

Project code	Title	2018-19 expenditure
<b>Objective 1 - Improve yield and yield stability</b>		
9167824	Benchmarking and validating the yield gap in each agro-ecological zone	-\$30,000.00
9100833	Using next-generation genetics to accelerate variety improvement in bread wheat, durum and barley	\$646,000.00
9176997	Regional Soil Constraints Forum for Management of Difficult Soils - Albany and Esperance port zones	\$84,714.00
9177003	Increasing the effectiveness of nitrogen fixation in pulses through improved rhizobial strains in the GRDC western region	\$281,000.00
9097808	An international collaborative effort to sequence the genome of field pea	-\$25,000.00
9175192	Grains Industry Research Scholarship (ANU) What are the epigenetic mechanisms involved in regulating stress response in Arabidopsis thaliana and Brachypodium distachyon	\$12,707.00
9175340	Grains Industry Research Scholarship (UNC) The molecular characterisation of vernalisation in safflower via the development of genomic and transcriptomic resources	-\$741.00
9175770	Grains Industry Research Scholarship - RMIT: Forms, analysis and stability of vitamin E and selenium in grains and grain products	-\$3,474.50
9175776	Grains Industry Research Scholarship - CURTIN: Effector gene prediction from fungal pathogen genome assemblies	-\$14,245.00
9176795	The provision of NVT sorghum field trials: Liverpool Plains	\$61,006.87
9176924	Development of Key Investment Target (KIT) 1.6	\$6,592.54
9176926	Development of KIT 1.6	\$10,690.16
9176941	Extent of RLN throughout the grain growing regions of WA and options to address	\$65,000.00
9176949	Development of KIT 1.6	\$9,462.15
9177025	Expanding the sowing window for canola and lupins – what works in WA?	\$314,959.00
9177056	Optimising high rainfall zone cropping for profit in the Western and southern regions	\$97,344.00
9177062	Development and validation of soil amelioration and agronomic practices to realise the genetic potential of grain crops grown under a high yield potential, irrigated environment in the northern and southern regions.	\$660,000.00
9177093	Development of KIT 1.7	\$7,473.49
9177106	Post-doctoral Fellowship - Understanding sorghum root growth and function in cold soils	\$122,944.00
9177303	Post-Doctoral Fellowship: Unravelling the relationships between soil mixing uniformity by spading and crop response	\$52,210.00
9177331	Increasing knowledge and profitability of cropping on Ironstone gravel soils	\$150,000.00
9177418	Post-doctoral Fellowship: Understanding P dynamics and bioavailability in alkaline clay soils	\$39,625.00
9177480	Post-doctoral Fellowship: Integrating yield optimisation in mungbean	\$60,386.00
9112995	Application of Focused Identification of Germplasm Strategy (FIGS) in the Australian environment	\$28,300.00
9134826	Optimising the yield and economic potential of high input cropping systems in the High Rainfall Zone	\$1,118,923.00
9174932	Grains Industry Reseach Scholarship:Improving barley (Hordeum vulgare) yields under abiotic stress: assessment of the contribution of the alternative mitoch	-\$19,811.00
9175210	Grains Industry Research Scholarship - UF: Epigenetic control of grain stress tolerance via short interfering RNA	-\$5,510.00
9176979	Grains Industry Reseach Scholarship - The bioactivity and functionality of the molecular and microbial components of snail mucus	\$11,899.00
9177181	Diagnostic services for pulse germplasm enhancement and breeding programs	\$73,000.00
9174833	Grains Industry Reseach Scholarship - Overcoming soil constraints on crop productivity	\$14,858.00
9175306	Evaluation of Faba Beans under Irrigation	-\$48,000.00
9176582	Adapted barley germplasm with waterlogging tolerance for the southern and western regions	\$268,113.00
9176929	Increasing the effectiveness of nitrogen fixation in pulses through improved rhizobial strains in the GRDC northern region	\$450,000.00
9111802	Benchmarking and managing soil herbicide residues for improved crop production	\$62,497.50
9112807	Determining yield under frost one degree at a time	-\$12,500.00
9149023	Spatial temperature measurement and mapping tools to assist growers, advisors and extension specialists manage frost risk at farm scale	\$440,350.00
9163806	A long term study to increase water use efficiency, grain yield and the profit of growers in the western region in a no-till system	\$456,890.00
