS/m)	0.2	0.1	Insufficient Calc Data
EC (se) (dS/m) (Cladj)	0.2	0.1	Insufficient Calc Data
Phosphorus Buffer Index (Colwell) (PBIc)	1,700	1,500	

LABORATORY ANALYSIS RESULTS

Phosphorus Environmental Risk Index	0.00	0.00	
Sodium:Potassium Ratio	1.3	2.3	
Magnesium % cations	26.5	15.2	Insufficient Calc Data
Grass Tetany Risk Index (Soil)	0.03	0.01	
Calcium:magnesium ratio	2.2	5.4	
Sodium % cations			Insufficient Calc Data
Exch. sodium %	3.2	1.8	
Electrochemical Stability Index	0.009	0.011	Insufficient Calc Data
eCEC cmol+/kg	1.5	2.4	Insufficient Calc Data

LABORATORY ANALYSIS RESULTS

TRADING NAME: Centuria
FARM NAME: Cudgen
PADDOCK NAME: Bottom
PADDOCK AREA: Not Provided

DATE: 23 Jun 2023
ADVISER NAME: Glen Pinn
PHONE:
MOBILE: 0458 421 483
EMAIL: pinnacleagriculture@bigpond.

SAMPLING DATE: 09 Jun 2023
RECEIVED DATE: 15 Jun 2023
ANALYSIS DATE: 22 Jun 2023

CROP: Not Provided

LABORATORY: Nutrient Advantage Lab

ANALYSIS			*LABORATORY RESULT*
Sample Depth (cm)	0.0 - 30.0	30.0 - 60.0	60.0 - 90.0
Sample Barcode	070292122	070292121	070292120
Laboratory Report No.	73880941	73880840	7387364
Product Code	IP-SNB-26	IP-SNB-26	IP-SNB-04
Soil Colour	Brown	Brown	
Soil Texture	Clay Loam	Medium Clay	
pH (1:5 H2O)	5.5	5.7	5.2
pH (1:5 CaCl2)	4.9	4.9	4.6
EC (1:5 H2O) dS/m	0.06	0.05	0.04
Chloride (1:5 H2O) mg/kg	18	<10	<10
Organic carbon (Walkley Black) %	2.19	2.26	
Nitrate nitrogen (KCl) mg/kg	6	5	2
Ammonium nitrogen (KCl) mg/kg	2	2	1
Phosphorus (Colwell) mg/kg	60	88	
Phosphorus (BSES) mg/kg	31	38	
Potassium (Amm-Acet.) cmol+/kg	0.32	0.11	
Potassium % of CEC	10	3.2	
Sulfate-S (KCl40) mg/kg	43.0	27.0	50.0
Calcium (Amm-Acet) cmol+/kg	1.9	2.2	
Calcium % of CEC	59.2	63.1	
Magnesium (Amm-Acet.) cmol+/kg	0.8	1.0	
Calcium:Magnesium Ratio (cmol+/kg)	2.5	2.2	
Sodium (Amm-Acet.) cmol+/kg	0.09	0.06	
Dispersion Index (Loveday/Pyle)	0	0	
Slaking	Partial	Water Stable	
Aluminium (KCl) (prewash) cmol+/kg	0.13	0.12	
Aluminium Saturation %	4	3.4	
Copper (DTPA) mg/kg	0.53	1.50	
Zinc (DTPA) mg/kg	0.77	1.00	
Manganese (DTPA) mg/kg	14.0	19.0	
Iron (DTPA) mg/kg	33.0	67.0	
Boron (hot CaCl2) (mg/kg)	0.4	0.4	

CALCULATED			*CALCULATED RESULT*
EC (se) (dS/m)	0.5	0.3	Insufficient Calc Data
EC (se) (dS/m) (Cladj)	0.3	0.2	Insufficient Calc Data
Phosphorus Buffer Index (Colwell) (PBIc)	970	1,200	

LABORATORY ANALYSIS RESULTS

Phosphorus Environmental Risk Index	0.10	0.10	
Sodium:Potassium Ratio	0.3	0.6	
Magnesium % cations	24.0	28.4	
Grass Tetany Risk Index (Soil)	0.12	0.03	
Calcium:magnesium ratio	2.5	2.2	
Exch. sodium %	2.8	1.8	
Electrochemical Stability Index	0.021	0.027	Insufficient Calc Data
eCEC cmol+/kg	3.2	3.5	

LABORATORY ANALYSIS RESULTS

TRADING NAME: Centuria
FARM NAME: Cudgen
PADDOCK NAME: Middle
PADDOCK AREA: Not Provided

DATE: 23 Jun 2023
ADVISER NAME: Glen Pinn
PHONE:
MOBILE: 0458 421 483
EMAIL: pinnacleagriculture@bigpond.

SAMPLING DATE: 09 Jun 2023
RECEIVED DATE: 15 Jun 2023
ANALYSIS DATE: 22 Jun 2023

CROP: Not Provided

LABORATORY: Nutrient Advantage Lab

ANALYSIS			*LABORATORY RESULT*
Sample Depth (cm)	0.0 - 30.0	30.0 - 60.0	60.0 - 90.0
Sample Barcode	070292119	070292118	070292117
Laboratory Report No.	73880739	73880638	7387353
Product Code	IP-SNB-26	IP-SNB-26	IP-SNB-04
Soil Colour	Brown	Brown	
Soil Texture	Medium Clay	Medium Clay	
pH (1:5 H2O)	5.9	6.0	6.4
pH (1:5 CaCl2)	5.2	5.7	6.1
EC (1:5 H2O) dS/m	0.03	0.03	0.03
Chloride (1:5 H2O) mg/kg	18	21	19
Organic carbon (Walkley Black) %	1.74	0.80	
Nitrate nitrogen (KCl) mg/kg	1	<0.50	1
Ammonium nitrogen (KCl) mg/kg	2	1	1
Phosphorus (Colwell) mg/kg	37	28	
Phosphorus (BSES) mg/kg	18	10	
Potassium (Amm-Acet.) cmol+/kg	0.09	0.08	
Potassium % of CEC	3.3	2.8	
Sulfate-S (KCl40) mg/kg	25.0	100.0	110.0
Calcium (Amm-Acet) cmol+/kg	1.9	2.3	
Calcium % of CEC	70.4	80.3	
Magnesium (Amm-Acet.) cmol+/kg	0.7	0.4	
Calcium:Magnesium Ratio (cmol+/kg)	2.9	5.6	
Sodium (Amm-Acet.) cmol+/kg	0.06	0.07	
Dispersion Index (Loveday/Pyle)	0	0	
Slaking	Partial	Partial	
Aluminium (KCl) (prewash) cmol+/kg	<0.10	<0.10	
Aluminium Saturation %	<1	<1	
Copper (DTPA) mg/kg	0.41	<0.010	
Zinc (DTPA) mg/kg	0.34	<0.020	
Manganese (DTPA) mg/kg	2.0	0.0	
Iron (DTPA) mg/kg	18.0	2.5	
Boron (hot CaCl2) (mg/kg)	0.4	0.2	

CALCULATED			*CALCULATED RESULT*
EC (se) (dS/m)	0.2	0.2	Insufficient Calc Data
EC (se) (dS/m) (Cladj)	0.2	0.2	Insufficient Calc Data
Phosphorus Buffer Index (Colwell) (PBIc)	1,200	2,000	

LABORATORY ANALYSIS RESULTS

Phosphorus Environmental Risk Index	0.00	0.00	
Sodium:Potassium Ratio	0.7	0.9	
Magnesium % cations	24.1	14.3	Insufficient Calc Data
Grass Tetany Risk Index (Soil)	0.03	0.03	
Calcium:magnesium ratio	2.9	5.6	
Sodium % cations			Insufficient Calc Data
Exch. sodium %	2.2	2.6	
Electrochemical Stability Index	0.014	0.012	Insufficient Calc Data
eCEC cmol+/kg	2.7	2.9	Insufficient Calc Data

LABORATORY ANALYSIS RESULTS

TRADING NAME: Centuria
FARM NAME: Cudgen
PADDOCK NAME: Old Shed
PADDOCK AREA: Not Provided

DATE: 23 Jun 2023
ADVISER NAME: Glen Pinn
PHONE:
MOBILE: 0458 421 483
EMAIL: pinnacleagriculture@bigpond.

