

Theme 1 - Meeting market requirements	Expenditure \$
DAV00158 -DEPI BA-2- Quantifying the value of pulse grains	331,064.00
AEG00007 - Increasing the competitiveness of oats for export	239,520.00
AEG00005 - Objective Market Intelligence on the Indonesian and South-East Asian Wheat Markets	83,775.00
PRB00001 - Improving on-farm grain storage management practices through technical training	619,868.00
CSP00145 - Omega3 canola collaborative research project	100,000.00
FAR00003 Hypervirulent cereals - a feedgrain initiative	425,488.00
DAN00196 - Eliminating grain defects in chickpeas	42,935.00
UA00150 - Late maturity alpha-amylase:A molecular marker-based, high-throughput, precise screening protocol	905,136.00
UQ00077 - A Genetic x Environment characterization of the risk for Late Maturity Alpha-amylase across the main wheat producing shires of Australia	100,000.00
CSP00193 Novel approaches against LMA - Knockout	181,711.00
GOH00001 - Review of current QA services for legume inoculants and exploration of future options	8,593.00
UA00153 - Novel approaches against LMA	214,033.50
MCM00003 - Strategic oversight and coordination of grain protection chemicals	107,241.00
BA00009 - Pilot Brewing for Malting Barley Lines	80,000.00
UCS00025 Expanding options for sorghum- Food and Distilling	320,000.00
Improving Australian malt barley flavour to address Chinese brewing requirements	368,393.00
Sorghum in the 21st Century: Food, Feed and Fuel for a Rapidly Changing World	3,000.00
UMU00047 - Barley grain defects	337,117.00
WQA00002 - Wheat Variety Classification Services	1,070,000.00
WQA00004 - APH zone expansion season 3 - WQA	32,434.00
APL00004 - CRRDC 2016/2017 RDC Contribution (Based on 3 year rolling average of RD&E expenditure)	186,786.75
APL00005 - Feed Grain Partnership Coordinator 2016 - 2017	6,766.66
BRA00001 - The services are to prepare a draft activity plan (the AP) for the GRDC for WISA Funds	33.72
BRA00002 - Perform the role of Project Manager as described in the Australian Grains Industry Discussion Group Activity Plan	6,424.09
CVA00001 - Review of current QA services for legume inoculants and exploration of future options	10,890.00
DAS00152 - IP Sub-Licence and Materials Supply Agreement - LMA	42,600.00
DAS00172 - Review of current QA services for legume inoculants and exploration of future options	8,092.00
GIM00002 - WISA Funds - Market Access Prioritisation	72,000.00
JCA00001 - Facilitate and support the working groups of the Australian Industry Discussion Group	4,825.71
NCA00010 - Improving market signals for GRDC and the grains industry to enhance delivery to°	108,000.00
AEG00002#3 - Australian Export Grain Innovation Centre (AEGIC)	3,000,000.00
BRI00042-1 - Wheat Classification Variety Operations - Run-off Insurance Expenses	2,000.00
Coordinate and Facilitate the Management of Market Access Issues in a Strategic and Prioritised Manner	300,000.00
Development of the Western grains industry background document	3,300.00
Enhancing Private sector agricultural RD&E investment in Australia	30,000.00
GGL00003 - Evaluating the quality of competitor varieties in Australian wheat export market	-18.00
Gross margins for various grain crops across growing regions in Victoria	27,170.00
HFG00009 - Shed and solar development for field research	7,118.93
Situation analysis of chickpea and pulse production trends in Madhya Pradesh (India)	15,000.00
Update on the drivers of Global Agriculture and the Role of Australia	23,858.94
	<b>9,425,157.30</b>
<b>Theme 2 - Improving crop yield</b>	
DAS00174 - Improving chickpea adoption to environmental challenges in Australia and India	50,000.00
COR00054-E - Delivery of the 2017 and 2018 Sowing Guides	119,202.42
DAQ00209 - Wheat Varieties for Queensland Guide for 2017 and 2018	15,655.00
DAV00157 Victorian Winter Crop Summary Guides for 2016, 2017, 2018 and 2019	35,000.00
CFF00009 - Molecular markers for root hair traits and enhanced phosphorus use efficiency (P°)	863,103.75
UA00160 - Australian Research Council (ARC) Industrial Transformation Research Hubs: Genetic Diversity and molecular breeding for wheat in a hot and dry climate	750,000.00
UMU00048 - Genetic approaches to reduce the nitrogen dilution effect and increase nitrogen-°	850,000.00
US00080 - 2016.02.01G A national approach to improving heat tolerance in wheat through mor°	300,000.00
Australian Cereal Rust Control Program (ACRCP) - CSIRO: Delivering genetic tools and knowledge required to breed wheat and barley with resistance to leaf rust, stripe rust and stem rust	862,478.00
Australian Cereal Rust Control Program (ACRCP) - University of Sydney: Delivering genetic tools and knowledge required to breed wheat and barley with resistance to leaf rust, stripe rust and stem rust	589,452.20
Australian Cereal Rust Control Program -Wheat and barley breeding support	30,000.00
DAN00108 - National Brassica Germplasm Improvement Program (1.4.5 PROJECT 1)	97,500.00
Wheat relatives research	500,000.00
PhA00015 - Biosecurity preparedness for the grains industry	191,539.00
CIM00020 - Focused Improvement of Durum Wheat Germplasm from CIMMYT for Yield Potential, Dr°	149,536.00
DAN00212 - Pulse Breeding Australia (Chickpea)°	1,436,000.00
DAS00129 - National Oat Breeding Program: healthy and productive grain varieties for the fu°	956,521.00
DAV00127 - Using next-generation genetics to accelerate variety improvement in bread wheat, durum and barley	826,636.00
DAV00154 - Pulse Breeding Australia: Lentil Breeding	1,234,120.00
ICA00012 - Focused improvement of ICARDA/Australian durum germplasm for abiotic tolerance°	150,000.00
UWA00175 - An integrated platform for rapid genetic gain in pulse crops°	785,772.00
Canola pre-breeding investment to continue some activities	34,500.00
DAN9175799 - Future Durum Breeding	1,249,975.00
DAV00119 - PBA Lentil Breeding - expansion project	-20,684.78
DAW00237 - Lupin Breeding for Australia	0.80
Improved Genetic Gain through GRDC Participation in Barley Pan-genome Consortium	925,600.00
National Soybean Breeding Program 2017 to 2019	592,000.00
ACP00009 - AVP1, PSTOL1 and NAS - Three high-value genes for higher wheat yield - International Wheat Yield Partnership	458,273.00
Yield research	1,204,404.00
CIM00019 - Enhanced delivery of CIMMYT germplasm to Australia	50,000.00
CSP00185 - Collection, phenotyping and exploitation of wild Cicer genetic resources	677,172.00
CSP00199 - Validation trials for dwarfing genes, vigour x management interactions	160,000.00
CSP00202 - Identification of wheat frost tolerance loci	375,136.00
CSP00205 - A genetic diversity toolkit to maximise harvest index by controlling the duration of developmental phase: IWYP CSIRO	167,321.00
DAQ00210 - National Mung Bean Improvement Program	470,000.00
DAS00148 Australian Pastures Genebank	184,910.00
DAV00134-BA - Diagnostic services for pulse germplasm enhancement and breeding programs	65,053.00
DAV00153 - Pulse Breeding Australia: Field Pea Breeding	1,430,710.00