9172801	Benchmarking and field validation of transgenic frost tolerance wheat lines	\$54,545.46
9172822	Understanding the amelioration processes of the subsoil application of amendments in the southern region	\$1,224,739.00
9172824	Understanding the implications of new traits on adaptation, crop physiology and management of pulses in the southern region	\$807,687.00
9174836	Grains Industry Reseach Scholarship - Frost temperature dynamics and rapid post event identification of damage to broadacre cereals	\$18,573.00
9174957	Grains Industry Reseach Scholarship - Frost tolerance in wheat	\$13,620.00
9174990	Grains Industry Reseach Scholarship - Physiological and biochemical responses lentil to silicon mediated drought tolerance	\$19,811.00
9175004	Frost risk management	\$367,353.00
9175102	Compaction mitigation options for growers in the Albany and Kwinana West port zones	\$40,000.00
9175166	Improved resistance to oat pathogens and abiotic stress management	\$415,740.00
9175168	New tools and germplasm for Australian pulse and oil seeds breeding programs to respond to changing virus threats	\$447,999.60
9175185	Improving profit and reducing risk by managing nitrogen in wheat and extreme temperature in pulses	\$502,880.00
9175701	Increasing profit from N, P and K fertiliser inputs into the evolving cropping sequences in the western region	\$1,222,269.00
9175860	Conduct frost risk management field trials	\$24,923.25
9175864	Conduct frost risk management field trials	\$46,370.47
9175865	Conduct frost risk management field trials	\$62,725.58
9175869	Conduct frost risk management field trials	\$45,313.12
9176054	Optimising timing and rate of nitrogen application in waterlogging conditions in the Esperance port zone	\$25,570.00
9176145	Frost risk management	\$323,026.50
9176293	Frost risk management 2017-19	\$160,792.00
9176469	Frost treatment	\$250,000.00
9014079	Managed Environment Facility (MEF) - Merredin	\$205,000.00
9014128	National Managed Environment Facility: Narrabri	\$166,706.50
9088813	Better irrigated wheat germplasm	\$170,000.00
9100814	Photosynthesis traits for raising wheat yield potential	-\$112,500.00
9100907	The generation of wheat cultivars with improved drought tolerance	\$68,582.00
9106800	Maintaining wheat grain number under reproductive-stage drought conditions	\$150,000.00
9111803	Delivery of wheat root traits that contribute to water limited yield stability	\$128,050.00
9112821	Raising water productivity: Trait assessment for Australian rainfed wheat	\$120,000.00
9112981	Pre-emptive chickpea pre-breeding for biotic stresses and germplasm enhancement	\$105,000.00
9112982	Focused improvement of ICARDA/Australian durum germplasm for abiotic tolerance	\$33,348.00
9148982	Hyperyielding cereals - a feedgrain initiative	\$280,000.00
9149050	Validation trials for dwarfing genes, vigour x management interactions, and preliminary assessment of rate of grain-filling	\$160,000.00
9162798	Using next generation approaches to exploit phenotypic variation in photosynthetic efficiency to increase wheat yield	-\$47,884.75
9168797	A national approach to improving heat tolerance in wheat through more efficient carbon allocation	\$300,000.00
9169799	Introgression of heat-tolerant genes to broaden genetic variation in current wheat breeding populations	\$704,275.00
9172860	An integrated platform for rapid genetic gain in pulse crops	\$949,025.00
9173801	Pulse Breeding Australia (Chickpea)	\$650,000.00
9174824	Grains Industry Research Scholarship - Roles of dual water:ion aquaporins in cereal osmotic stress response	\$27,240.00
9175117	Achieving stable and high canola yield across the rainfall zones of WA	\$420,000.00
9175259	ARC Research Hub for Legumes for Sustainable Agriculture	\$1,000,000.00
9175308	Growing profitable irrigated durum wheat	\$3,000.00
9175312	Increasing carbon capture by optimising canopy resource distribution	\$48,152.00
9175421	National Soybean Breeding Program 2017 to 2019	\$500,000.00
9175478	Pulse Breeding Australia: Lentil	\$1,291,000.00
9175488	The 10 Genome Wheat Sequencing Consortium	\$26,500.00
9175746	Improving chickpea adoption to environmental challenges in Australia and India	\$97,879.00
9175781	Grains Industry Research Scholarship - UMU: Exploring sugar metabolism in bread wheat for improving drought tolerance	-\$4,841.00
9175799	Future Durum Breeding	\$1,250,025.00