SAMPLING DATE: 09 Jun 2023
RECEIVED DATE: 15 Jun 2023
ANALYSIS DATE: 22 Jun 2023

CROP: Not Provided

LABORATORY: Nutrient Advantage Lab

ANALYSIS			*LABORATORY RESULT*
Sample Depth (cm)	0.0 - 30.0	30.0 - 60.0	60.0 - 90.0
Sample Barcode	070292116	070292115	070292114
Laboratory Report No.	73880537	73880436	7387342
Product Code	IP-SNB-26	IP-SNB-26	IP-SNB-04
Soil Colour	Brown	Yellow Brown	
Soil Texture	Clay Loam	Clay Loam	
pH (1:5 H2O)	6.4	5.4	5.2
pH (1:5 CaCl2)	5.4	4.8	4.6
EC (1:5 H2O) dS/m	0.05	0.06	0.05
Chloride (1:5 H2O) mg/kg	<10	<10	<10
Organic carbon (Walkley Black) %	2.47	1.97	
Nitrate nitrogen (KCl) mg/kg	5	2	1
Ammonium nitrogen (KCl) mg/kg	2	2	1
Phosphorus (Colwell) mg/kg	260	94	
Phosphorus (BSES) mg/kg	250	49	
Potassium (Amm-Acet.) cmol+/kg	0.63	0.46	
Potassium % of CEC	8	17	
Sulfate-S (KCl40) mg/kg	6.2	52.0	61.0
Calcium (Amm-Acet) cmol+/kg	4.2	1.1	
Calcium % of CEC	53.1	40.8	
Magnesium (Amm-Acet.) cmol+/kg	3.0	0.8	
Calcium:Magnesium Ratio (cmol+/kg)	1.4	1.4	
Sodium (Amm-Acet.) cmol+/kg	0.08	0.04	
Dispersion Index (Loveday/Pyle)	0	0	
Slaking	Partial	Partial	
Aluminium (KCl) (prewash) cmol+/kg	<0.10	0.30	
Aluminium Saturation %	<1	11.1	
Copper (DTPA) mg/kg	3.00	0.73	
Zinc (DTPA) mg/kg	6.30	0.71	
Manganese (DTPA) mg/kg	10.0	5.7	
Iron (DTPA) mg/kg	100.0	62.0	
Boron (hot CaCl2) (mg/kg)	0.4	0.5	

CALCULATED			*CALCULATED RESULT*
EC (se) (dS/m)	0.4	0.5	Insufficient Calc Data
EC (se) (dS/m) (Cladj)	0.3	0.3	Insufficient Calc Data
Phosphorus Buffer Index (Colwell) (PBIc)	430	1,400	

LABORATORY ANALYSIS RESULTS

Phosphorus Environmental Risk Index	0.60	0.10	
Sodium:Potassium Ratio	0.1	0.1	
Magnesium % cations	37.9	29.7	
Grass Tetany Risk Index (Soil)	0.09	0.24	
Calcium:magnesium ratio	1.4	1.4	
Exch. sodium %	1.0	1.4	
Electrochemical Stability Index	0.048	0.043	Insufficient Calc Data
eCEC cmol+/kg	7.9	2.7	

LABORATORY ANALYSIS RESULTS

TRADING NAME: Centuria
FARM NAME: Cudgen
PADDOCK NAME: Road
PADDOCK AREA: Not Provided

DATE: 23 Jun 2023
ADVISER NAME: Glen Pinn
PHONE:
MOBILE: 0458 421 483
EMAIL: pinnacleagriculture@bigpond.

SAMPLING DATE: 09 Jun 2023
RECEIVED DATE: 15 Jun 2023
ANALYSIS DATE: 22 Jun 2023

CROP: Not Provided

LABORATORY: Nutrient Advantage Lab

ANALYSIS			*LABORATORY RESULT*
Sample Depth (cm)	0.0 - 30.0	30.0 - 60.0	60.0 - 90.0
Sample Barcode	070292113	070292112	070292111
Laboratory Report No.	73880335	73880234	7387331
Product Code	IP-SNB-26	IP-SNB-26	IP-SNB-04
Soil Colour	Yellow Brown	Yellow Brown	
Soil Texture	Clay Loam	Medium Clay	
pH (1:5 H2O)	5.0	5.8	6.1
pH (1:5 CaCl2)	4.4	5.2	5.6
EC (1:5 H2O) dS/m	0.03	0.02	0.03
Chloride (1:5 H2O) mg/kg	13	<10	17
Organic carbon (Walkley Black) %	2.22	0.95	
Nitrate nitrogen (KCl) mg/kg	1	1	1
Ammonium nitrogen (KCl) mg/kg	2	1	1
Phosphorus (Colwell) mg/kg	32	21	
Phosphorus (BSES) mg/kg	14	9	
Potassium (Amm-Acet.) cmol+/kg	0.03	0.02	
Potassium % of CEC	1.8	0.5	
Sulfate-S (KCl40) mg/kg	46.0	58.0	85.0
Calcium (Amm-Acet) cmol+/kg	0.2	2.4	
Calcium % of CEC	11.9	77.3	
Magnesium (Amm-Acet.) cmol+/kg	0.2	0.6	
Calcium:Magnesium Ratio (cmol+/kg)	1	4	
Sodium (Amm-Acet.) cmol+/kg	0.05	0.09	
Dispersion Index (Loveday/Pyle)	0	0	
Slaking	Partial	Partial	
Aluminium (KCl) (prewash) cmol+/kg	1.40	<0.10	
Aluminium Saturation %	72.5	<1	
Copper (DTPA) mg/kg	0.41	<0.010	
Zinc (DTPA) mg/kg	0.37	0.03	
Manganese (DTPA) mg/kg	2.9	0.2	
Iron (DTPA) mg/kg	28.0	5.6	
Boron (hot CaCl2) (mg/kg)	0.3	0.3	

CALCULATED			*CALCULATED RESULT*
EC (se) (dS/m)	0.2	0.1	Insufficient Calc Data
EC (se) (dS/m) (Cladj)	0.2	0.1	Insufficient Calc Data
Phosphorus Buffer Index (Colwell) (PBIc)	1,200	1,300	

LABORATORY ANALYSIS RESULTS

Phosphorus Environmental Risk Index	0.00	0.00	
Sodium:Potassium Ratio	1.4	5.1	
Magnesium % cations	11.4	19.3	Insufficient Calc Data
Grass Tetany Risk Index (Soil)	0.08	0.01	
Calcium:magnesium ratio	1.0	4.0	
Sodium % cations			Insufficient Calc Data
Exch. sodium %	2.5	2.8	
Electrochemical Stability Index	0.012	0.007	Insufficient Calc Data
eCEC cmol+/kg	1.9	3.1	Insufficient Calc Data

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PINNACLE AGRICULTURE

Season Plan 2023

Prepared for: Centuria

Date: 23 June 2023

Printed by: Pinnacle Agriculture

Company: Pinnacle Agriculture

Index

Area Summary

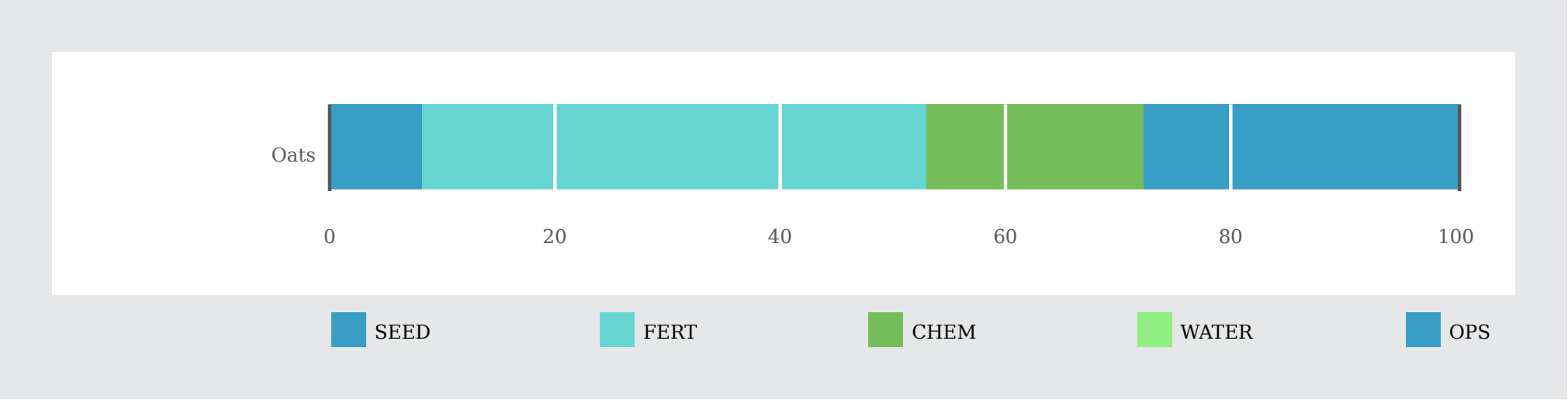
GROUP	CROP	VARIETY		AREA (ha)	(%)
Cereals	Oats	Wizard (oats)		4.2	100.00
			CROP	4.2	100.00
			GROUP	4.2	100.00
			TOTAL	**4.2**	**100.00**

Input Summary

INPUTS	AMOUNT	AVERAGE UNIT COST	TOTAL COST
Seed			
Wizard (oats)	84 kg	$1.80 /kg	$151.20
		TOTAL	$151.20
Adjuvant			
Ammonium Sulphate Herbicide Adjuvant	2.94 kg	$1.40 /kg	$4.12
Uptake Spraying Oil	1.47 L	$7.50 /L	$11.03
		TOTAL	$15.14
Fertiliser			
Granulock Z	336 kg	$1.20 /kg	$403.20
Urea	630 kg	$0.70 /kg	$441.00
		TOTAL	$844.20
Herbicide			
Adama LVE MCPA 570 Herbicide	2.1 L	$13.18 /L	$27.68
Lontrel Advanced Herbicide	420 mL	$69.50 /L	$29.19
Nufarm Crucial Herbicide	12.6 L	$12.00 /L	$151.20
Paradigm Arylex Active Herbicide	63 g	$519.00 /kg	$32.70
Starane Advanced Herbicide	3.15 L	$34.00 /L	$107.10
		TOTAL	$347.87
Operation			
Boomspray application	12.6 ha	$15.00 /ha	$189.00
Sowing	4.2 ha	$60.00 /ha	$252.00
Spreading	4.2 ha	$20.00 /ha	$84.00
		TOTAL	$525.00
		TOTAL	**$1,883.41**