DAW00238 - Development of lupin molecular markers tagging yield QTL genes	350,000.00
PCA00003 - Australian Peanut Breeding Program	380,000.00
UA00143 - Australian Wheat and Barley Molecular Marker Program - Genetic Analysis	1,500,000.00
UA00147 - Genetic analysis of heat tolerance in wheat	402,975.00
UA00162 - Screening of frost tolerance in cereals	1,005,961.00
UA00163 - Pulse Breeding Australia: Faba Bean Breeding	999,520.00
UA00168 - The 10 Genome Wheat Sequencing Consortium	548,500.00
ULA00009 - The effects of heat stress on programmed cell death and floret sterility in wheat	149,992.00
UMU00049 - 2016.02.01F - Maintenance of grain plumpness and transfer of heat tolerance into Australian barley germplasm	550,000.00
UMU00050-DAW00240 - Manipulating barley phenology to maximise yield potential	400,000.00
UQ00070 - Sorghum Core Pre-breeding Program	645,000.00
US00072 - Evaluation of wheat germplasm derived from Indian materials for specific traits	43,000.00
US00081 - 2016.02.01C - Introgression of heat-tolerant genes to broaden genetic variation	739,381.00
9176093 - PulseBio Project 3: Stable grain yield in pulses through improved stress tolerance (P3)	663,283.00
Accelerating wheat genetic gain by establishing a high-throughput spike phenotyping platform	729,983.00
UOQ1801-004RTX -Sorghum project	78,661.00
CUR00024 - Genetics of wild germplasm, gene-pool expansion and integrated ASSD approach	284,890.00
Lupin Breeders Toolbox - A Resource for Lupin Genetic Improvement	399,225.00
UA00148 - Trait discovery in wild barley using the nested-association mapping population HEB -25	150,000.00
UMU00043 - Novel glutenin subunits for extra functionality to Australian wheat cultivars	180,000.00
UWA00176 - Agronomy lab and weed seed bank	100,000.00
BAY9175836 - Licence Agreement LMA in Wheat	10,000.00
USQ00017 - Assessing collections of wild chickpea relatives for resistance to root-lesion nematodes	106,021.00
ACP00010 - Benchmarking and field validation of transgenic frost tolerance wheat lines	272,727.30
Wheat research	170,000.00
CSP00175 - Maintaining wheat grain number under reproductive-stage drought conditions	219,562.00
CSP00179 - Raising water productivity: Trait assessment for Australian rainfed wheat	300,000.00
CTR00001 - Heat and Drought Wheat Improvement Consortium (HeDWIC) Proposal for an initial capability study	25,000.00
DAW00234 - Determining yield under frost one degree at a time	10,000.00
ICA00013 - Improving heat tolerance of wheat	179,925.00
SKC00008 - Knowledge Manager within the GRDC National Frost Initiative	18,860.46
US00082-Increasing carbon capture by optimising canopy resource distribution.	205,660.00
CIM00018 - Identification and Utilization of Novel Sources of Resistance to Crown rot and the Root Lesion Nematodes in Adapted Spring and Durum Wheat	295,562.00
DAN00163 - Durum Breeding Australia	-0.01
ICA00011 - Pre-emptive chickpea pre-breeding for biotic stresses and germplasm enhancement	304,141.00
US00083 - ARC Research Hub for Legumes for Sustainable Agriculture	1,000,000.00
MCF00001 - Idea 00236 - Future Soy Bean Breeding	599.09
MCF00002 - Digital Workspace - Future Durum Breeding	599.09
AMC00017 - Managed Environment Facility (MEF) Research implementation coordinator	20,000.00
AMC00018 - Frost Steering Committee Consultancy Agreements	11,782.35
CBC00001 - Frost Steering Committee Consultancy Agreements	6,978.03
CSP00183 - Pedigree based association genetic analysis of wheat phenology	0.50
CSP00197 - Frost Steering Committee Consultancy Agreement	15,000.00
DAS00158 - Program Leader Environment for National Frost Initiative	12,005.00
DAW00198 - Managed Environment Facility (MEF) - Merredin	205,000.00
GLC00001 - Frost Steering Committee Consultancy Agreements	5,049.83
ICA00010 - Mining the ICARDA germplasm collection for biotic and abiotic priority traits	114,800.00
ICA00014 - Application of Focused Identification of Germplasm Strategy (FIGS)	166,882.00
IGP00004 - Evaluation of Barley Breeding Lines in the Northern Region	595,174.00
MIC00001 - Improving the productivity and cost of GRDC plant breeding investments	3,270.00
MOR00001 - Frost Steering committee	3,027.06
MPF00001 - Frost Steering committee	3,303.94
NFC00002 - Frost Steering Committee Consultancy Agreement	15,000.00
RTA00001 - GRDC Frost Initiative – Steering Committee	414.00
US00051 - National Managed Environment Facility: Narrabri	167,206.49
US00073 - Exploitation of international grains in Australia: coordinated importation, quarantine and evaluation, data management and communication	329,477.00
9176106 -BA- Australian Grains Genebank 2017-2022	1,184,013.00
9176121 - PulseBio 4: Biosecure pulse seeds	132,352.00
Attend annual meeting of ARC Research Hub Legumes for Sustainable Agriculture	3,120.00
Audit the Southern NSW Local Trial sites	3,282.84
Australian Grains Gene Banks (AGG) Capacity and Capability Enhancement - Infrastructure	2,000,000.00
CFF00008 - Assessment of leaf area index, tiller survival and short delay in flowering	3,687.50
Future Vetch Breeding for Grain and Hay	575,000.00
FWC9175826 - Coordinator of Pulse Breeding Australia (PBA)	22,429.56
Lupin Variety Launch	1,936.31
MCF00003-Digital Workspace – Future Vetch Breeding for Grain and Hay	599.09
Michael Lamond - Assistance with development of the Oat Strategy	3,335.55
PRC00004 - Digital Workspace – Future Soy Bean Breeding	1,198.00
PRC00006 - Idea 00256 - Future Vetch Breeding for Grain and Hay	1,198.00
UT00027 - Transpirational control and oxidative stress tolerance traits as components of s <sup>o</sup>	50,040.00
UWA00173 - Capacity building to understand plant energy efficiency in harsh environments	200,000.00
Coordination of the Genetic Control of Crown Rot and Nematode Projects	1,500.00
Synthesis of canola/cereals/pulse agronomy research in the northern grains region	15,000.00
CSA00041 - Better Irrigated Wheat Germplasm <sup>o</sup>	170,000.00
UA00159 - Improving wheat yields on sodic, magnesic, and dispersive soils	1,175,823.60
UMU00044 - Identifying low pH tolerance and effective rhizobia for wild Cicer to improve adaptation to acid sandy soils	427,885.00
UMU00046 Improved Adaption of Barley to Acid Soils	553,300.00
UQ00068 - Delivery of wheat root traits that contribute to water limited yield stability	407,509.00
	<b>40,843,492.97</b>

### Theme 3 - Protecting your crop

UM00052-UG - Improving grower surveillance, management, epidemiology knowledge and tools to manage	150,168.00
CUR00022 - Fungicide resistance management strategy and communications	125,000.00
DAW00256 - Building Crop Protection and Production Agronomy R&D Capacity in regional Western Australia	1,785,000.00
Australian Cereal Rust Control Program - Novel sources of stem rust resistance from uncultivated wild relatives of wheat	123,750.00