9175868	Conduct frost risk management field trials	\$126,556.00
9176041	Halving the \$90m of canola harvest losses in Western Australia	\$14,000.00
9176507	Improved genetic gain through GRDC participation in Barley Pan-genome Consortium	\$218,775.00
9176626	Post-Doctoral Fellowship - Improving root growth in dispersive soils	\$161,765.00
9176730	Accelerating wheat genetic gain by establishing a high-throughput spike phenotyping platform	\$85,100.00
9176855	Rooty: A root ideotype toolbox to support improved wheat yields	\$61,100.00
9176880	Optimising canola production in diverse australian growing environments	\$394,816.00
9176891	Herbicide behaviour workshops for the Australian Grains Industry	\$196,403.00
9176986	Next generation plant breeding: integrating genomic selection and high throughput phenotyping to enhance genetic gain in sorghum and mungbeans	\$46,294.00
9177055	Capturing global diversity and international genetic gains of wheat and barley	\$322,423.00
9177142	Post-doctoral Fellowship - Enhancing genomic prediction for sorghum to deal with genotype-by-environment interactions for yield	\$100,000.00
9177346	Post-Doctoral Fellowship: Photosynthetic acclimation to high temperature in wheat	\$34,991.00
9177372	Investment in WA-focused linseed agronomy	\$65,000.00
9177407	Post-Doctoral Fellowship: Minimising the impact of high temperature at flowering on spikelet fertility	\$105,160.00
9177440	Update GRDC adjuvants booklet	\$19,510.00
9149077	Wodjil Workout - Rise of the pH	\$15,000.00

Project code	Title	2018-19 expenditure
9170805	Developing farming systems for the Low Rainfall Zone of Western Australia	\$649,340.00
9175608	Provide technical expertise and strategic oversight to a series of GRDC investment planning meetings in tactical agronomy for the western region	\$2,200.00
9175609	NSW DPI Bilateral agreement - Winter agronomy	\$2,500,000.00
9176395	Optimising mungbean yield in the northern region - Mungbean physiology	\$203,133.00
9176605	Post-doctoral Fellowship - Crop lower limit: Root water extraction responses to soil properties as key to variability in Plant Available Water Capacity	\$132,459.00
9176607	Development, characterisation and incorporation of novel herbicide tolerance traits in pulse crops	\$563,021.00
9176656	Managing early season canola establishment pests in New South Wales – Development of technical content	\$100,000.00
9176658	Post-doctoral Fellowship - Interfacing crop improvement and agronomy/ nutrition programs	\$179,419.00
9176670	Optimising sorghum yield through agronomic management	\$650,000.00
9176681	Managing weeds in the GRDC Northern grains region – Co-ordination of workshop material; and establishment and monitoring of regional focus paddocks	\$122,465.00
9176683	Managing early season canola pests in New South Wales - Establishment and coordination of grower/ advisor groups	\$103,000.00
9176709	RuralFocus radio interviews	\$10,400.00
9176715	Soil constraints - West Steering Committee	\$3,760.60
9176739	Providing support to Manager NVT - West	\$24,620.00
9176743	Pulse Check - local extension and communication for profitable pulse production in coast and tablelands	\$99,280.00
9176746	Review to evaluate the performance, delivery and effectiveness of the research partnership "Building crop protection and production agronomy R&D capacity in regional Western Australia"	\$16,500.00
9176753	Pulse Check – local extension and communication for profitable pulse production in South West NSW	\$99,818.00
9176754	The provision of services: North Central QLD and South Central QLD	\$118,041.00
9176758	Pulse Check- local extension and communication for profitable pulse production in North West NSW	\$97,435.00
9176760	Pulse Check - local extension and communication for profitable pulse production in North East NSW	\$97,435.00
9176761	Pulse Check – local extension and communication for profitable pulse production in Central QLD	\$97,435.00
9176762	Services agreement	\$173,920.00
9176763	Pulse Check – local extension and communication for profitable pulse production in Liverpool Plains	\$99,936.00
9176764	Pulse Check – local extension and communication for profitable pulse production in Central East NSW	\$99,560.00
9176766	Pulse Check – local extension and communication for profitable pulse production in Eastern Downs QLD	\$100,000.00