Cost by Crop

CROP	AREA	SEED		FERT		CHEM		WATER		OPS		TOTAL	
	ha	Cost	Cost/ha	Cost	Cost/ha	Cost	Cost/ha	Cost	Cost/ha	Cost	Cost/ha	Cost	Cost/ha
Oats	4	151.20	36.00	844.20	201.00	363.01	86.43	0.00	0.00	525.00	125.00	1,883.41	448.43
TOTALS	**4**	**151.20**	**36.00**	**844.20**	**201.00**	**363.01**	**86.43**	**0.00**	**0.00**	**525.00**	**125.00**	**1,883.41**	**448.43**

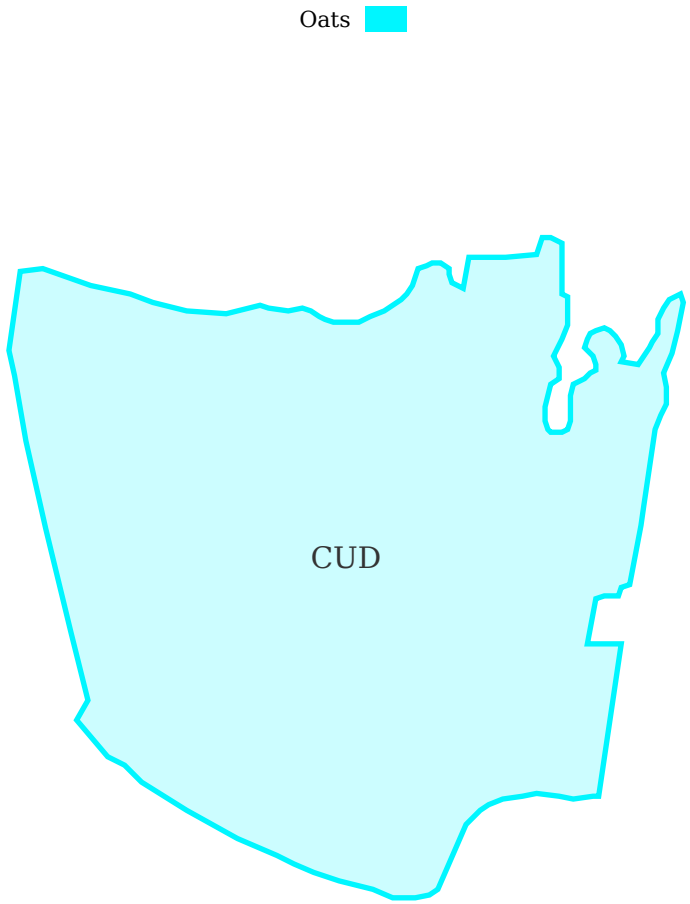


Gross Margins by Crop

Oats	TOTAL COST			LOW		MED		HIGH	
4.2 ha			$1,883.41		$3.00 /t		$4.00 /t		$5.00 /t
	t/ha	t	BE $/t	$	$/ha	$	$/ha	$	$/ha
LOW	275	1,155	1.63	1,581.59	376.57	2,736.59	651.57	3,891.59	926.57
MED	300	1,260	1.49	1,896.59	451.57	3,156.59	751.57	4,416.59	1,051.57
HIGH	325	1,365	1.38	2,211.59	526.57	3,576.59	851.57	4,941.59	1,176.57

Total Farm Crop Gross Margin		Crops Gross Margin					
Total Area	Total Cost						
4.2 ha	$1,883.41	All crops low price		All crops med price		All crops high price	
		$	$/ha	$	$/ha	$	$/ha
	All crops low yield	1,581.59	376.57	2,736.59	651.57	3,891.59	926.57
	All crops med yield	1,896.59	451.57	3,156.59	751.57	4,416.59	1,051.57
	All crops high yield	2,211.59	526.57	3,576.59	851.57	4,941.59	1,176.57

Cudgen
Aerial Overview



Farm Planning Summary - Cudgen

FIELD	2023
Cudgen (Map: CUD)	Oats - Wizard (oats) 4.2 ha

Cudgen

Oats - Wizard (oats)

Average Field Nutrition (kg/ha): N 77.8 P 17.44 S 3.2 Zn 0.8

Cudgen (4.2 ha)

Total (4.2 ha)

Fallow Spray - 1

01 Jan 2023

	RATE	TOTAL	COST/ HA	COST
Total Application Rate	70 L/ha	294 L		
Starane Advanced Herbicide	0.75 L/ha	3.15 L	$25.50	$107.10
Boomspray application	1 ha/ha	4.2 ha	$15.00	$63.00
Nufarm Crucial Herbicide	1.5 L/ha	6.3 L	$18.00	$75.60
		Total	**$58.50**	**$245.70**

Pre Plant Knockdown + Pre Emergent Herbicide

15 Mar 2023

	RATE	TOTAL	COST/ HA	COST
Total Application Rate	70 L/ha	294 L		
Ammonium Sulphate Herbicide Adjuvant	1 kg/100L	2.94 kg	$0.98	$4.12
Boomspray application	1 ha/ha	4.2 ha	$15.00	$63.00
Nufarm Crucial Herbicide	1.5 L/ha	6.3 L	$18.00	$75.60
Droplet Size: Very Coarse				
		Total	**$33.98**	**$142.72**

Sowing

20 Mar 2023

	RATE	TOTAL	COST/ HA	COST
Wizard (oats)	20 kg/ha	84 kg	$36.00	$151.20
Granulock Z	80 kg/ha	336 kg	$96.00	$403.20
Sowing	1 ha/ha	4.2 ha	$60.00	$252.00
Field Nutrition (kg/ha): N 8.8 P 17.44 S 3.2 Zn 0.8				
		Total	**$192.00**	**$806.40**

Early Post - Em Nitrogen

01 May 2023

	RATE	TOTAL	COST/ HA	COST
Spreading	1 ha/ha	4.2 ha	$20.00	$84.00
Urea	150 kg/ha	630 kg	$105.00	$441.00
Field Nutrition (kg/ha): N 69				
		Total	**$125.00**	**$525.00**

Post Emergent Weed Control

20 May 2023

	RATE	TOTAL	COST/ HA	COST
Total Application Rate	70 L/ha	294 L		
Adama LVE MCPA 570 Herbicide	0.5 L/ha	2.1 L	$6.59	$27.68
Lontrel Advanced Herbicide	0.1 L/ha	420 mL	$6.95	$29.19
Paradigm Arylex Active Herbicide	15 g/ha	63 g	$7.79	$32.70
Uptake Spraying Oil	0.5 L/100L	1.47 L	$2.63	$11.03
Boomspray application	1 ha/ha	4.2 ha	$15.00	$63.00
		Total	**$38.95**	**$163.59**

Chem Total	**$86.43**	**$363.01**
Fert Total	**$201.00**	**$844.20**
Plan Total	**$448.43**	**$1,883.41**

Oats	TOTAL COST			LOW		MED		HIGH	
4.2 ha			$1,883.41		$3.00 /t		$4.00 /t		$5.00 /t
	t/ha	t	BE $/t	$	$/ha	$	$/ha	$	$/ha
LOW	275	1,155	1.63	1,581.59	376.57	2,736.59	651.57	3,891.59	926.57
MED	300	1,260	1.49	1,896.59	451.57	3,156.59	751.57	4,416.59	1,051.57
HIGH	325	1,365	1.38	2,211.59	526.57	3,576.59	851.57	4,941.59	1,176.57

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PINNACLE AGRICULTURE

Season Plan 2023

Prepared for: Centuria

Date: 23 June 2023

Printed by: Pinnacle Agriculture

Company: Pinnacle Agriculture

Index

Area Summary

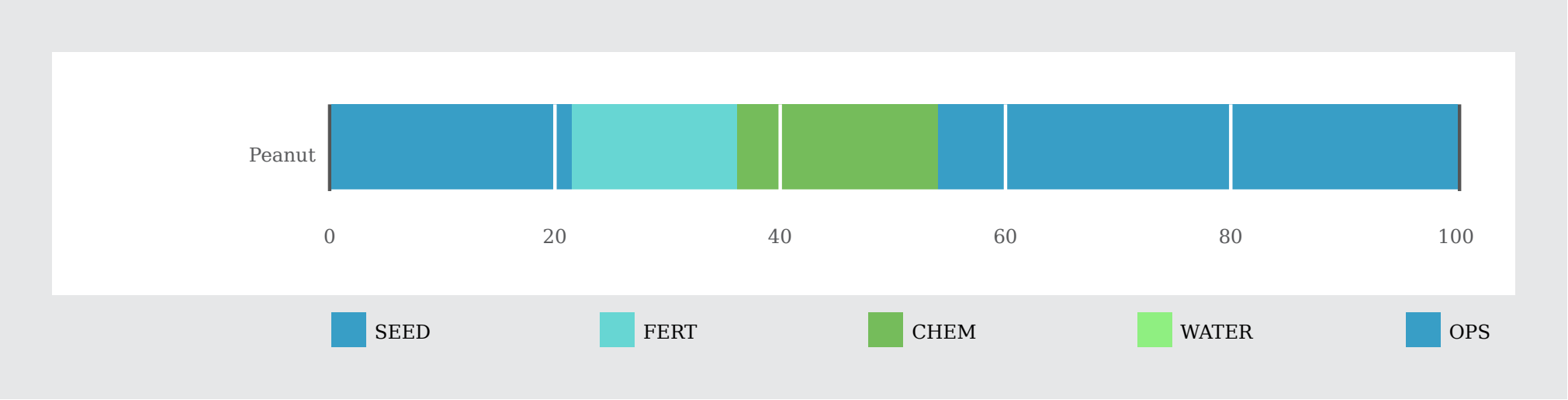
GROUP	CROP	VARIETY		AREA (ha)	(%)
Fruit & Nuts	Peanut	Fisher (Peanut)		4.2	100.00
			CROP	4.2	100.00
			GROUP	4.2	100.00
			TOTAL	**4.2**	**100.00**