Commonwealth Grant – Improving Plant Pest Management Through Cross Industry Deployment of Smart Sensor, Diagnostics and Forecasting	700,000.00
DAQ00187 - National Barley Foliar Pathogen Variety Improvement Program (NBFPVIP)	1,725,000.00
UM00051 - National Canola Pathology Program	1,339,945.00
Weed control research	70,450.00
Intelligent Robotic Non-Chemical Weeding	646,837.00
CFF00010 - Genetic solution to crown rot in barley	256,070.00
CIM00017 - ACRCP- CIMMYT delivery of resistant germplasm and surveillance for resistance	183,822.00
CSP00192 - Development of gene deployment strategies	350,000.00
DAQ00190 - Maintaining a barley pre-breeding capability in Queensland	213,144.00
UA00157 - Development of tools to accelerate nematode resistance gene deployment	275,000.00
US00070 - Accelerating the utilisation and deployment of durable adult plant resistance to leaf rust in barley	199,078.00
US00074 - Development of genetic tools for Australian barley crops against leaf rust	599,615.96
US00075 - Integrated Genetic Solutions to Crown Rot in Wheat	1,232,450.78
USA00016 - The application of bent leg technologies to higher speed tined seeding of cereal	14,000.00
Opportunities for SMART surveillance for biotic threats in the Australian grains industry	38,125.00
UA00158 - Mechanisms, evolution and inheritance of resistance*	299,745.40
A simple and innovative test for real-time detection of resistance in weeds	76,037.00
CSE00058 - Future NIPI forums: towards more sustainable pest management practices	0.36
CSE00059 - New knowledge to improve the timing of pest management decisions in grain crops	459,734.00
CSE00061 - PYC106 - CSIRO Snail biocontrol revisited – Phase 2	395,676.00
CUR00023-BA-1 - Centre for crop and disease management	6,092,316.00
DAN00175 - National Crown rot epidemiology and management program	664,996.00
DAN00202 New tools and germplasm for Australian pulse and oil seeds breeding programs to respond to changing virus threats	447,999.20
DAQ00186-USQ - Improving grower surveillance, management epidemiology knowledge and tools to manage crop disease - DAFFQ	567,264.00
DAQ00191 - Sorghum Midge Testing Scheme	16,660.00
DAQ00196 - Delivery of Improved Invertebrate Pest Management in the Northern Grains region	549,432.00
DAQ00201 - National Pest Information Service (NPIS)	350,000.00
DAS00131-BA - Improving weed management in pulse crops through herbicide tolerance - Part B	507,863.00
DAS00132-BA - Improving weed management in pulse crops through herbicide tolerance Part A	170,000.00
DAS00133-BA - Improved Resistance to oat pathogens and abiotic stress management	300,000.00
DAS00137-BA - National improved molecular diagnostics for disease management	525,000.00
DAS00139-BA - Improving grower surveillance, management, epidemiology knowledge and tools to manage crop disease in South Australia	200,000.00
DAS00160-BA - DAS00159 - BA Biology and management of snails and slugs in grain crops	399,369.00
DAS00170 Spring Research in response to Russian Wheat Aphid incursion 2016	129,158.00
DAS00171 - Cultivar/Variety Screening and Biotype Determination for Russian Wheat Aphid Resistance	23,636.36
DAV00128 - National nematode epidemiology and management program	815,160.00
DAV00129-BA - Improving grower surveillance, management, epidemiology knowledge and tools	400,000.00
DAW00228 - National pathogen management modelling and delivery of decision support	661,129.00
DAW00229 - Improving grower surveillance, management, epidemiology knowledge and tools	782,735.00
DAW00248 - Effective genetic control of Stagonospora nodorum blotch	398,700.00
DAW00257 - Locally Important Weeds*	199,936.00
DEP00002 - Push Notifications to enable proactive management of pests, weeds and diseases	170,000.00
HIP00001 Herbicide Innovation Partnership	9,000,000.00
IAC00002 - Surveillance and forecasts for mouse outbreaks in Australian cropping systems	46,000.00
PHA00015 - Biosecurity preparedness for the grains industry	78,385.00
QST00001 - Determination of barley germination and vigour from late application of Glyphosate	836.00
SFS00032 - Harvest weed seed control for the southern region	241,305.00
UA00149 - Improving IWM practice of emerging weeds in the southern and western regions	38,465.30
UCS00024 - Surveillance of herbicide resistant weeds in Australian grain cropping	150,674.00
UM00048 - National coordination of invertebrate pest research and insecticide resistance	100,000.00
UM00050 - 'Proof of concept' for approaches designed at increasing disease resistance to fungal pathogens of canola	288,830.00
UM00057 - 2016.03.15A Insecticide resistance management in RLEM and chemical sensitivities	583,917.00
UM00059 Control of Snails and Slugs - New products for snail and slug control- Biological control of slugs using ciliate protozoa	117,515.25
USQ00013 - Managing crop diseases - Improving crown rot resistance in durum	265,000.00
USQ00019 - Genetic control of nematode species affecting major crops - Germplasm enhancement for nematode control in cereals and pulses	578,178.00
UT00030 - Effective control of barley yellow dwarf virus (BYDV) in wheat	300,000.00
Agvet #041 Grant Agreement Fallow Grains - Priority Use - Imtrade	68,041.00
Agvet #043 Grant Agreement Grass Weeds -Dry pulses-Priority Use-Imtrade	46,611.25
Agvet #046 Grant Agreement -Peanuts - Aphids/Mealybugs - Priority Use -Bayer	73,375.00
Agvet #047 Grant Agreement - Sunflowers - Powdery mildew - Priority Use-Bayer	25,730.00
Agvet #048 Grant Agreement -Soybeans - Rust/Sclerotinia - Priority Use -Bayer	50,900.00
Australian Cereal Rust Control Program - Continued monitoring of cereal rust pathogens in Australia	532,367.02
Chafflining in the Geraldton port zone - a new, cost effective harvest weed seed control tool	30,000.00
Cultural management for weed control and maintenance of crop yield	272,874.00
DAW00247 - Improved genetic solutions for management of yellow spot in wheat	387,358.00
Determining the effectiveness of zinc phosphide rodenticide bait in the presence of alternative food supply	16,772.65
Endophytes for insect management in cereals	490,000.00
GLP residue study - Trifluralin residues in oats	20,000.00
Improved surveillance and management options for mice in crops	150,000.00
Licence and Support Contract – Crop Diseases Mobile Application	97,600.00
Low weed seed bank persistence under sustained integrated weed management	234,724.00
LUN00001 - Reducing the impact of the parasitic root lesion nematode on cereal crops	-85,350.00
NPB00013 - Plant Biosecurity CRC - Grain Storage R&D Program	999,190.00
Plant Biosecurity Research Initiative Collaboration and Funding Agreement	16,429.00
RDC - Rnd4Profit-115-02-005 - New biocontrol solutions for sustainable management of weed impacts to agricultural productivity	125,000.00
Russian Wheat Aphid Risk Assessment and Regional Thresholds	450,000.00
Summer and winter crop diseases in the Northern Region	2,880.00
Supporting the sustainable use of insecticides and local on-farm implementation of integrated pest management strategies in the GRDC Southern region	100,000.00
UA00156 - Emerging weeds (Seed-bank biology of emerging weeds)	551,456.00

UWA00171 - Australian Herbicide Resistance Initiative - Phase 5	1,499,547.00
Zinc phosphide and protein content analysis of grain/pellet mice bait samples	3,360.00
DAN00172-BA - Managing Crop Disease - Improving chickpea pathogen resistance (PRR)	-5.00
USQ00024 - Extent, distribution and cause of peanut kernel shivel (PKS) syndrome in the Bundaberg and Northern Queensland regions	53,246.25
AMC00016 - Development of Yield Response Curves for cereal foliar and root and crown pathogens	36,000.00
ANU00026 - Biosecurity Preparedness of the Grains Industry against Wheat Blast	84,000.00
DAN00174 - Managing on-farm biosecurity risk in wheat through pre-emptive breeding	335,490.00
DAW00245 - Yield loss response curves for host resistance to leaf, crown and root diseases	950,000.00
UWA00172 - WeedSmart - Stage Three	100,000.00
Agvet #042 Grant Agreement Grass weeds in canola - Priority Use -Imtrade	45,770.00
Agvet #044 Grant Agreement -Adzuki beans/Mungbeans -Mites-Priority Use-Adama	40,000.00
Agvet #045 Grant Agreement-Mungbeans-powdery mildew-Priority Use-Adama	40,000.00
Agvet #049 Grant Agreement -Chickpeas-Botrytis-Priority Use-BASF	40,000.00
Agvet #050 Grant Agreement -Maize/popcorn - Northern blight - Priority Use - BASF	40,000.00
Agvet #051 Grant Agreement -Adzuki beans - Thrips- Priority Use-ISK	40,000.00
Agvet #052 Grant Agreement- Canola - Aphids - Priority Use -ISK	40,000.00
Agvet R2#006 Grant Agreement - Field peas x Silver grass - Priority Use	41,185.00
Agvet R2#007 Grant Agreement - Lentils x grass weeds & Lentils x broadleaf weeds - Priority Use	31,185.00
Agvet R2#008 Grant Agreement - Lupins x wild radish & other broadleaf weeds - Priority Use	31,185.00
Agvet R2#009 Grant Agreement - Mung beans x grass weeds & Mung beans x broadleaf weeds - Priority Use	31,185.00
Agvet R2#010 Grant Agreement -Oats x Grasses and broadleaf weeds - Priority Use	54,740.00
ALB9175323 - Coordination of the Genetic Control of Crown Rot and Nematode projects	80,000.00
Economic thresholds for the major pests reducing profitability in the Australian grains industry	72,950.00
CSP00182 - Genetically improving wheat's ability to outcompete weeds	380,000.00
MRE00002 - Air inversion modelling to manage spray drift*	549,998.00
UCS00020 - Weed management in the southern region mixed farming systems	499,957.00
UQ00080 - New uses for existing chemistry	239,991.00
US00084 - Innovative crop weed control for northern region cropping systems	1,799,592.00
WCA00004 - Reduced herbicide usage through application technology	242,985.75
DAN00204 - Conventional insecticide resistance in Helicoverpa	18,267.00
DAS00162-B - Validation of the persistence of common residual herbicides being used across the low rainfall zone under current farming systems (which are dominated by stubble retention and no-till crop establishment) and to develop techniques	25,000.00
SNAILS, SLUGS AND SLATERS IN WESTERN AUSTRALIA: CASE STUDIES OF GROWERS IN WA'S SOUTHERN COASTAL REGION	30,000.00
UCS00022 - Mechanisms of Weed Suppression By Early Vigour and Other Novel Wheat Genotypes	6,308.75
Understanding mouse biology and ecology in zero- and no-till cropping systems to inform best practice crop production and mouse management practices	460,100.00
What are earwigs pests and when are they beneficial?	44,242.00
ARN00001 - Support of the Australian Glyphosate Sustainability Working Group	20,000.00
BWI00001 - Intellectual Property Licence Agreement - Provision of Northern Australia Weed Images	1,240.00
DAN00213-BA2 - NSW DPI Bilateral Agreement - Winter Pathology	1,350,000.00
DAV00144 - Cereal and Pulse cultivar resistance ratings for the Southern region	268,528.00
FLR00008 - Crop Competition for Weed Control SNSW	6,410.00
HEU00006 - the identification and sourcing of insect, crop nutrition and disease images for corporate GRDC's use	67,600.00
RDP00015 - Grain Weeds Advisory Committee	150,000.00
Australian Cereal Rust Control Program - Consultancy Agreement	18,762.89
Development of investment papers for regional and national disease surveillance, epidemiology and management	9,600.00
Mentoring a new scientist to manage soilborne fungal diseases	74,956.00
Pathways to Registration - Minor Use	215,335.00
Stealth Plow: Mechanical control of hard to kill weeds with minimum soil disturbance	72,500.00
UCS00023 - Mechanisms of Weed Suppression By Early Vigour and Other Novel Wheat Genotypes	-7,250.00
	<b>51,909,027.17</b>
<b>Theme 4 - Advancing profitable farming systems</b>	
DAS00145 - Maintaining profitable farming systems with retained stubble	166,000.00
DAN00171 - Northern Pulse Agronomy Initiative - NSW	75,000.00
DAN00173 - Management of Barley and Barley Cultivars for the Southern Region	607,380.00
DAN00192 - Southern NSW Soybean Agronomy Project	60,000.00
BWD9175825 - Building capacity, skills and knowledge for the pulse industry in the Southern Region: Supporting expansion of high value	659,163.12
CFF00011 - Improving farming system efficiency in southern NSW	645,000.00
CSA00050 - Northern Farming Systems - integrating research solutions for profitable outcome	360,665.00
CSP00187 - Optimised canola profitability ? understanding the relationship between physiology and tactical agronomy management	384,503.00
DAQ00192 - Northern Farming Systems - integrating research solutions for profitable outcome	600,000.00
DAQ00205 - GRDC Grower Solutions Extension for the Northern Region (Central Queensland)	256,742.00
DAW00249 - TACTICAL WHEAT AGRONOMY FOR THE WEST	803,250.00
GOA00002 - GRDC Grower Solutions- North	571,536.00
NAG00003-A - Regionally specific agronomy projects (RSAP): Early seeding trials for the northern part of the Geraldton port zone	10,000.00
NGA00004 - GRDC Grower Solutions - North	1,230,010.00
ORM00017 - GRDC Farm Business Updates Western Region	375,000.00
TAR00007-A - Best practice management for Spot Type Net blotch in multiple barley sequences and interactions with stubble and pre-harvest head loss	20,000.00
UQ00075 - Tactical crop agronomy for maize and sorghum in the Northern Region	61,500.00
BFDC - Making Better Fertiliser Decision for Cropping Systems in Australia, phase 3	122,500.00
Boosting profit and reducing risk on mixed farms in low and medium rainfall areas with newly discovered legume pastures enabled by innovative management methods – southern region.	823,430.00
Boosting profit and reducing risk on mixed farms in low and medium rainfall areas with newly discovered legume pastures enabled by innovative management methods – Western region (Dryland pasture legume systems)	581,700.00
DAS9175938 - Regional Agronomy SA – Integrated Farming Systems in the Medium Rainfall Zone	560,061.00
Demonstration of Legume crops for profitability in the Western Region	300,000.00
Demonstrations of Legume crops for reliable profitability in the Albany Port Zone	110,000.00
Extension knowledge and resources to manage risk and exploit opportunities to improve whole farm profit through integration of cropping and livestock enterprises in the GRDC Southern Region	150,000.00
Farm Business Management Workshops for the Western Region	40,000.00
Financial Decision making tools for Kwinana East growers	30,000.00
Optimising mungbean yields - Determining factors contributing to yield gap in mungbean in the northern region	169,015.00