9176767	Pulse Check – local extension and communication for profitable pulse production in Western Downs QLD	\$100,000.00
9176768	Pulse Check – local extension and communication for profitable pulse production in South East NSW	\$100,000.00
9176787	National Oat Breeding Program	\$985,000.00
9176811	Attend Mingenew Expo on behalf of GRDC	\$3,949.44
9176853	Western Cropping Systems Initiative project development support	\$9,900.00
9177032	Investigating phenology diversity in germplasm to optimise profitability from April sown oats	\$75,000.00
9177115	Identification, surveillance and advisory platform for management of grains pests	\$375,220.00
9177146	The adaption of pulses (chickpea and lentil) across the northern grains region.	\$192,802.00
9177237	Towards Effective Control of Blackleg of Canola: Coordinating international blackleg research and development	\$170,000.00
9177254	Towards Effective Control of Blackleg of Canola: Identification of novel sources of blackleg resistance genes	\$400,000.00
9177286	Multi-species DNA chip platform - A resource for pulse genetic improvement	\$450,000.00
9177300	Towards Effective Control of Blackleg of Canola : Canola infrastructure and FFS	\$500,000.00
9177443	Improving canola heat tolerance - a coordinated multidisciplinary approach	\$600,000.00
9177492	Using long season wheats for increases in profits and grazing opportunities	\$10,000.00
9177534	NVT protocol development	\$36,120.00
9063829	Management of barley and barley cultivars in Western Australia	\$600,000.00
9112813	Sorghum core pre-breeding program	\$640,000.00
9112906	Maintaining a barley pre-breeding capability in Queensland	\$213,144.00
9112929	Development of lupin molecular markers	\$300,000.00
9112992	Trait discovery in wild barley using the nested-association mapping population HE	\$206,000.00
9112999	Manipulating barley phenology to maximise yield potential	\$300,000.00
9134806	National paddock survey initiative	\$45,000.00
9134830	Assessing collections of wild chickpea relatives for resistance to root-lesion nematodes	\$149,771.00
9134852	Northern Farming Systems - integrating research solutions for profitable outcome	\$600,000.00
9134907	Optimised canola profitability	\$853,114.00
9148896	Tactical wheat agronomy for the west	\$823,816.00
9149049	Australian Peanut Breeding program	\$380,000.00
9149071	Program leader environment for National Frost Initiative	-\$5,000.00
9166801	Screening of frost tolerance in cereals	\$851,413.00
9169803	Improving yield by optimising energy use efficiency	\$412,944.00
9169805	AVP1, PSTOL1 and NAS - Three high-value genes for higher wheat yield - International Wheat Yield Partnership	\$154,731.75
9170799	Services agreement	\$470,244.60
9170800	Identification of wheat frost tolerance loci using a combination of genetics, biochemistry and molecular approaches	\$385,994.00
9170801	Services agreement 2015/16 - 2018/19	\$185,682.44
9170802	Services agreement 2015/16 - 2018/19	\$200,780.41
9170803	Services agreement 2015/16- 2018/19	\$13,900.00
9170835	Services agreement	\$433,900.22
9170843	Services agreement	\$1,174,284.68
9170844	Services agreement	\$956,286.12
9172797	Services agreement	\$89,856.20
9172798	Pulse Breeding Australia: Faba bean breeding	\$999,750.00
9172833	Soil Constraints-West Steering Committee	-\$1,800.00
9174980	Grains Industry Research Scholarship: Investigating the potential for improving grain yield through enhanced stress recovery	\$29,716.00
9175069	Development of crop management packages for early sown, slow developing wheats in the southern region	\$495,405.00
9175150	Improving farming system efficiency in southern NSW	\$645,000.00
9175219	Optimising crop nutrition (phosphorus and sulphur) in lupins and canola in the southern region of New South Wales	\$10,000.00
9175247	Maintenance of grain plumpness and transfer of heat tolerance into Australian barley germplasm	\$550,000.00
9175420	Australian National Vetch Breeding Program	\$485,000.00
9175477	Pulse Breeding Australia: Field pea breeding	\$1,411,200.00
9175503	National Mung Bean Improvement Program	\$470,000.00
9175593	Optimised canola profitability: understanding the relationship between physiology and tactical agronomy management	\$309,637.00
9175749	Positioning the soil wetting agent technology for commercial success	\$25,000.00
9175755	Services agreement 2017/2018	\$33,970.90