Input Summary

INPUTS	AMOUNT	AVERAGE UNIT COST	TOTAL COST
Seed			
Fisher (Peanut)	504 kg	$3.30 /kg	$1,663.20
		TOTAL	$1,663.20
Adjuvant			
BS1000 Bio-Degradable Surfactant	588 mL	$6.50 /L	$3.82
		TOTAL	$3.82
Fertiliser			
Blue Spear - K 15-2-25	4.2 kg	$7.62 /kg	$32.00
Legume Max	588 kg	$1.00 /kg	$588.00
Lime	3.36 t	$0.05 /kg	$168.00
Wengfu SOP	210 kg	$1.70 /kg	$357.00
		TOTAL	$1,145.00
Fungicide			
Bravo Fungicide	10.58 L	$15.40 /L	$162.99
Folicur 430 SC Fungicide	735 mL	$12.50 /L	$9.19
		TOTAL	$172.18
Herbicide			
Adama Spinnaker 700 WG Herbicide	588 g	$101.14 /kg	$59.47
Dual Gold Herbicide	8.4 L	$21.00 /L	$176.40
		TOTAL	$235.87
Inoculant			
Nodulator Granular Legume Inoculant	20.16 kg	$7.40 /kg	$149.18
		TOTAL	$149.18
Operation			
Boomspray application	16.8 ha	$15.00 /ha	$252.00
Cartage	4.2 ha	$100.00 /ha	$420.00
Cleaning	4.2 ha	$75.00 /ha	$315.00
Fertiliser - side-banded	4.2 ha	$60.00 /ha	$252.00
Grain Drying	4.2 ha	$50.00 /ha	$210.00
Harvest	4.2 ha	$150.00 /ha	$630.00
Inter row cultivation	4.2 ha	$60.00 /ha	$252.00
Offset disc	8.4 ha	$60.00 /ha	$504.00
Planting	4.2 ha	$80.00 /ha	$336.00
Spreading	8.4 ha	$20.00 /ha	$168.00
Windrowing/contract	4.2 ha	$60.00 /ha	$252.00
		TOTAL	$3,591.00
Seed Treatment Fungicide			
Maxim XL Fungicide Seed Treatment	2.02 L	$400.00 /L	$806.40
		TOTAL	$806.40
Spray Oil			
Parachute	4.2 L	$5.93 /L	$24.91
		TOTAL	$24.91
		TOTAL	**$7,791.57**

Cost by Crop

CROP	AREA	SEED		FERT		CHEM		WATER		OPS		TOTAL	
	ha	Cost	Cost/ha	Cost	Cost/ha	Cost	Cost/ha	Cost	Cost/ ha	Cost	Cost/ha	Cost	Cost/ha
Peanut	4	1,663.20	396.00	1,145.00	272.62	1,392.36	331.52	0.00	0.00	3,591.00	855.00	7,791.57	1,855.14
TOTALS	**4**	**1,663.20**	**396.00**	**1,145.00**	**272.62**	**1,392.36**	**331.52**	**0.00**	**0.00**	**3,591.00**	**855.00**	**7,791.57**	**1,855.14**

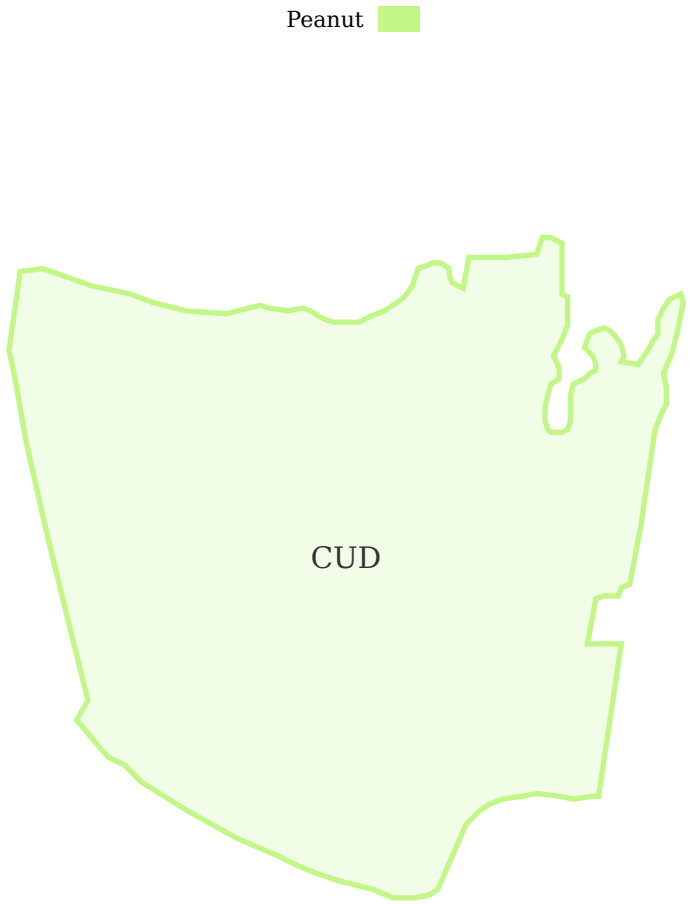


Gross Margins by Crop

Peanut	TOTAL COST			LOW		MED		HIGH	
4.2 ha			$7,791.57		$700.00 /t		$750.00 /t		$800.00 /t
	t/ha	t	BE $/t	$	$/ha	$	$/ha	$	$/ha
LOW	2	8.4	927.57	-1,911.57	-455.14	-1,491.57	-355.14	-1,071.57	-255.14
MED	3	12.6	618.38	1,028.43	244.86	1,658.43	394.86	2,288.43	544.86
HIGH	4	16.8	463.78	3,968.43	944.86	4,808.43	1,144.86	5,648.43	1,344.86

Total Farm Crop Gross Margin		Crops Gross Margin					
Total Area	Total Cost						
4.2 ha	$7,791.57	All crops low price		All crops med price		All crops high price	
		$	$/ha	$	$/ha	$	$/ha
	All crops low yield	-1,911.57	-455.14	-1,491.57	-355.14	-1,071.57	-255.14
	All crops med yield	1,028.43	244.86	1,658.43	394.86	2,288.43	544.86
	All crops high yield	3,968.43	944.86	4,808.43	1,144.86	5,648.43	1,344.86

Cudgen
Aerial Overview



Farm Planning Summary - Cudgen

FIELD	2023
Cudgen (Map: CUD)	Peanut - Fisher (Peanut) 4.2 ha

Field Nutrition (kg/ha): N 5.75 P 12.2 K 47.35 S 16.28 Ca 280.82 Mg 16.002 B 0.0001 Cu 0.0002 Fe 0.001 Mn 0.0007 Mo 0.00006 Zn 0.0005

Cudgen - 4.2 ha

2023

Peanut - Fisher (Peanut)