Optimising mungbean yields - Determining factors contributing to yield gap in mungbeans in the northern region	45,530.00
Optimising mungean yield in the northern region - Mungbean Agronomy	17,000.00
Optimising plant establishment, density and spacings to maximise crop yield and profit in the southern and western regions	480,441.00
Optimising timing and rate of Nitrogen application in waterlogging conditions in the Western Region	37,198.00
ULA9175069 - Development of crop management packages for early sown, slow developing wheats in the Southern region	671,980.00
Using seasonal forecast information and tools to manage risk and increase profitability in the Southern Region - Agriculture Victoria expands The Break	154,179.00
Using soil and plant testing data to better inform nutrient management and optimise fertiliser investments for grain growers in the southern region	400,000.00
UQ00083 - Scoping Study - Summer Crop Agronomy	90,386.95
EPF00001 - Maintaining profitable farming systems with retained stubble - upper Eyre Peninsula	310,000.00
DAV00150 - Understanding the implications of new traits on adaptation, crop physiology and management of pulses in the Southern region	1,872,520.00
CMA00003 - Linking APSIM-based management tools with POAMA seasonal forecasts	100,000.00
DAW00224 - Management of barley and barley cultivars in Western Australia	600,000.00
ULA00011 - National Phenology Initiative	1,600,000.00
US00079 - Future Farm Review phase: Intelligent decisions	148,864.00
Positioning the Soil Wetting Agent Technology for Commercial Success	270,000.00
FAR00004-A - Understanding or evaluating the effectiveness of fungicides to manage Septoria (STB) and leaf rust	90,000.00
MSF00006 - Pre emergent herbicide management for pulse crops in South Western NSW	8,256.00
PLN00013-B - Assessment of some harvest weed seed management options for Kwinana West, Kwinana East and Esperance port zone	40,000.00
SCF00004-A - Effective baiting options for the control of conical snails in the Albany port zone	5,000.00
WML00002 - Mid-row banding nitrogen in a post-rice crop	50,000.00
CRA00004 - Cultivar Crown Rot Tolerance Trials	31,000.00
AMP00010 - Phenology Research and Data provision: Slope, Aspect and Elevation	95,000.00
CSP00174 - Maintaining profitable farming systems with retained stubble in NSW South West Slopes and Riverina	361,666.00
CSP00186 - - Maintaining profitable farming systems with retained stubble: Component 1 - Research Support	232,574.00
CWF00018 - Maintaining profitable farming systems with retained stubble in Central West NSW	423,667.00
DAN00191 - N fixing break-crops and pastures for high rainfall zone acid soils	181,850.00
DAN00195 - Tactical crop agronomy of sorghum and maize in the northern region - NSW component	60,223.00
DAW00260 - Advancing Profitable Farming Systems - Frost Risk Management	145,352.00
Maintaining profitable farming systems with retained stubble in the South East and KI regions	115,395.00
MSF00003 - Maintaining profitable farming systems with retained stubble in the Mallee	392,667.00
RPI00009 - Maintaining profitable farming systems with retained stubble in the Riverine Plains	333,347.00
UA00165 Managing legume and fertiliser nitrogen in the Southern Region	170,283.00
UNF00002 - Maintaining profitable farming systems with retained stubbles in Upper North SA	130,200.00
YCR00003 - Maintaining profitable farming systems with retained stubble on Yorke Peninsula	258,333.00
CSA00055 - Benchmarking and validating the yield gap in each agro-ecological zone	194,320.00
Development of local strategies to enable the integrated and profitable management of annual ryegrass seed banks in high rainfall zone farming systems of the Southern Region	200,000.00
Increasing profit from N, P and K fertiliser inputs into the evolving cropping sequences in the Western Region	2,267,659.00
Increasing the effectiveness of nitrogen fixation in pulse crops through development of improved rhizobial strains, inoculation and crop management practices	430,000.00
More nitrogen from pulse crops for growers in the Southern region	130,000.00
Optimising timing and rate of Nitrogen application in waterlogging conditions in the Esperance Port Zone	39,000.00
SEP9175725 - Late season application of glyphosate trial	39,015.00
Southern Dry Start Seeding Forums Framework	3,200.00
Spray Drift Awareness Workshops in the Maranoa	10,000.00
DAN00184 - Evaluation and agronomic management of dual purpose cereal varieties for NSW mixed cropping systems	210,191.00
CSP00169 - Achieving stable and high canola yield across the rainfall zones of WA	343,308.00
BWD00025 - National paddock survey initiative <sup>o</sup>	1,263,248.00
CSP00187 Optimised canola profitability understanding the relationship between physiology and tactical agronomy management	938,516.00
DAQ00204 Growers Solutions project for Coastal/Hinterland Queensland and NSW North Coast	383,495.00
DAV00141-BA - Optimising the yield and economic potential of high input cropping systems	1,273,568.00
HIL00002 - RCSN Facilitation and Coordination – Western Region	444,000.00
ICN00016 - IWM extension Northern Region	-0.14
LIL00001 - Coordination and Facilitation Services to the Grdc's Regional Cropping Solution Network (RCSN) in the Southern Region	518,902.00
LYH00003 - Develop MERI Strategy for the Frost Initiative	19,500.00
MDF00001 - Reducing variety selection risk through understanding varietal performance	9,000.00
RMS00005 - Southern NSW Regional Cropping Solutions Technical Facilitator	182,500.00
RPI00013 - Optimising crop nutrition (phosphorus and sulphur) in lupins and canola in the Southern Region of New South Wales	50,000.00
UQ00082 - Updated nutrient response curves in the northern and southern regions	1,596,808.00
DAS00159-BA-1 - SARDI Bilateral Agreement	2,966,251.00
Measuring Profitability Consultancy	29,309.79
MID00001 - Digital Workspace - Development of crop management packages for early sown winter wheats in the southern region	1,198.00
Return on investment for using drones to monitor growth patterns in broadacre cropping in Western Australia	29,000.00
UA9170000 – Literature Review/Scoping Study – Optimising plant establishment, density and spacings to maximise crop yields in the	5,000.00
AVP00003-A - Compaction Mitigation options for growers in the Albany and Kwinana West port zones	46,000.00
BWD00024 - Maintaining profitable farming systems with retained stubble in Victoria and Tasmania	671,853.00
Benefits of foliar micronutrients on cereals in a low rainfall environment	70,000.00
ICF00011 - Irrigated Pulses	7,100.00
ICF00012 - Growing Profitable Irrigated Durum Wheat	15,000.00
AAM00005-A - Deep ripping, 'deeper' deep ripping & water use efficiency	30,427.00
AGC00005 - Impact of N placement and timing on crop yield and ryegrass population	15,000.00
AGC00006 - Improving N Fixation in Lentils	35,000.00