9175766	Services agreement 2015/16 -2018/19	\$2,296,355.63
9175803	Capacity building to understand plant energy efficiency in harsh environments	\$200,000.00
9175826	Coordinator of Pulse Breeding Australia (PBA)	\$29,892.85
9175938	Regional Agronomy SA – integrated farming systems in the Medium Rainfall Zone	\$288,251.00
9176038	Better sorghum: larger grain with more protein	\$231,310.00
9176058	Review of seeding systems that provide improved crop establishment for growers in the western region	\$20,000.00
9176093	PulseBio project 3: stable grain yield in pulses through improved stress tolerance (P3)	\$506,280.00
9176098	Yardstick demonstrations for the Albany and Esperance port zones	\$40,000.00
9176124	Optimising mungbean yields - Determining factors contributing to yield gap in mungbean in the northern region	\$9,015.00
9176126	Optimising mungbean yields - Determining factors contributing to yield gap in mungbeans in the northern region	\$4,470.00
9176134	Optimising plant establishment, density and spacings to maximise crop yield and profit in the southern and western regions	\$192,791.00
9176138	Optimising timing and rate of nitrogen application in waterlogging conditions in the western region	\$26,150.00
9176141	Yardstick demonstrations for the Geraldton port zone, Western Australia	\$62,000.00
9176146	Simple identification of on-farm lime sources in the western region	\$6,250.00
9176156	Summer cropping demonstrations in the western region	\$40,000.00
9176161	Summer cropping demonstrations in the Esperance port zone	\$43,000.00
9176166	Ripper gauge demonstration sites - Esperance port zone	\$20,000.00
9176336	Services agreement	\$22,199.94
9176447	Optimising mungbean yield in the northern region - mungbean agronomy	\$256,000.00
9176603	Yardstick demonstrations for the Kwinana West and Kwinana East port zones	\$25,560.00
9176608	Improving grower profits through longer season wheat crops	\$80,000.00
9176622	Lupin Breeders Toolbox - A resource for lupin genetic improvement	\$399,225.00
9176639	Licence and support contract – NVT online website support and maintenance	\$80,324.34
9176701	Services agreement	\$561,000.00
9176707	Development of the Western grains industry background document	\$3,300.00
9176716	National Phenology Initiative	\$719,119.50

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9176720	Attendance at annual meeting of ARC Research Hub Legumes for Sustainable Agriculture	\$4,426.74
9176722	NVT-SAGI services agreement	\$190,000.00
9176733	Services agreement	\$166,260.00
9176735	Common seed 'bulk-up' to provide seed for all relevant GRDC research investments	\$159,634.44
9176879	Grains Industry Research Scholarship - Determining the genetic control of grain size and heat stress tolerance during flowering in barley	\$11,899.00
9177001	Optimising profitability of high rainfall zone farming systems-survey, farmer-scale demonstration trials and field days	\$20,000.00
9177079	GRDC Research Update series - Northern Region	\$176,130.00
9177140	Planning & facilitation of workshops and assistance in the development of KIT 1.5 investment strategy	\$16,500.00
9177255	Services agreement	\$352,550.25
9177275	GRDC Grains Research Updates western region	\$326,250.00
9177320	Research and extension programme at SA Crop Technology Centre	\$10,000.00
9177451	Services agreement	\$20,279.70
9177505	Common seed 'bulk-up' to provide seed for all relevant GRDC research investments	\$185,400.00
9177549	Facilitation of face-to-face workshops and assistance in the development and final review of KIT 1.9 strategy	\$3,300.00
9100845	Tactical break crop agronomy in Western Australia	\$1,200,000.00
9112907	Soil acidity is limiting grain yield	\$68,500.00
9113031	Application of CTF in the low rainfall zone	\$450,000.00
9113050	Subsoil constraints - understanding and management	\$930,000.00
9113052	Minimising the impact of soil compaction on crop yield	\$213,939.00
9113067	Delivering enhanced agronomic strategies for improved crop performance on water repellent soils in Western Australia	\$1,022,500.00
9148941	Innovative approaches to managing subsoil acidity in the southern grain region	\$679,893.00
9148965	Innovative approaches to managing subsoil acidity in the western region	\$880,107.00
9149036	Improving wheat yields on sodic, magnesic, and dispersive soils	\$1,125,151.90