4.2 ha

SITUATION/ TIMING	INPUTS	RATE	TOTAL	COST/ HA	COST
cultivation 25 Jul 2023	Offset disc	1 ha/ha	4.2 ha	$60.00	$252.00
			Total	**$60.00**	**$252.00**
presow fert 01 Aug 2023	Legume Max	90 kg/ha	378 kg	$90.00	$378.00
	Spreading	1 ha/ha	4.2 ha	$20.00	$84.00
	Field Nutrition (kg/ha): N 3.6 P 7.83 K 17.1 S 4.68 Ca 5.67				
			Total	**$110.00**	**$462.00**
cultivation 15 Aug 2023	Offset disc	1 ha/ha	4.2 ha	$60.00	$252.00
			Total	**$60.00**	**$252.00**
Planting 10 Nov 2023	Fisher (Peanut)	120 kg/ha	504 kg	$396.00	$1,663.20
	Nodulator Granular Legume Inoculant	4 kg/100kg of seed	20.16 kg	$35.52	$149.18
	Maxim XL Fungicide Seed Treatment	0.4 L/100kg of seed	2.016 L	$192.00	$806.40
	Planting	1 ha/ha	4.2 ha	$80.00	$336.00
	Use group P innoculant				
			Total	**$703.52**	**$2,954.78**
PSPE herbicide 11 Nov 2023	Total Application Rate	70 L/ha	294 L		
	Dual Gold Herbicide	2 L/ha	8.4 L	$42.00	$176.40
	Boomspray application	1 ha/ha	4.2 ha	$15.00	$63.00
			Total	**$57.00**	**$239.40**
post em lime 20 Nov 2023	Lime	800 kg/ha	3.36 t	$40.00	$168.00
	Fertiliser - side-banded	1 ha/ha	4.2 ha	$60.00	$252.00
	Field Nutrition (kg/ha): Ca 272 Mg 16				
			Total	**$100.00**	**$420.00**
post em fert 01 Jan 2024	Legume Max	50 kg/ha	210 kg	$50.00	$210.00
	Wengfu SOP	50 kg/ha	210 kg	$85.00	$357.00
	Spreading	1 ha/ha	4.2 ha	$20.00	$84.00
	Field Nutrition (kg/ha): N 2 P 4.35 K 30 S 11.6 Ca 3.15				
			Total	**$155.00**	**$651.00**
post em spray 10 Jan 2024	Total Application Rate	70 L/ha	294 L		
	Adama Spinnaker 700 WG Herbicide	0.14 kg/ha	588 g	$14.16	$59.47
	Bravo Fungicide	1.8 L/100L	5.292 L	$19.40	$81.50
	BS1000 Bio-Degradable Surfactant	0.2 L/100L	588 mL	$0.91	$3.82
	Boomspray application	1 ha/ha	4.2 ha	$15.00	$63.00
			Total	**$49.47**	**$207.79**
foliar fungicide 07 Feb 2024	Total Application Rate	70 L/ha	294 L		
	Bravo Fungicide	1.8 L/100L	5.292 L	$19.40	$81.50
	Blue Spear - K 15-2-25	1 kg/ha	4.2 kg	$7.62	$32.00
	Boomspray application	1 ha/ha	4.2 ha	$15.00	$63.00
	Field Nutrition (kg/ha): N 0.15 P 0.02 K 0.25 Mg 0.0019 B 0.0001 Cu 0.0002 Fe 0.001 Mn 0.0007 Mo 0.00006 Zn 0.0005				
			Total	**$42.02**	**$176.50**
interrow cultivation 15 Feb 2024	Inter row cultivation	1 ha/ha	4.2 ha	$60.00	$252.00
			Total	**$60.00**	**$252.00**
foliar fungicide 01 Mar 2024	Total Application Rate	70 L/ha	294 L		
	Folicur 430 SC Fungicide	0.175 L/ha	735 mL	$2.19	$9.19
	Parachute	1 L/ha	4.2 L	$5.93	$24.91
	Boomspray application	1 ha/ha	4.2 ha	$15.00	$63.00
			Total	**$23.12**	**$97.09**
digging 07 Mar 2024	Windrowing/contract	1 ha/ha	4.2 ha	$60.00	$252.00
			Total	**$60.00**	**$252.00**
threshing 25 Mar 2024	Harvest	1 ha/ha	4.2 ha	$150.00	$630.00
			Total	**$150.00**	**$630.00**

SITUATION/ TIMING	INPUTS	RATE	TOTAL	COST/ HA	COST
post harvest expenses 01 Apr 2024	Total Application Rate	70 L/ha	294 L		
	Cleaning	1 ha/ha	4.2 ha	$75.00	$315.00
	Grain Drying	1 ha/ha	4.2 ha	$50.00	$210.00
	Cartage	1 ha/ha	4.2 ha	$100.00	$420.00
			Total	**$225.00**	**$945.00**
			Chem Total	$331.52	$1,392.36
			Fert Total	$272.62	$1,145.00
			Seed Total	$396.00	$1,663.20
			Plan Total	**$1,855.14**	**$7,791.57**

Peanut	TOTAL COST			LOW		MED		HIGH	
4.2 ha			$7,791.57		$700.00 /t		$750.00 /t		$800.00 /t
	t/ha	t	BE $/t	$	$/ha	$	$/ha	$	$/ha
LOW	2	8.4	927.57	-1,911.57	-455.14	-1,491.57	-355.14	-1,071.57	-255.14
MED	3	12.6	618.38	1,028.43	244.86	1,658.43	394.86	2,288.43	544.86
HIGH	4	16.8	463.78	3,968.43	944.86	4,808.43	1,144.86	5,648.43	1,344.86

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PINNACLE AGRICULTURE

Season Plan 2023

Prepared for: Centuria

Date: 23 June 2023

Printed by: Pinnacle Agriculture

Company: Pinnacle Agriculture

Index

Area Summary

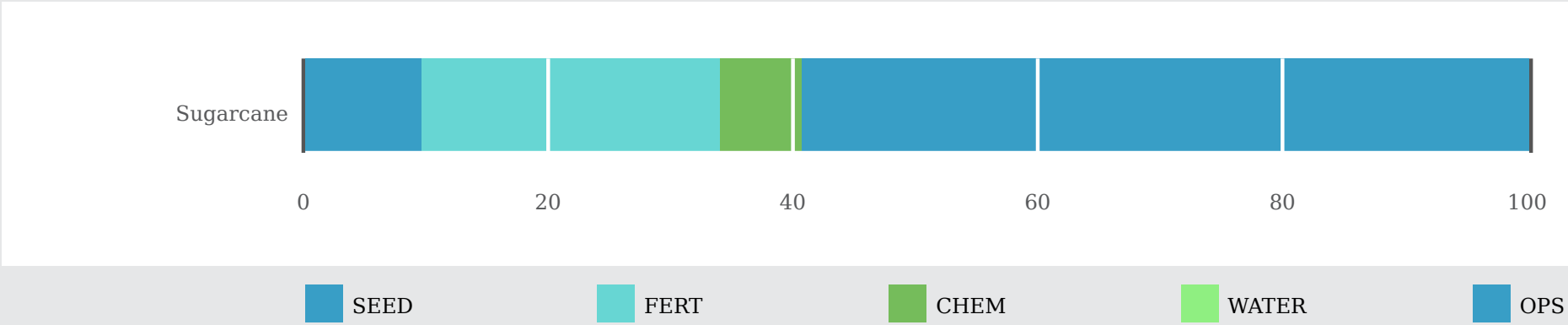
GROUP	CROP	VARIETY		AREA (ha)	(%)
Sugar Crops	Sugarcane	Sugarcane NVS		4.2	100.00
			CROP	4.2	100.00
			GROUP	4.2	100.00
			TOTAL	**4.2**	**100.00**

Input Summary

INPUTS	AMOUNT	AVERAGE UNIT COST	TOTAL COST
Seed			
Sugarcane NVS	21 kg	$40.00 /kg	$840.00
		TOTAL	$840.00
Adjuvant			
Hasten Spray Adjuvant	2.94 L	$6.45 /L	$18.96
		TOTAL	$18.96
Fertiliser			
DAP	840 kg	$1.00 /kg	$840.00
Urea S	1.26 t	$0.80 /kg	$1,008.00
Urea	420 kg	$0.70 /kg	$294.00
		TOTAL	$2,142.00
Fungicide			
Nufarm Sinker Fungicide	2.1 L	$99.00 /L	$207.90
		TOTAL	$207.90
Herbicide			
Adama Diuron 900 WDG Herbicide	7.98 kg	$17.05 /kg	$136.06
Atrazine 900 WG	10.5 kg	$11.50 /kg	$120.75
Gramoxone 250 Herbicide	6.3 L	$7.00 /L	$44.10
Nufarm Amicide Advance 700 Herbicide	4.2 L	$8.80 /L	$36.96
		TOTAL	$337.87
Insecticide			
Nufarm suSCon maxi Intel Soil Insecticide	840 g	$31.00 /kg	$26.04
		TOTAL	$26.04
Operation			
Boomspray application	8.4 ha	$15.00 /ha	$126.00
Harvest	4.2 ha	$700.00 /ha	$2,940.00
Offset disc	8.4 ha	$60.00 /ha	$504.00
Planting	4.2 ha	$375.00 /ha	$1,575.00
Spreading	4.2 ha	$20.00 /ha	$84.00
		TOTAL	$5,229.00
		TOTAL	**$8,801.77**

Cost by Crop

CROP	AREA	SEED		FERT		CHEM		WATER		OPS		TOTAL	
	ha	Cost	Cost/ha	Cost	Cost/ha	Cost	Cost/ha	Cost	Cost/ ha	Cost	Cost/ha	Cost	Cost/ha
Sugarcane	4	840.00	200.00	2,142.00	510.00	590.77	140.66	0.00	0.00	5,229.00	1,245.00	8,801.77	2,095.66
TOTALS	**4**	**840.00**	**200.00**	**2,142.00**	**510.00**	**590.77**	**140.66**	**0.00**	**0.00**	**5,229.00**	**1,245.00**	**8,801.77**	**2,095.66**