CRC00004 - Improving spray fallow techniques for better moisture conservation	82,320.00
CSP00208 - Optimising whole-farm water use efficiency and risk using whole farm bioeconomics - Postdoctoral Fellow aligned to	31,260.00
CSP00209 - Current situation analysis of soil types and attributes by sub region in the Northern grains regions	24,027.75
CSP00210 - Methods to predict plant available water capacity (PAWC)	400,000.00
DAW00227 - Tactical break crop agronomy in Western Australia	1,163,014.00
LEA00002 - Profitable farming systems with retained stubble on Lower Eyre Peninsula	153,478.00
LIE00010-A - Best bet management of ameliorated non-wetting soils for the Geraldton port zones	70,000.00
SGI00002 - Evaluation of Faba Beans under Irrigation	9,600.00
UNE00022 - Evaluating testing methods for phosphorus and potassium soil reserves	75,750.00
UQ00063 - Regional soil testing guidelines for the northern grains region	551,000.00
UQ00078 - Deep placement of nutrients*	380,065.00
UQ00086 - Fertiliser form and soil interactions when applied in high concentration bands	25,000.00
WMG00003-A - Panel Deed Work Order - Investigating double break (or stacked rotation) options	49,586.00
Optimising mungbean yield in the northern region - Mungbean Irrigation	10,000.00
Preliminary study to improve long-fallow farming systems to maximise plant water use and farm profit, and reduce risk	105,876.00
	<b>37,293,712.47</b>

#### Theme 5 - Improving your farm resource base

DAN00214 - Advancing Profitable Farming Systems - Frost Risk Minimisation	297,712.97
Ripper Gauge Demonstration sites - Esperance Port Zone	100,000.00
Applying Technology Solutions for Improved Frost Detection, Diagnostics and Precision Management Decisions	40,000.00
CSP00198 - Spatial temperature measurement and mapping tools	540,000.00
DAV00137-BA - Maintaining productivity and quality of wheat under elevated CO2	1,000,000.00
Future Farm Phase II Workshop	5,091.00
Future Farm Phase II Workshop	2,318.18
Future Farm Phase II Workshop	3,715.56
DAN00180 - Benchmarking and managing soil herbicide residues for improved crop production	187,492.50
UWA00174 - A LONG-TERM STUDY TO INCREASE WATER USE EFFICIENCY, GRAIN YIELD AND THE PROFIT OF GROWERS IN THE WESTERN	377,855.00
BWD00032 - Advancing Profitable Farming Systems - Conduct Frost Risk Management Field Trials	92,243.51
DAN00215 - Advancing Profitable Farming Systems -Frost Risk Management	323,026.50
DAW00241 - Farming systems to improve crop tolerance to frost	0.14
FAR00006 - Advancing Profitable Farming Systems – Conduct Frost Risk Management Field Trials	33,231.00
FGI00012 - Advancing Profitable Farming Systems – Conduct Frost Risk Management Field Trials	60,417.50
Frost Treatment	250,000.00
Rural R&D for Profit-16-13-007 Forewarned is forearmed: managing the impacts of extreme climate events	50,000.00
TAR00010 - Advancing Profitable Farming Systems – Conduct Frost Risk Management Field Trials	46,370.47
UA00170 - Advancing Profitable Farming Systems- Frost Risk Management	200,720.00
UA00171 Advancing Profitable Farming Systems – Frost Risk Management 2017-19	192,950.00
CSP00207 - Scoping study - Reviewing mechanisms and magnitude of nutrient mineralisation in Australian grain producing soils	16,314.00
DAV00145-BA-1 - DEPI - Bilateral Agreement - 8+ years	175,170.00
DAV00145-BA-2 - DEPI - Bilateral Agreement - 3-8 Years	-258,639.00
UM00056 - Developing and Applying an Equilibrium Displacement Model (EDM)	65,000.00
BRO00001 - Frost Steering committee*	1,100.00
ERC00001 - Frost Steering Committee Consultancy Agreement	3,598.96
LIV00004 - Advancing profitable farming systems - conduct frost Risk Management field traits	168,095.00
PRC00001 - Frost Steering Committee Consultancy Agreement	4,911.28
ALB00002 - GRDC Frost Initiative Steering Committee	6,805.84
CWF00019 - Soil acidity and pH management for Central West Farming Districts	77,989.00
DAV00149 - 2016.05.07 Understanding the amelioration processes of the subsoil application of amendments in the Southern Region	1,845,847.00
Feasibility of managing high cereal stubble loads at seeding through innovative residue cutting in the Southern Region	40,000.00
High work rate 'plough and sow' technology for farm-scale sandy soil amelioration	238,745.50
In field assessment of selected soil properties and plant N contents using IR Spectroscopy	115,000.00
Tailoring an integrated solution to effectively address subsoil constraints by incorporation of chemically-balanced nano-amendments	290,000.00
ACT00004 - Application of CTF in the low rainfall zone	450,000.00
CSP00203 - Increasing production on sandy soils in low and medium rainfall areas of the Southern region	114,000.00
DAN00206 - Innovative approaches to managing subsoil acidity in the southern grain region	659,877.00
DAQ00211 - Quantifying the effectiveness of cover crops as a means of increased water infiltration and reduced evaporation in the	470,000.00
DAV00151 - D-BA Understanding how waterlogging affects water and nitrogen use by wheat	234,539.00
DAV00152 - D-BA Spatial variability of soil acidity and response to liming in cropped lands	191,893.00
DAW00236 - Soil Acidity is limiting grain yield*	205,500.00
DAW00242 - Subsoil constraints - understanding and management	1,030,000.00
DAW00243 - Minimising the impact of soil compaction on crop yield	213,860.00
DAW00244 - Delivering enhanced agronomic strategies for improved crop performance	1,022,500.00
DAW00258 Overcoming constraints to profitable cropping on forest gravel soils of the Western Region	222,179.00
RSS00010 - Soil Acidity is limiting grain yield- SA component	60,000.00
SFS00026 - Soil acidity is limiting grain yield - Southern Victoria	40,000.00
DAS00162-A: Validating recent research on break crop options in the low rainfall zone to determine the best options for the different	70,000.00
DAW00215 - Characterising water deficit and bench marking genetic diversity in wheat	212,545.00
DAW00252 - Innovative approaches to managing subsoil acidity in the Western Region	860,110.00
Demonstrating the benefits of soil amelioration and controlled traffic practices across a broad range of soil types in Western Australia.	303,284.00
Economics of ameliorating soil constraints in the northern region: Program co-ordination – communication, extension and evaluation	129,000.00
Economics of ameliorating soil constraints in the northern region: Economics of adoption	45,000.00