9170834	Investigating double break (or stacked rotation) options	\$44,286.00
9172819	Soil Constraints-West Steering Committee	\$2,443.20
9172823	Increasing production on sandy soils in low and medium rainfall areas of the southern region	\$1,412,471.00
9172828	Chairman of the GRDC Soil Constraints West Committee	\$17,488.80
9172846	Soil Constraints-West Steering Committee*	\$2,830.27
9172849	Understanding how waterlogging affects water and nitrogen use by wheat	\$234,539.00
9172850	Spatial variability of soil acidity and response to liming in cropped lands	\$191,893.00
9172858	TWC00002 - Soil Constraints-West Steering Committee*	\$2,966.00
9172859	Soil Constraints-West Steering Committee	\$1,398.00
9175104	Best bet management of ameliorated non-wetting soils for the Geraldton port zones	\$24,429.00
9175135	Validating recent research on break crop options in the low rainfall zone to determine the best options for the different climate, soil type and biotic stress situations	\$70,000.00
9175222	Improving sustainable productivity and profitability of Mallee farming systems with a focus on soil improvements	\$346,686.00
9175228	Grains Industry Research Scholarship: (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	\$7,347.00
9175237	Impact of N placement and timing on crop yield and ryegrass population	\$3,000.00
9175283	Quantifying the effectiveness of cover crops as a means of increased water infiltration and reduced evaporation in the northern region	\$500,000.00
9175342	Improved Adaption of Barley to Acid Soils	\$558,800.00
9175379	Overcoming constraints to profitable cropping on forest gravel soils of the western region	\$50,000.00
9175454	Optimising whole-farm water use efficiency and risk using whole farm bioeconomics - Postdoctoral Fellow	\$34,464.00
9175888	Economics of ameliorating soil constraints in the northern region: Economics of adoption	\$107,215.00
9175927	Economics of ameliorating soil constraints in the northern region: Spatial soil constraint diagnoses	\$197,000.00
9175930	Economics of ameliorating soil constraints in the northern region: Program co-ordination – communication, extension and evaluation	\$141,846.00
9175934	Economics of ameliorating soil constraints in the northern region: Soil constraint management and amelioration	\$742,266.79
9176012	Tactics for improving rooting depth and crop yield on sodic soils	\$5,000.00
9176014	Incorporating lime to depth in duplex wheatbelt soils	\$18,875.00
9176069	Soil Quality iBook	\$30,000.00
9176088	Seeding systems to improve cereal crop establishment on heavy textured soils	\$24,400.00
9176102	Demonstrating the benefits of soil amelioration and controlled traffic practices across a broad range of soil types in Western Australia.	\$63,724.00
9176109	Ripper gauge demonstration sites Albany port zone	\$20,000.00
9176147	Tactics to improve crop establishment in a drying soil profile in the western region	\$30,000.00
9176490	Post-doctoral Fellowship - Managing soil constraints with on-row seeding systems for the Low Rainfall Zone	\$91,060.00
9176525	Tailoring an integrated solution to effectively address subsoil constraints by incorporation of chemically-balanced nano-amendments	\$100,000.00
9176547	Biosolids to overcome subsoils constraints in the Victorian grain growing soils	\$55,502.00
9176574	High work rate 'plough and sow' technology for farm-scale sandy soil amelioration	\$107,435.00
9176624	Post-doctoral fellowship – Understanding mechanisms of subsoil amelioration	\$109,696.00
9176704	Optimising mungbean yield in the northern region - Mungbean irrigation	\$50,000.00
9176921	Preserving Australia's rhizobial collections to benefit the Australian grains industry	\$331,184.70
9177030	Re-engineering soils to improve the access of crop root systems to water and nutrients stored in the subsoil	\$410,000.00
9177034	Increasing farming system profitability and longevity of benefits following soil amelioration	\$163,561.00
9177038	Increased grower profitability on soils with sodicity and transient salinity in the eastern grain belt of the western region	\$199,712.00
9177324	New knowledge and practices to address topsoil and subsurface acidity under minimum tillage cropping systems of South Australia	\$602,000.00
9177469	Improving production of grower retained open pollinated canola seed using agronomic management to increase establishment in the MRZ and LRZ of the Northern region.	\$132,500.00