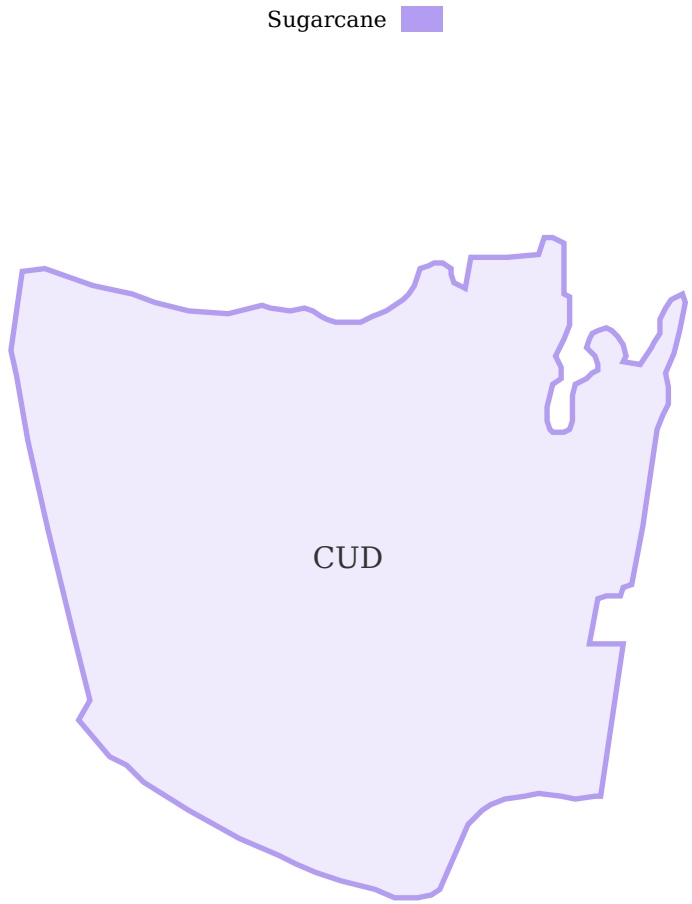


Gross Margins by Crop

Sugarcane	TOTAL COST			LOW		MED		HIGH	
4.2 ha			$8,801.77		$25.00 /t		$30.00 /t		$35.00 /t
	t/ha	t	BE $/t	$	$/ha	$	$/ha	$	$/ha
LOW	80	336	26.20	-401.77	-95.66	1,278.23	304.34	2,958.23	704.34
MED	100	420	20.96	1,698.23	404.34	3,798.23	904.34	5,898.23	1,404.34
HIGH	120	504	17.46	3,798.23	904.34	6,318.23	1,504.34	8,838.23	2,104.34

Total Farm Crop Gross Margin		Crops Gross Margin					
Total Area	Total Cost						
4.2 ha	$8,801.77	All crops low price		All crops med price		All crops high price	
		$	$/ha	$	$/ha	$	$/ha
	All crops low yield	-401.77	-95.66	1,278.23	304.34	2,958.23	704.34
	All crops med yield	1,698.23	404.34	3,798.23	904.34	5,898.23	1,404.34
	All crops high yield	3,798.23	904.34	6,318.23	1,504.34	8,838.23	2,104.34

Cudgen
Aerial Overview



Farm Planning Summary - Cudgen

FIELD	2023
Cudgen (Map: CUD)	Sugarcane - Sugarcane NVS 4.2 ha

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PINNACLE AGRICULTURE

Season Plan 2023

Prepared for: Centuria

Date: 21 November 2023

Printed by: Tom Nichols

Company: Pinnacle Agriculture

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Area Summary

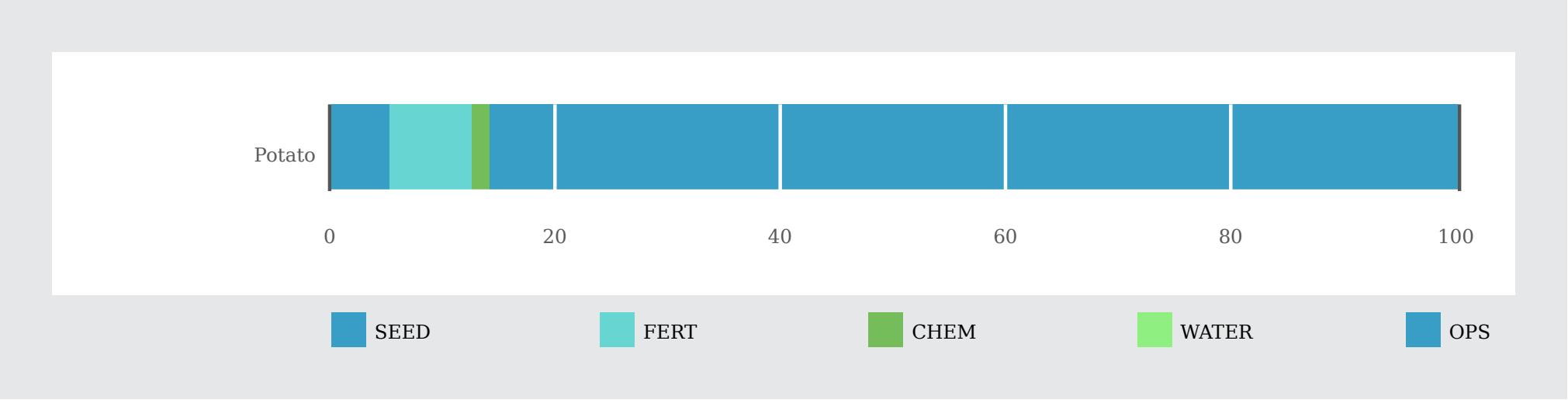
GROUP	CROP	VARIETY		AREA (ha)	(%)
Vegetables & Melons	Potato	Desiree		4.2	100.00
			CROP	4.2	100.00
			GROUP	4.2	100.00
			TOTAL	**4.2**	**100.00**

Input Summary

INPUTS	AMOUNT	AVERAGE UNIT COST	TOTAL COST
Seed			
Desiree	134.4 t	$0.01 /kg	$1,881.60
		TOTAL	$1,881.60
Fertiliser			
Double Super	2.1 t	$0.65 /kg	$1,365.00
Urea	840 kg	$0.70 /kg	$588.00
Wengfu MOP	840 kg	$0.85 /kg	$714.00
		TOTAL	$2,667.00
Herbicide			
Dual Gold Herbicide	6.3 L	$16.35 /L	$103.01
		TOTAL	$103.01
Insecticide			
Bayer Nemacur 400	9.24 L	$50.00 /L	$462.00
		TOTAL	$462.00
Operation			
Bed forming	4.2 ha	$50.00 /ha	$210.00
Boomspray application	8.4 ha	$15.00 /ha	$126.00
Cartage - bins	4.2 ha	$135.00 /ha	$567.00
Casual labour	138.6 ha	$107.10 /ha	$14,844.48
Cultivation	4.2 ha	$40.00 /ha	$168.00
Deep Ripping	4.2 ha	$150.00 /ha	$630.00
Freight	4.2 ha	$120.00 /ha	$504.00
Grading	4.2 ha	$1,200.00 /ha	$5,040.00
Harrow	4.2 ha	$15.00 /ha	$63.00
Harvest - Potato	4.2 ha	$250.00 /ha	$1,050.00
Rotary hoe	4.2 ha	$150.00 /ha	$630.00
Slashing	4.2 ha	$35.00 /ha	$147.00
Spreading	8.4 ha	$20.00 /ha	$168.00
Storage and Handling	4.2 ha	$1,620.00 /ha	$6,804.00
Transplanting	4.2 ha	$80.00 /ha	$336.00
		TOTAL	$31,287.48
		TOTAL	**$36,401.09**

Cost by Crop

CROP	AREA	SEED		FERT		CHEM		WATER		OPS		TOTAL	
	ha	Cost	Cost/ha	Cost	Cost/ha	Cost	Cost/ha	Cost	Cost/ ha	Cost	Cost/ha	Cost	Cost/ha
Potato	4	1,881.60	448.00	2,667.00	635.00	565.01	134.53	0.00	0.00	31,287.48	7,449.40	36,401.09	8,666.93
TOTALS	**4**	**1,881.60**	**448.00**	**2,667.00**	**635.00**	**565.01**	**134.53**	**0.00**	**0.00**	**31,287.48**	**7,449.40**	**36,401.09**	**8,666.93**

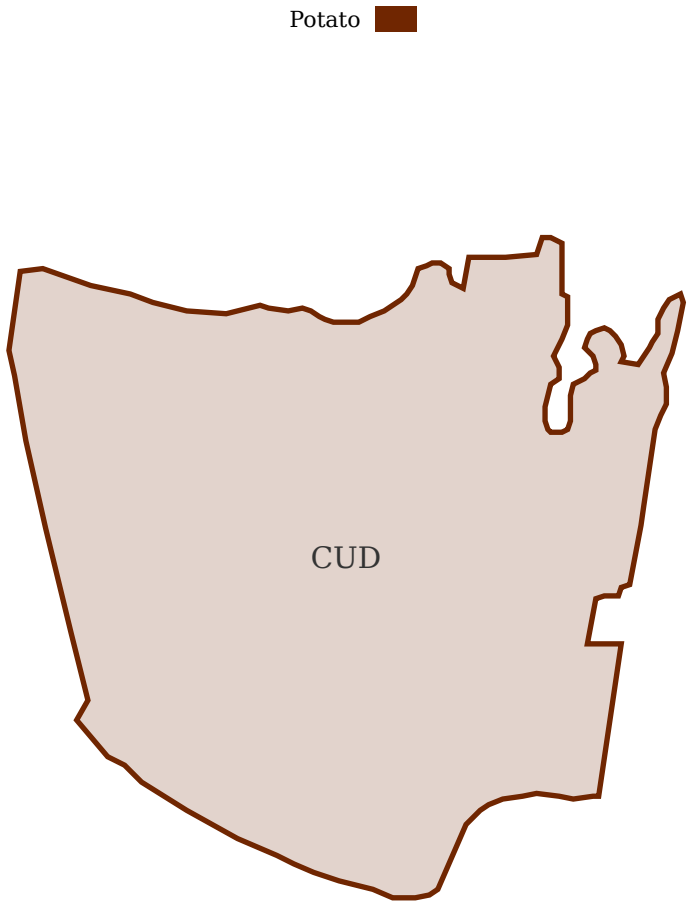


Gross Margins by Crop

Potato	TOTAL COST			LOW		MED		HIGH	
4.2 ha			$36,401.09		$650.00 /t		$750.00 /t		$850.00 /t
	t/ha	t	BE $/t	$	$/ha	$	$/ha	$	$/ha
LOW	10	42	866.69	-9,101.09	-2,166.92	-4,901.08	-1,166.92	-701.08	-166.92
MED	15	63	577.80	4,548.92	1,083.08	10,848.92	2,583.08	17,148.92	4,083.08
HIGH	20	84	433.35	18,198.92	4,333.08	26,598.92	6,333.08	34,998.92	8,333.08