Economics of ameliorating soil constraints in the northern region: Soil constraint management and amelioration	361,365.79
Economics of ameliorating soil constraints in the northern region: Spatial soil constraint diagnoses	150,000.00
Improved sampling methods to better predict nutrient availability and supply for soils in the Western region	488,722.24
Incorporating lime to depth in duplex wheatbelt soils	37,750.00
Nutrient re-distribution and availability in ameliorated and cultivated soils in the Western Region	621,301.00
Ripper Gauge Demonstration sites Albany port zone	100,000.00
Seeding systems to improve cereal crop establishment on heavy textured soils	56,000.00
Soil Quality iBook	100,000.00
Soil Water App maintenance in 2018	20,600.00
GRDC Communities - crop nutrition	73,120.00
SPI9175820 - Genetic Technologies for Sodic Soils – Market Review	15,450.00
Tactics for improving rooting depth and crop yield on sodic soils	40,000.00
Tactics to Improve Crop Establishment in a Drying Soil Profile in the Western Region	42,000.00
Understanding the stratification of nutrients in soils in the southern region and developing appropriate fertiliser practices	105,000.00
VIS00002 - Legume Management for Economic Nitrogen Production in the Low Rainfall Areas of North West Victoria	14,900.00
MP00002 - Soil Constraints-West Steering Committee	2,345.16
PLT00004 - Chairman of the GRDC Soil Constraints West Committee	15,552.66
QK00002 - Soil Constraints - West Steering Committee	4,060.65
TWC00002 - Soil Constraints-West Steering Committee	3,291.00
	<b>15,378,827.41</b>
<b>Theme 6 - Building skills and capacity</b>	
A 'focus farms' study to optimize weed resistance management practices in Western Australia	30,000.00
ALV00004 - Improving physical, mental and safe work environments for Australian grain growers	1,198.18
PEN00004 - Improving physical, mental and safe work environments for Australian grain growers	1,198.18
COR00035 - Converting of Information from Research Reports for a Grower Audience	100,000.00
DAN00209 - eXtensionAUS Crop Nutrition Learning Network*	91,573.00
DAV00143 - Improving practices & adoption through strengthening D & E capability & delivery	700,634.00
DAV00146 - eXtensionAUS Field Crop Diseases Learning Network	91,573.00
DER00021 - Understanding grower needs for access to knowledge	26,500.00
UHS11009 - Evaluating the potential of long fallowing to reduce whole-farm production costs whilst maintaining profit margin	6,000.00
9176026 - Building grower capacity & knowledge in the development of farm business management strategy Farm Business Strategic Review Pilot - Grains, South Australia	40,000.00
A Review of Seeding Systems that Provide Improved Crop Establishment for Growers in the Western Region	63,000.00
AEA00007-Digital Workspace – Development of crop management packages for early sown winter wheats in the southern region	600.00
Assessing the economic value of precision agricultural tools for grain farming businesses in the Southern Region	100,000.00
Best practice glyphosate use for Esperance Port Zone growers	30,000.00
EPF00002 - GRDC Dry Start Forums – Maximising returns through informed decision making	17,263.09
Excellence Through Stewardship	42,500.00
GAD9175674 - CFI Extension of GRDC	15,000.00
GRDC 'Opportunity for Profit' workshops	86,992.50
GRDC Dry Season Forum - Maximising returns through informed decision making	5,708.18
Improving crop emergence through the better use of seeding technologies.	19,040.00
Improving grower profits through longer season wheat crops	75,000.00
Legumes for profitability in the Esperance Port Zone	100,000.00
Making Lupins Profitable Again in the Northern Wheatbelt of the Western Region	32,550.00
National, regional and local video and podcasts	200,000.00
Practical and applied workshops and communications to promote key messages and resources to maximise the effectiveness of spray	175,000.00
Risk Management in Australian Agriculture	5,800.00
Simple Identification of On-Farm Lime Sources in the Western Region	18,750.00
Summer Cropping Demonstrations in the Esperance Port Zone	100,000.00
Summer Cropping Demonstrations in the Western Region	100,000.00
UB00004 - Online Final Reports Research - Innovative Knowledge Management Approaches to Support Research Uptake	184,550.00
URS9175851 - Extension investment development Northern and Southern Regions	7,000.00
Yardstick demonstrations for the Albany and Esperance port zones	170,000.00
'Yardstick' Demonstrations for the Geraldton Port Zone, Western Australia	100,000.00
Yardstick' Demonstrations for the Kwinana West and Kwinana East port zones	181,440.00
GRS10940 Hannah Robinson (UQ) Investigating the relationship between stress tolerance genes and grain quality in barley (Hordeum	18,367.00
UHS11007 - Dissecting chickpea diversity for improved nitrogen fixation	6,000.00
GRS10687 ANU RNA secondary structure and the regulation of metabolism	7,261.00
GRS10929 - Grains Industry Research Scholarship - (RMIT) Modification of photosynthesis by gene replacement in crop plants.	19,591.00
GRS10935 - Grains Industry Research Scholarship - (UWA) Genomic research to improve the value of the Narrow-leafed lupin (Lupinus	6,122.00
GRS10936 - Grains Industry Research Scholarship - (UF) Epigenetic control of grain stress tolerance via short interfering RNA	22,040.00
GRS10938 Matthew Aubert (UA) Molecular and genetic characterisation of early aleurone development in barley and wheat	31,835.00
GRS11005 - F. graminearum cell wall	29,716.00
GRS11007 - Improving barley (Hordeum vulgare) yields under abiotic stress: assessment of the contribution of the alternative mitoch	19,811.00
GRS11008 - Combining speed breeding and multi-trait genomic prediction to enhance genetic gain for yield in wheat	29,716.00
GRS11009 - Application of Precision Ag Tools to a Wheat Breeding Program	29,716.00
GRS11010 - Investigating the potential for improving grain yield through enhanced stress recovery	29,716.00
UHS11003 - A genome-wide association study of key agronomic and nutritional traits in the CIMMYT wheat zinc diversity panel	6,000.00
UHS11006 - Early vigour in barley: identifying traits and genetic controls to design resilient crops	6,000.00
UHS11008 - The genetic basis of wheat harvest quality; with a focus on PHS, black point and threshability	6,000.00

UHS11010 - Investigating how legumes establish a nutrient exchange with rhizobia during nodule formation	6,000.00
UHS11011 - A whole genome approach for the Quantitative Trait Loci (QTL) analyses which accounts map order uncertainty	6,000.00
GRDC Research Scholarship - Genome-wide identification of disease resistance genes in the Brassicaceae and characterisation of their DNA methylation status in Brassica napus	17,656.00
Hyperspectral Data for Estimating Crop Leaf Biochemistry	9,941.00
GRS10926 - Grains Industry Research Scholarship - (QUT) Automated Weed and Plant Recognition for Agricultural Applications	3,673.00
GRS10939 - Grains Industry Research Scholarship Symbiotic effectiveness and genetic stability of Mesorhizobium root nodule bacteria	17,141.00
GRS11006 - Grains Industry Research Scholarship Adult plant resistance and pathogen virulence in blackleg disease of canola	29,716.00
UHS11002 - Identification of effectors in the spot blotch pathogen Bipolaris sorokiniana	6,000.00
UHS11004 - Hyperparasites for the control of cereal rusts in Australia	6,000.00
GRS - Evolution and management of Group J resistance in annual ryegrass (Lolium rigidum)	17,773.00
GRS - Extent, distribution and management of herbicide resistant common sowthistle and prickly lettuce in lentils	17,656.00
GRS - Protecting the Australian Pulse Industries from Diamondback Moth infestations.	17,656.00
GRS10780 - Grains Industry Research Scholarship - (ANU) Components of Immunity to Stagonospora nodorum in Wheat	7,261.00
GRS10932 - Grains Industry Research Scholarship - (USQ) A comparison of the growth patterns of three root pathogens in wheat	18,366.00
GRS - Common rust of maize	14,713.00
GRS10566 Grains Research Scholarship (UWA) Understanding the strategies of outstanding performers in dryland farming enterprises	7,185.30
GRS10931 Grains Research Scholarship (UA) Evaluating the abiotic stress tolerance of transgenic wheat and barley	24,438.00
GRS11000 - Frost temperature dynamics and rapid post event identification of damage to broadacre cereals	29,716.00
GRS11001 - Frost tolerance in wheat: Grain Research Scholarship for field-based phenotyping tools in pre-breeding	59,432.00
GRS11011 - Physiological and biochemical responses lentil to silicon mediated drought tolerance	29,716.00
UHS11001 - Benefits of Sowing Orientation on Barley Crop Canopy Temperature Over the Frost Window	6,000.00
UHS11005 - Ozone and heat waves	6,000.00
GRS - Adaptation of fast winter wheat genotypes to the Mediterranean semi-arid cropping regions of southern Australia	11,770.00
GRS Understanding Invasiveness of Wild Oat in - Wheat Production under Drought and Heat Stress in Conservation Agriculture	8,828.00
GCS00139 - AusAg&Foodtech Summit 2017	10,000.00
Halving the \$90m of canola harvest losses in Western Australia	80,000.00
ATA98 - Longerenong Agricultural College Victoria 2017-18	12,000.00
ATA99 - Tocal College	12,000.00
BAE00026 - Science and Innovation Awards for Young People in Agriculture	22,727.27
DAN00200 - Building research capacity in the northern grains region - NSW	660,000.00
DAQ00194 - Building research capacity in the northern grains region - Queensland	618,113.00
GRS10432 (ANU) Communicating controversial science to farmers	0.50
GRS10490(UA) Identification of arabionxylan biosynthetic genes in plants	0.25
NUF00010 - Nuffield Australia Farming Scholarships	202,500.00
PIT00001 - Executive Officer - GINRD&E Strategy	46,350.00
RDC00011 - The Horizon Scholarship	60,000.00
RDC00016 - Horizon Scholarships 2017	100,000.00
UA00146 - Theme PhD Scholarship - (UA) DBM dispersal and colonisation of Australian canola crops	19,967.75
UHS11000 - Versatile Disc Chain Tool	6,000.00
9176032 - Land use change report for Victoria from 2010-2017	6,320.00
ARL - GRDC support for the Australian Rural Leadership Program	100,000.00
ATA97 - Western Australian College of Agriculture	12,000.00
Bagging Grain profits – Technical assessment of the use of silo bags in the WA supply chain	30,000.00
Conference Sponsorship - AgCatalyst	5,000.00
Conference Sponsorship - Australian Grains Industry Conference 2018, 2019 & 2020	3,750.00
DAL00001 – People in Agriculture	56,000.00
Follow the Farmer sponsorship	5,000.00
GAD9175576 - Baker Ag Advantage Grower Trip to WA	15,000.00
GAD9175681 - Holt Rock Group South Australia Agronomy & Farm Business Tour	9,100.00
GAD9175691 - Yorke Peninsula Grower Study Tour to Tasmania	15,000.00
GAD9175692 - Seeking experienced farmers and trials in high rainfall production systems with methods to deal with high stubble and trash loads for the following season and new grain markets after record low prices.	12,250.00
GAD9175695 – Esperance Region Diversity, Growth and Innovation Tour	9,640.00
GAD9175696 - Swan Hill area grower study tour to WA to study herbicide resistance.	13,500.00
GAD9175698 - GRDC Capacity Building for Growers and Advisers – Study Tours (Esperance Grower and Agronomist Hyper Yielding Cereals Production System tour of New Zealand)	30,000.00
GCS11009 - WAFarmers Annual Conference "AgVersity"	10,000.00
GRDC Branded Capacity Building for Growers and Advisers - Study Tours	10,227.27
GRDC Emerging Leader Award - Therese McBeath	15,000.00
Contributing to discussion on the Oat Improvement Strategy	1,530.00
GRS10486 - 2017 Grain Research Scholarship Overcoming soil constraints on crop productivity	0.50
GRS10564 - Grains Industry Research Scholarship - (CUR) Effector gene prediction from fungal pathogen genome assemblies	-9.00
Innovation Generation 2017	12,500.00
INSPIRE Summit 2018	13,125.00
IRE00002 - State-of-the-art Automated Pipe Through the Bank irrigation layout	2,545.40
MCF00004 - Improving physical, mental and safe work environments for Australian grain growers	1,198.00
Understanding Growers – Market Research Services to better understand Australian grain growers in relation to their RD&E requirements and expectations	2,396.36
Understanding Growers – Market Research Services to better understand Australian grain growers in relation to their RD&E requirements and expectations	2,396.36
Understanding Growers – Market Research Services to better understand Australian grain growers in relation to their RD&E requirements and expectations	2,396.36