9177479	Post-doctoral fellowship: Understanding causes of physical constraints in sandy soils and implications for targeted deep tillage	\$80,000.00
9177483	Ripper gauge - Demonstrating the impact of deep ripping timing	\$25,000.00
	<b>TOTAL</b>	<b>\$70,145,195.35</b>
<b>Objective 2 - Maintain and improve price</b>		
9175152	Omega3 canola collaborative research project	\$49,636.25
9175846	Sorghum in the 21st Century: Food, Feed and Fuel for a Rapidly Changing World	\$1,000.00
9176866	Improving industry intelligence for the GRDC and grains industry	\$108,000.00
9176928	Review and analysis of the Australian oat industry, including identification of potential market development opportunities	\$54,498.15
9177341	Australian Pulse opportunity analysis	\$162,000.00
9177569	Assessment of new opportunities to identify high-value or value-add crop products	\$62,689.54
9176061	Coordinate and facilitate the management of market access issues in a strategic and prioritised manner	\$300,000.00
9176712	Services	\$202,500.00
9167818	Strategic oversight and coordination of grain protection chemicals	\$110,400.00
9176434	Plant Biosecurity Research Initiative collaboration and Funding agreement	\$24,485.00
9176628	GLP residue study - Trifluralin residues in oats	\$35,310.00
9148823	Novel approaches against LMA - Knockout	\$230,567.00
9148825	Novel approaches against LMA	\$71,344.50
9149056	Genetic approaches to reduce the nitrogen dilution effect and increase nitrogen-use efficiency (NUE) in wheat	\$650,000.00
9175248	A Genetic x Environment characterization of the risk for Late Maturity Alpha-amylase across the main wheat producing shires of Australia	\$75,000.00
9175250	Late maturity alpha-amylase:A molecular marker-based, high-throughput, precise screening protocol	\$350,000.00
9175280	Quantifying the value of pulse grains	\$343,316.00
9175292	Expanding options for sorghum- Food and distilling	\$280,000.00
9175825	Building capacity, skills and knowledge for the pulse industry in the southern region: Supporting expansion of high value pulses into new areas and ensuring sustained profitability of all key pulse crops in existing areas	\$761,326.22
9176452	Leveraging generic resources and associated data from Chickpea Feed the Future Innovation Lab in the US	\$95,000.00
9176818	Coordination of the LMA field risk projects	\$13,200.00
9176989	Grains Industry Research Scholarship: The application of FTIR to predict dough making properties of wheat flour	\$11,899.00
9177576	GRDC/ CRCNA Co-Funding agreement	\$600,000.00
9177031	High Value Pulses – Raising awareness, optimising yield and expanding the area of lentil, chickpea and faba bean in Western Australia	\$93,000.00
9113023	Collection, phenotyping and exploitation of wild Cicer genetic resources for chickpeas	\$531,264.00
9134862	CUR00024 - Genetics of wild germplasm, gene-pool expansion and integrated ASSD approach to enhance adaptive potential in chickpeas	\$796,065.00
9170797	Updated nutrient response curves in the northern and southern regions	\$1,091,870.00
9175172	IP sub-Licence and materials supply agreement - LMA	\$39,800.00
9175245	Barley grain defects	\$445,000.00
9175707	Australian Export Grain Innovation Centre (AEGIC)	\$2,500,000.00
9176050	National grain end point royalty reporting and analysis 2017/2018	\$67,500.00
9176077	Demonstrations of legume crops for reliable profitability in the Albany port zone	\$85,000.00
9176164	Demonstration of legume crops for profitability in the western region	\$150,000.00

Project code	Title	2018-19 expenditure
9176167	Legumes for profitability in the Esperance port zone	\$62,600.00
9176961	Grains Industry Research Scholarship - Identification and characterisation of barley (1,3;1,4)-β-Glucan mutants	\$11,899.00
9176987	Valorisation of sorghum biomass into sustainable, high-performance nanomaterials	\$11,899.00
9177088	Determination of residue of glyphosate in linseed following a single foliar application of glyphosate (as Weedmaster ARGO)	\$24,795.00
9134828	Identifying low pH tolerance and effective rhizobia for wild Cicer to improve adaptation to acid sandy soils	\$347,244.00
9176543	In field assessment of selected soil properties and plant N contents using IR spectroscopy	\$92,000.00