Total Farm Crop Gross Margin		Crops Gross Margin					
Total Area	Total Cost						
4.2 ha	$36,401.09	All crops low price		All crops med price		All crops high price	
		$	$/ha	$	$/ha	$	$/ha
	All crops low yield	-9,101.09	-2,166.92	-4,901.08	-1,166.92	-701.08	-166.92
	All crops med yield	4,548.92	1,083.08	10,848.92	2,583.08	17,148.92	4,083.08
	All crops high yield	18,198.92	4,333.08	26,598.92	6,333.08	34,998.92	8,333.08

Cudgen
Aerial Overview



Farm Planning Summary - Cudgen

FIELD	2023
Cudgen (Map: CUD)	Potato - Desiree 4.2 ha

Cudgen

Potato - Desiree

Average Field Nutrition (kg/ha): N 125 P 85.5 K 100 S 27 Ca 41

Cudgen (4.2 ha)

Total (4.2 ha)

Deep rip cultivation

01 Mar 2023

	RATE	TOTAL	COST/ HA	COST
Total Application Rate	70 L/ha	294 L		
Deep Ripping	1 ha/ha	4.2 ha	$150.00	$630.00
		Total	**$150.00**	**$630.00**

Shallow Cultivation

10 Mar 2023

	RATE	TOTAL	COST/ HA	COST
Total Application Rate	70 L/ha	294 L		
Cultivation	1 ha/ha	4.2 ha	$40.00	$168.00
		Total	**$40.00**	**$168.00**

pre plant fertiliser - 1

15 Jul 2023

	RATE	TOTAL	COST/ HA	COST
Total Application Rate	70 L/ha	294 L		
Double Super	500 kg/ha	2.1 t	$325.00	$1,365.00
Spreading	1 ha/ha	4.2 ha	$20.00	$84.00
Field Nutrition (kg/ha): N 33 P 85.5 S 27 Ca 41				
		Total	**$345.00**	**$1,449.00**

pre plant fertiliser - 2

01 Aug 2023

	RATE	TOTAL	COST/ HA	COST
Total Application Rate	70 L/ha	294 L		
Urea	200 kg/ha	840 kg	$140.00	$588.00
Wengfu MOP	200 kg/ha	840 kg	$170.00	$714.00
Spreading	1 ha/ha	4.2 ha	$20.00	$84.00
Field Nutrition (kg/ha): N 92 K 100				
		Total	**$330.00**	**$1,386.00**

Bed preparation

10 Aug 2023

	RATE	TOTAL	COST/ HA	COST
Total Application Rate	70 L/ha	294 L		
Harrow	1 ha/ha	4.2 ha	$15.00	$63.00
Rotary hoe	1 ha/ha	4.2 ha	$150.00	$630.00
Bed forming	1 ha/ha	4.2 ha	$50.00	$210.00
		Total	**$215.00**	**$903.00**

Pre plant soil fungicide

28 Aug 2023

	RATE	TOTAL	COST/ HA	COST
Total Application Rate	70 L/ha	294 L		
Bayer Nemacur 400	2.2 L/ha	9.24 L	$110.00	$462.00
Boomspray application	1 ha/ha	4.2 ha	$15.00	$63.00
		Total	**$125.00**	**$525.00**

Planting

01 Sep 2023

	RATE	TOTAL	COST/ HA	COST
Total Application Rate	70 L/ha	294 L		
Desiree	32,000 kg/ha	134.4 t	$448.00	$1,881.60
Casual labour	32 ha/ha	134.4 ha	$534.40	$2,244.48
		Total	**$982.40**	**$4,126.08**

Transplanting

05 Sep 2023

	RATE	TOTAL	COST/ HA	COST
Total Application Rate	70 L/ha	294 L		
Transplanting	1 ha/ha	4.2 ha	$80.00	$336.00
		Total	**$80.00**	**$336.00**

Pre emergent herbicide (post transplant)

06 Sep 2023

	RATE	TOTAL	COST/ HA	COST
Total Application Rate	70 L/ha	294 L		
Dual Gold Herbicide	1.5 L/ha	6.3 L	$24.53	$103.01
Boomspray application	1 ha/ha	4.2 ha	$15.00	$63.00
		Total	**$39.53**	**$166.01**

Pre harvest slashing

20 Dec 2023

	RATE	TOTAL	COST/ HA	COST
Total Application Rate	70 L/ha	294 L		
Slashing	1 ha/ha	4.2 ha	$35.00	$147.00
		Total	**$35.00**	**$147.00**

Harvest

25 Dec 2023

	RATE	TOTAL	COST/ HA	COST
Total Application Rate	70 L/ha	294 L		
Harvest - Potato	1 ha/ha	4.2 ha	$250.00	$1,050.00
		Total	**$250.00**	**$1,050.00**

Post Harvest (Packing+Freight)

26 Dec 2023

	RATE	TOTAL	COST/ HA	COST
Total Application Rate	70 L/ha	294 L		
Storage and Handling	1 ha/ha	4.2 ha	$1,620.00	$6,804.00
Cartage - bins	1 ha/ha	4.2 ha	$135.00	$567.00
Freight	1 ha/ha	4.2 ha	$120.00	$504.00
Grading	1 ha/ha	4.2 ha	$1,200.00	$5,040.00
Casual labour	1 ha/ha	4.2 ha	$3,000.00	$12,600.00
		Total	**$6,075.00**	**$25,515.00**

Chem Total	**$134.53**	**$565.01**
Fert Total	**$635.00**	**$2,667.00**
Plan Total	**$8,666.93**	**$36,401.09**

Potato	TOTAL COST			LOW		MED		HIGH	
4.2 ha			$36,401.09		$650.00 /t		$750.00 /t		$850.00 /t
	t/ha	t	BE $/t	$	$/ha	$	$/ha	$	$/ha
LOW	10	42	866.69	-9,101.09	-2,166.92	-4,901.08	-1,166.92	-701.08	-166.92
MED	15	63	577.80	4,548.92	1,083.08	10,848.92	2,583.08	17,148.92	4,083.08
HIGH	20	84	433.35	18,198.92	4,333.08	26,598.92	6,333.08	34,998.92	8,333.08

Field Nutrition (kg/ha): N 204.4 P 40 S 14.4

Cudgen - 4.2 ha

2023

Sugarcane - Sugarcane NVS
4.2 ha

SITUATION/ TIMING	INPUTS	RATE	TOTAL	COST/ HA	COST
Cultivation 01 Jun 2023	Offset disc	1 ha/ha	4.2 ha	$60.00	$252.00
	Urea S	150 kg/ha	630 kg	$120.00	$504.00
	Field Nutrition (kg/ha): N 61.2 S 7.2				
			Total	**$180.00**	**$756.00**
Cultivation 01 Jul 2023	Urea S	150 kg/ha	630 kg	$120.00	$504.00
	DAP	200 kg/ha	840 kg	$200.00	$840.00
	Offset disc	1 ha/ha	4.2 ha	$60.00	$252.00
	Field Nutrition (kg/ha): N 97.2 P 40 S 7.2				
			Total	**$380.00**	**$1,596.00**
Pre Emergent Herbicide 15 Sep 2023	Total Application Rate	70 L/ha	294 L		
	Atrazine 900 WG	2.5 kg/ha	10.5 kg	$28.75	$120.75
	Nufarm Amicide Advance 700 Herbicide	1 L/ha	4.2 L	$8.80	$36.96
	Boomspray application	1 ha/ha	4.2 ha	$15.00	$63.00
			Total	**$52.55**	**$220.71**
Planting 15 Sep 2023	Sugarcane NVS	5 kg/ha	21 kg	$200.00	$840.00
	Nufarm suSCon maxi Intel Soil Insecticide	0.2 kg/ha	840 g	$6.20	$26.04
	Nufarm Sinker Fungicide	0.5 L/ha	2.1 L	$49.50	$207.90
	Planting	1 ha/ha	4.2 ha	$375.00	$1,575.00
			Total	**$630.70**	**$2,648.94**
Post Em Spray 16 Sep 2023	Total Application Rate	70 L/ha	294 L		
	Adama Diuron 900 WDG Herbicide	1.9 kg/ha	7.98 kg	$32.39	$136.06
	Gramoxone 250 Herbicide	1.5 L/ha	6.3 L	$10.50	$44.10
	Hasten Spray Adjuvant	1 L/100L	2.94 L	$4.52	$18.96
	Boomspray application	1 ha/ha	4.2 ha	$15.00	$63.00
			Total	**$62.41**	**$262.12**
Post Em Nitrogen Application 01 Oct 2023	Urea	100 kg/ha	420 kg	$70.00	$294.00
	Spreading	1 ha/ha	4.2 ha	$20.00	$84.00
	Field Nutrition (kg/ha): N 46				
			Total	**$90.00**	**$378.00**
Harvest 01 Nov 2023	Harvest	1 ha/ha	4.2 ha	$700.00	$2,940.00
			Total	**$700.00**	**$2,940.00**
			Chem Total	$140.66	$590.77
			Fert Total	$510.00	$2,142.00
			Seed Total	$200.00	$840.00
			Plan Total	**$2,095.66**	**$8,801.77**