Research Partner Survey	59,850.00
ROB00002 - UK Study Tour	7,500.00
Traineeship in Applied Grain Research	38,360.00
Understanding Our Growers Survey	555,900.00
UQ00085 - GRDC Recognising and Rewarding Excellence Award	25,000.00
US00086 - GRDC Emerging Leader Awards	15,000.00
GRS10927 - Grains Industry Research Scholarship - (US) Conjoint use of soil NIR and XRF spectroscopy in the field	2,449.00
GRS10934 - Grains Industry Research Scholarship - (ANU) Stabilising flowering time of wheat in response to autumn rainfall decline in the southern cropping region of Australia	14,591.00
GRS10941 (UQ) Identification of nitrate transporters and corresponding regulatory and metabolic genes under variable conditions of nitrate supply in diverse Sorghum bicolor genotypes for improved nitrogen use	29,386.00
GRS11002 - A data based approach to diagnosis and management of yield variability attributed to soil constraints	29,716.00
GRS11003 - Roles of dual water:ion aquaporins in cereal osmotic stress response	29,716.00
GRS11004 - Overcoming soil constraints on crop productivity	29,716.00
Biosolids to overcome subsoils constraints in the Victorian grain growing soils	138,755.00
Post-doctoral Fellowship - Managing soil constraints with On-Row Seeding Systems for the Low Rainfall Zone	40,000.00
Post-Doctoral Fellowship - More profit from lentils through enhanced tolerance of waterlogging and improved canopy management	135,586.00
Post-Doctoral Fellowship – Understanding mechanisms of subsoil amelioration	69,588.00
	<b>7,032,036.45</b>

#### Theme 7 - Foundational activities

CIC00033 - B.2 continuation of work required to edit and deliver GROWNOTES for Lupins Services South	4,000.00
BWD00029 - The Provision of Field Trial Services for the National Variety Trials Program	217,913.10
CMP00001-C - Western Region Grower Notes 2nd Review of Barley, Durum, Faba Beans and Field Peas	11,536.37
COR00037 - Ground Cover Newspaper and Supplement	1,850,984.34
COR00054-A - Delivery of Southern Region Crop GROWNOTES for Lentils, Faba Beans and Field Peas Services – South	20,894.00
COR00054-B Delivery of Southern Region GROWNOTES for Vetch Services - South	2,922.00
COR00054-C Delivery of Western Region Lentils Crop GROWNOTES - West	3,466.00
CUC00001 - eXtensionAUS Phase II Project Coordination	48,950.00
CUR00026 - Statistics for the Australian Grains Industry (SAGI): Western Node	676,510.00
GIA00004 - GRDC Grains Research Updates - Western Region	491,942.00
ICN00021 - GRDC Research Updates – Northern Region	617,091.00
ORM00013 - GRDC Business Updates - Northern Region	187,155.00
ORM00014 - GRDC Research Updates - Southern Region	1,115,311.00
ORM00015 - GRDC Farm Business Updates - Southern Region	1,235,156.00
SBM00003 - GROWNOTES TIPS AND TACTICS FOR PUBLICATION AND WEBSITE	75,000.00
SBM00009 - Western GrowNotes for Oats and Barley	1,136.03
UB00006 - GRDC Online Farm Trials system – Phase 2	150,000.00
WAH00001 - Editing and Revision of Southern Region GrowNotes: Lentils, Lupins, Chickpeas, Field Peas, Faba Beans and Vetch	13,000.00
ACO00016 - Regional Science Writers - Southern	250,000.00
CIC00028 - Northern Region Field Day Support	36,365.18
CIC00029 - GRDC Northern Regional Communication Services 2015-16	324,694.62
CIC00030 - GRDC Western Regional Communication Services 2015-16	251,844.79
CIC00031 - Regional Science Writer - Northern	311,909.60
CIC00032 - Regional Science Writers - Western	260,497.50
CIC00033 - C.2 continuation of work required to edit and deliver Western Region Crop GrowNotes TM for Lupins and Durum Wheat	8,000.00
COR00054-D Delivery of Western Region Crop GROWNOTES for Vetch Services - West	1,222.00
GRDC branded publications	100,000.00
MEL00004 - GRDC Branded Communications - Expanding Grower Access to Trial Results	1,000.00
MEL00005 - GRDC Branded Communication - Improving Grower Access to Relevant Research - Digital Media	1,000.00
PNS00020 - GRDC Southern Regional Communication Services 2015-16	340,000.00
ANU00028 - Grain Phenomics Climate Facility	290,000.00
AEG00009 - AEGIC Cool Room	14,300.00
NVT Services Agreement - Roundup Ready testing	28,943.62
GRDC Communities - field crop diseases	73,160.00
Leveraging generic resources and associated data from Chickpea Feed the Future Innovation Lab in the US	441,140.00
BWD00030 - BCG Laboratory Infrastructure Project	31,000.00
CSP00211 - CSIRO Storage building at Boorowa Agricultural Research Station	90,000.00
DAS00173 - Controlled Environment Plant Growth Chamber for the new PIRSA/SARDI Clare Regional Field Research Centre	27,000.00
UA00169 - Enhancing the infrastructure for grains research at the University of Adelaide	111,346.00
UCS00026 - Charles Sturt University Controlled Environments for Grains Research	274,330.80
UM00058 - State-of-the-art plant growth facilities dedicated to grains research	54,127.00
UMU00053 - Southern Metropolitan Infrastructure Hub	1,125,000.00
CWF00022 - CWFS Research Innovation Hub - Central West NSW	38,088.64
DAN000201 - Building research capacity in the southern grains region - NSW	331,590.00
LIE00011 - Construction and enhancement of Liebe Group Research Workshop & Laboratory	9,436.51
JDI9175827 - Sorghum NVT Research program	64,828.83
Licence and Support Contract – NVT Online Website Support and Maintenance	64,000.00
NVT Research Platform Development and Support	355,000.00
NVT Research Support	4,360.00
NVT Services Agreement	242,500.00
NVT Sorghum Trials (QLD/NSW) 2017/2018 Season	132,061.08
NVT-SAGI Services Agreement	220,000.00

Sorghum NVT	78,500.00
Tender for provision of Field Trial Services for the National Variety Trials (NVT) Program 2017/18	225,300.00
DAQ00189 - NVT Services Agreement	87,106.00
DAS00143 - NVT Services Agreement	301,260.00
DAV00136 - NVT Services Agreement	221,000.00
MGPO0004 - Blackleg Ratings NVT Services Agreement	270,223.00
BAE00029 - Australian Agricultural and Grazing Industries Survey (AAGIS) and Grains Reports: 2017-18	477,580.00
CAS00009 - NVT Services Agreement	201,060.00
COR00055 - Ongoing Updating and Maintenance of GRDC's Image Library	48,690.00
DAN00182 - NVT Services Agreement	329,529.00
DAN00211 - NVT Services Agreement	464,247.74
DAQ00188 - NVT Services Agreement	406,794.00
DAQ00206 - NVT Services Agreement	108,485.56
DAS00163 - NVT Services Agreement	1,453,618.36
DAW00235 - NVT Services Agreement	323,026.50
DER00026 - 2017 GRDC Grower Survey	64,265.00
EAS00003 - The Provision of Field Trial Services for the National Variety Trials Program	514,671.24
KAL00007 - The Provision of Field Trial Services for the National Variety Trials Program 2015/16-2018/19	2,421,407.19
LIV00002 - NVT Services Agreement	891,788.45
RDP00016 - 2015.07.09 National Agribusiness Reference Group	84,900.00
RHC00010 - Branding Strategy Implementation°	15,000.00
RHC00012 - GRDC Communication Products and Services Market Research 2017 - 2019	110,000.00
SFS00035 - The Provision of Field Trial Services for the National Variety Trials Program	175,711.01
UT00032 - The Provision of Field Trial Services for the National Variety Trials Program	13,900.00
UW00009 - SAGI3 Node Agreement Bioinformatics and Biometrics for the Australian Grains Industry	1,140,000.00
UW00010 - SAGI: EssCargoT	467,339.15
AMC00024 - Final Report editing for GRDC Website for advisers and growers	181,500.00
Australian Agricultural and Grazing Industries Survey (AAGIS) 2018-19	122,583.00
COLLATING BACKGROUND DATA ON CANOLA AND CHICKPEA	15,000.00
Common seed "bulk-up" to provide seed for all relevant GRDC research investments	238,100.00
Comms Strategy for AGIDG	13,650.00
Customer Relationship Management (CRM) database and campaign development	100,000.00
GRDC Decision Support Tool Review	30,000.00
GRDC Publications Audit	9,000.00
GRDC Recognising and Rewarding Excellence 2018 Dr John Kirkegaard	18,750.00
GRDC Strategic Plan - Corporate Videos	12,200.00
GRDC Website Review	30,000.00
HEU00005 Maintenance and Enhancement of Existing Systems for Effective Delivery of GRDC Products and Information Services	1,198.00
MEL00003 Maintenance and Enhancement of Existing Systems for Effective Delivery of GRDC Products and Information Services	1,198.00
Publications Library	67,852.00
SCR00001 - Rural Focus Interviews with the GRDC	10,400.00
UA9175717 - SAGI South Masters Scholarship Agreement	61,000.00
NVT REGIONAL COMMITTEE Central NSW	2,485.45
NVT REGIONAL COMMITTEE Central Qld	5,344.60
NVT REGIONAL COMMITTEE Eyre Peninsula	1,654.88
NVT REGIONAL COMMITTEE Nth NSW	3,883.33
NVT REGIONAL COMMITTEE SA	1,066.36
NVT REGIONAL COMMITTEE Sth NSW	1,664.20
NVT REGIONAL COMMITTEE Sth Qld	2,049.39
NVT REGIONAL COMMITTEE Vic Wimmera	778.60
NVT REGIONAL COMMITTEE Yorke Peninsula	4,349.60
Wild oats tips and tactics	3,750.00
Northern region field day support	308.66
9176033 - Undertake a literature review/scoping study: Waterlogging in the southern region and SE WA	35,000.00
NVT REGIONAL COMMITTEE Vic High Rianfall Zone	915.88
	<b>24,502,797.16</b>
<b>Theme 8 - R&amp;D Management</b>	
DAS00167-BA - Regional Agronomy SA - Improving disease management through improved agronomic practices	294,668.00
DAS00168-BA - Regional Agronomy SA - Improving weed management in high break crop intensity farming systems	332,943.00
CAN00004 - Warehouse and Distribution of GRDC's Publications, Periodicals and Promotional M°	95,503.90
DAS00165-BA - Assessment of N and water co-limitations by remote sensing as a tool to improve wheat and canola profitability and manage risk	373,812.00
TAR00008- Industry representative in the GRDC investment planning meetings in tactical agronomy for the Western Region	1,475.38
DBE00001 - IWSD Technology	100,000.00
GRDC Machinery Co-Investment – Manufacturing and Performance Review of Amendment Incorporation Subsoiler machine	50,000.00
Open Ag technologies for Australian Grain Farms	166,215.00
CSA00057 - Improved understanding and management packages to increase nutrient use efficiency in the Western Region – scoping	50,000.00
DAS00166-BA - Improving profit and reducing risk by managing nitrogen in wheat and extreme temperature in pulses	473,911.00
Gap Analysis Consultancy for Plant Growth Regulator (PGR)	10,000.00
CLA00007 - Grains and Cropping R&D Trust - Darling Downs Property	2,701.54
COG00001 - Commercialisation Plan for Pulse Imaging Algorithms	600.00

COG00002 - Value proposition for wheat functionality traits impacting enduring grower profitability	25,000.00
EVE00001 - Soil Constraints-West Steering Committee*	7,626.00
LOL00002 - LMK SA AFS Client Study Tour - Victoria 2017	-0.27
RDI00001 - To assess the value proposition of potential GRDC investment in novel pulse, oilseed and maize	12,500.00
TAP00011 - Nominee Director ACAS	33,476.16
TFC00002 - Assessment of the value proposition for barley, sorgham and oats Australian growers	12,500.00
ZIA00002 - Levy Payer Register Pilot	39,550.00
9176040 - Southern Panel Support – Delivery of Southern Spring Tour 2017 and transition of panel support services to the GRDC Business Support Team	8,596.14
AAI00001 - Project Management Services for specified GRDC projects (GRDC Northern and Southern Regions)	116,390.55
BET00002 - GRDC West office support	48,395.71
Communication Services to support the GRDC Innovation Call	21,250.00
CRY9175863 - Cryosite Storage Agreement	8,400.00
CSP9175838 - Recovery of Patent Costs	24,438.54
DCO9175842 - Patent Costs 17/18	1,055.00
DER9175818 - R&D Plan Consultation Survey 2017	28,400.00
Development of gap analysis for investment planning for the High Rainfall Zone	8,800.00
DMA - AGT Nominee Director Agreement - David Matthews	76,099.31
FAK9175844 - Costs associated with Australian Trade Mark Application	312.00
Final Report External Evaluations	5,750.00
GLE00001 - Improving the productivity and cost of GRDC plant breeding investments	20,670.54
GMC9175855 - Idea development for Western Region RCSN 2017	12,000.00
GRDC Innovation Grant Reviews	116,595.00
GTL9175795 - IP Costs relating to the Cereal Endophyte Programme	6,947.74
IP Management Projection for Plant Breeding Portfolio.	2,400.00
IP Management Projection for Plant Breeding Portfolio.	2,400.00
JD19175454 - Southern Region Extension Investment - Ideas to investment proposals	9,000.00
Madderns9175839 - Patent Fees associated with Weed Seed Devitalization Arrangement	1,161.41
Mid-term review of the GRDC/SARDI Bilateral Research Agreement	40,000.00
National annual investment area forums for collaboration and technical review	144,845.00
NCA9176050 - National Grain End Point Royalty Reporting and Analysis 2017/2018	101,250.00
NRS9175737 - Strategic Planning workshop in Adelaide + Perth	10,251.18
NRS9175891 - Cross Panel Workshop Sessions	5,140.54
PTG9175726 - AGT Nominee Director Agreement - Peter Graham	38,653.12
RDM00001 - Nominee Director Agreement	41,000.00
Recruitment of GRDC Nominee Director	15,000.00
SAI00004 Annual Membership to SAI Platform Australia	8,000.00
SPI9175810 - Innovation Landscape Analysis	37,400.00
SPI9175821 - Nitrogen Use Efficiency (NUE) Path to Market Analysis	27,810.00
Tender Evaluations Nutrition West	1,200.00
To collate information towards the development of a pulse strategy for WA.	15,000.00
To participate and provide advice to GRDC on RCSN applications assessments.	673.00
WISA Funds - Communications strategy and supporting documents for the AGIDG	8,032.50
WISA Funds - Project Management Services: Grains Industry Good Project	75,000.00
Wrays - 2017/2018 Patent Costs	440.00
Grains Research Scholarship	4,155.00
IP MANAGEMENT	508,600.61
Operating expenditure	2,460.00
PANEL support	1,624,615.43
R&D SUPPORT costs	39,691.84
Wheat Initiative	1,455.70
BN00002 - Soil Constraints-West Steering Committee	2,625.00
CT00002 - Soil Constraints-West Steering Committee	1,835.87
DAS00169-BA - Improving sustainable productivity and profitability of Mallee farming systems with a focus on soil improvements	339,826.00
	<b>5,696,504.44</b>
<b>Total of all R&amp;D expenditure</b>	<b>192,081,555.37</b>