Sugarcane	TOTAL COST			LOW		MED		HIGH	
4.2 ha			$8,801.77		$25.00 /t		$30.00 /t		$35.00 /t
	t/ha	t	BE $/t	$	$/ha	$	$/ha	$	$/ha
LOW	80	336	26.20	-401.77	-95.66	1,278.23	304.34	2,958.23	704.34
MED	100	420	20.96	1,698.23	404.34	3,798.23	904.34	5,898.23	1,404.34
HIGH	120	504	17.46	3,798.23	904.34	6,318.23	1,504.34	8,838.23	2,104.34

Appendix 5

ABS Value of Agricultural Commodities Produced, Australia, 2020-21	Gross value ($)			
Commodity description	Australia	New South Wales	Richmond - Tweed	Tweed
Broadacre crops - Cereal crops - Wheat for grain	9850955106	3815902506	801541.1	
Broadacre crops - Cereal crops - Oats for grain	541471646.4	160498221.3	18627.96	
Broadacre crops - Cereal crops - Barley for grain	3728467687	938349933.1	206513.21	
Broadacre crops - Cereal crops - Sorghum for grain	539759359.2	179967917	35924.49	
Broadacre crops - Cereal crops - Rice for grain	174389409	171853603.8	943734.85	2777.27
Broadacre crops - Cereal crops - Maize for grain	113490152.4	64157588.9	260040.63	
Broadacre crops - Cereal crops - All other cereals for grain or seed (a)	49566184.43	21966803.68	80711.91	
Broadacre crops - Non-cereal crops - Cotton lint (irrigated and non-irrigated)	1465471088	915923351		
Broadacre crops - Non-cereal crops - Oilseeds - Canola	2929727713	887902329.6		
Broadacre crops - Non-cereal crops - Oilseeds - Other oilseeds	61428082.09	32555126.69	10769471.21	375481.92
Broadacre crops - Non-cereal crops - Pulses and legumes - Chickpeas	519730630.4	332987058	347420.49	4828.59
Broadacre crops - Non-cereal crops - Pulses and legumes - Lentils	604049646.1	7839409.15		
Broadacre crops - Non-cereal crops - Pulses and legumes - Lupins	348073248.6	64325705.94	8415.38	
Broadacre crops - Non-cereal crops - Pulses and legumes - Other pulses (b)	596398993.7	87690699.52		
Broadacre crops - Non-cereal crops - Sugar cane - Cut for crushing	1284582078	73535230.04	56430281.1	35407260
Broadacre crops - All other crops n.e.c.	235046038.3	36030083.39	1097298.14	31856.25
Broadacre crops - Total	23042607062	7791485567	70999980.45	35822203.6
Hay - Total	2160429109	508690761.5	2999003.84	64970.95
Nurseries, cut flowers or cultivated turf - Nurseries - Undercover	455098837.2	154300181.4	35931863.57	5318193.43
Nurseries, cut flowers or cultivated turf - Nurseries - Outdoor	905174479.3	267051958.8	50324377.95	14463908.32
Nurseries, cut flowers or cultivated turf - Nurseries - Total	1360273317	421352140.2	86256241.52	19782101.76
Nurseries, cut flowers or cultivated turf - Cut flowers - Undercover	79568159.85	14633610.99	2290469.13	360455.64
Nurseries, cut flowers or cultivated turf - Cut flowers - Outdoor	145430447.5	13948253.22	1916734.38	593317.52
Nurseries, cut flowers or cultivated turf - Cut flowers - Total	224998607.4	28581864.21	4207203.52	953773.15
Nurseries, cut flowers or cultivated turf - Cultivated turf	275087201.8	146751929.4	3541381.56	1528762.08
Nurseries, cut flowers or cultivated turf - Total	1860359126	596685933.8	94004826.6	22264636.98
Fruit and nuts - Citrus fruit - Mandarins	392278351	40287786.68	85658.22	8067.69
Fruit and nuts - Citrus fruit - Oranges	643169564.1	315948930.6	13535.27	5237.71
Fruit and nuts - Citrus fruit - All other citrus fruit n.e.c.	250568242.4	30154833.39	281612.75	51734.86
Fruit and nuts - Stone fruit - Cherries	262037989.6	32993435.91		
Fruit and nuts - Stone fruit - Nectarines	127350249.8	13298623.44	366723.91	
Fruit and nuts - Stone fruit - Peaches	78497069.73	4939502.23	26358.88	
Fruit and nuts - Stone fruit - All other stone fruit n.e.c.	115221093.2	16419937.56	14665.18	
Fruit and nuts - Orchard fruit - Apples	725747876	90383221.5	94060.04	
Fruit and nuts - Orchard fruit - Avocados	336094777.8	37003627.08	7162990.53	942053.04
Fruit and nuts - Orchard fruit - Mangoes	199826089.7	268200.3	166595.03	24037.54
Fruit and nuts - Orchard fruit - Olives	120374392	11672713.09		
Fruit and nuts - Orchard fruit - Pears (including Nashi)	96671480.23	35852.37	3306.04	
Fruit and nuts - Orchard fruit - All other orchard fruit n.e.c.	117003480.6	10046214.84	4931804.48	30292.33
Fruit and nuts - Nuts - Almonds	631369182	128329634.4		
Fruit and nuts - Nuts - Macadamias	289895578	102502079.6	89276652.19	816533.95
Fruit and nuts - Nuts - All other nuts n.e.c.	122808793	87389465.14	1163321.78	
Fruit and nuts - Berry fruit - Strawberries	388446232.3	1021224.23	67464.75	55453.07
Fruit and nuts - Berry fruit - All other berry fruit n.e.c	578357244	254270019.3	7547127.15	21278.21
Fruit and nuts - Plantation fruit - Bananas	657471748.8	10937989.88	4344037.14	2604330.27
Fruit and nuts - Plantation fruit - Pineapples	56685715.17	542.06	542.06	542.06
Fruit and nuts - Other fruit - All other fruit n.e.c.	97555692.34	16990125.29	6804718.17	6694651.2
Fruit and nuts (excluding grapes) - Total	6287430842	1204893959	122351173.6	11254211.93
Fruit and nuts - Grapes - Wine production	1224048128	252511959.6		
Fruit and nuts - Grapes - All other uses	578217176	75006400.23		
Fruit and nuts - Grapes - Total	1802265304	327518359.8		
Vegetables - Beans (including french and runner beans)	159921201.6	6877931.94	866379.22	402678.07
Vegetables - Broccoli	137500644.4	8663423.33	16458.02	8818.09
Vegetables - Cabbages	67422332.01	19682791.44	16252.68	12933.5
Vegetables - Capsicums (excluding chillies) - Outdoor and undercover	142029652.9	2987005.33	144158.29	132720.11
Vegetables - Carrots	286604079.4	28872717	7224.68	3497.14
Vegetables - Cauliflowers	66238579.21	8055999.31	21083.1	16732.97
Vegetables - Cucumbers	129013295.3	71408329.54	368999.52	83049.69
Vegetables - Herbs (including basil, coriander and parsley)	173185951.1	45554606.14	83501.72	18135.08
Vegetables - Lettuces - Outdoor and undercover	188211320.1	7360555.81	651576.11	4675.2
Vegetables - Melons (including bitter melon, rock melon and watermelon)	173030668.4	41040580.85	31319.46	17090.17
Vegetables - Mushrooms	325501713.5	74947020.75	1639.83	1639.83
Vegetables - Onions	155587155.9	5340918.79	4826.73	
Vegetables - Potatoes	784326633	49448665.23	1080538.82	1058506.6
Vegetables - Pumpkins (including butternut)	68719010.46	8882872.2	101058.84	92114.49
Vegetables - Sweet corn	201230443.6	8040267.28	4365.18	3964.32
Vegetables - Tomatoes - Outdoor and undercover	507835317.5	103011015	509321.82	182154.51
Vegetables - All other vegetables n.e.c.	1212681759	143877805.9	14374184.61	9628526.74
Vegetables - Total	4779039757	634052505.9	18282888.65	11667236.47
Total value of crops	39932131200	11063327087	308637873.1	81073259.93
Livestock products - Wool	2644776635	841782554.7	72930.75	7703.77
Livestock products - Milk	4687963149	670324245.2	59379227.91	6199502.3
Livestock products - Eggs	1124398155	389425752.5	5206092.95	143778.91
Livestock products - Total	8457137939	1901532552	64658251.6	6350984.99
Livestock slaughtered and other disposals - Sheep and lambs	4332328417	1262471668	91229.46	15564.17
Livestock slaughtered and other disposals - Cattle and calves	1.3465E+10	2751772331	109282725	9649960.7
Livestock slaughtered and other disposals - Pigs	1556568229	251783090.6	14993581.59	187175.34
Livestock slaughtered and other disposals - Poultry	2926550404	770983172.3	3602032.33	49828.58
Livestock slaughtered and other disposals - Other n.e.c.	186799596.7	7649267.38	53714.89	8193.34
Livestock slaughtered and other disposals - Total	22467642258	5044659530	128023283.2	9910722.14
Total agriculture	70856911397	18009519169	501319407.9	97334967.06