9177467	Accelerating Post-Entry Quarantine (PEQ) processing and delivery of first batch of wild-elite chickpea segregation population	\$77,672.03
<b>TOTAL</b>		<b>\$11,019,779.69</b>
<b>Objective 3 - Optimise input costs</b>		
9176081	NVT Services agreement - Roundup Ready testing	-\$5,788.72
9176947	National Resistance Monitoring for insect pests of stored grain	\$567,186.00
9097816	Application of the platform technology EzyCross to introduce Blackleg resistance from wild Brassica sp. into canola germplasm	-\$37,475.00
9176655	Evaluation of pesticide tank mix impacts on nozzle spray quality	\$41,000.00
9176756	Pulse Check – local extension and communication for profitable pulse production in Central West NSW	\$100,360.00
9176800	Snail & slug management forums in the Wimmera	\$7,000.00
9176931	The cost: benefit of irrigating crops under drought condition	\$53,760.00
9176937	Early and Effective Summer Weed Control: A workshop series for the WA grainbelt	\$92,500.00
9177074	Facilitated action learning groups to support profitable irrigated farming systems in the northern and southern regions.	\$120,000.00
9177245	Towards Effective Control of Blackleg of Canola Program 1: Disease epidemiology and management	\$400,000.00
9177249	Towards Effective Control of Blackleg of Canola: Phenotyping for Adult Plant Resistance (APR - Quantitative Resistance) in canola	\$350,000.00
9177262	Chaff lining workshop	\$4,600.00
9177277	Surface and sub-surface runoff systems and their relevance to crop management decision-making in southern coastal areas of WA	\$25,000.00
9177328	Post-doctoral Fellowship: A Model for Predicting Chickpea Ascochyta Blight Risk	\$42,451.00
9177330	Post-Doctoral Fellowship: Exploiting the Potential of a Novel Fungal Biofertiliser	\$98,398.50
9177340	New methods of snail control	\$83,741.00
9177347	High Rainfall Zone Workshops	\$5,000.00
9177350	'Golden Rules for Canola in the Kwinana East port zone' booklet	\$17,500.00
9177441	Managing Botrytis diseases in intensive pulse cropping systems	\$81,557.00
9177444	Hydrogen to ammonia research and development project	\$200,000.00
9177496	Validation and demonstration of decision-making tools for managing blackleg in canola in the western region	\$78,400.00
9177567	Optimising the profitability of high rainfall zone farming systems - survey, farmer-scale demonstration trials and field days	\$20,000.00
9162804	Building crop protection and production agronomy R&D capacity in regional Western Australia	\$1,785,000.00
9164804	Future Farm Theme 2 - Review phase: Intelligent decisions	-\$148,864.00
9176028	Opportunities for SMART surveillance for biotic threats in the Australian grains industry	\$38,125.00
9176335	Improved disease management in South Australian field crops through surveillance, diagnostics and epidemiology knowledge	\$254,328.00
9176339	Managing eyespot in intensive cereal, stubble retention farming systems in South Australia	\$188,039.00
9176343	Monitoring Diamondback Moth for forecasting and adaptive management of outbreak and insecticide resistance risk.	\$123,378.00
9176650	Managing Weeds in the GRDC Northern Grains Region - Development of technical content	\$48,209.00
9176968	Warm and cool season mixed cover cropping for sustainable farming systems in south eastern Australia	\$250,000.00
9100919	Profitable farming systems with retained stubble on Lower Eyre Peninsula	\$40.00
9177190	Non-wetting management options for growers in the Albany port zone	\$70,000.00
9177239	Optimising farm scale returns from irrigated grains: Maximising dollar return per megalitre of water	\$33,885.00
9176493	Future Farm Phase 2: Improving farmer confidence in targeted N management through automated sensing and decision support	\$1,903,026.00
9176534	Non-chemical Weed Control System - Integrated Harrington Seed Destructor accessibility expansion - Design for combine harvesters class 5 to 8	\$74,000.00
9100876	Proof of concept' for approaches designed at increasing disease resistance to fungal pathogens of canola	\$115,000.00
9100879	Improving grower surveillance, management, epidemiology knowledge and tools to manage cop disease - National chickpea pathology program	\$162,564.00
9100880	Improving grower surveillance, management, epidemiology knowledge and tools to manage crop disease - WA	\$678,101.00
9113006	Sorghum Midge Testing Scheme	\$17,795.00
9113058	Push notifications to enable proactive management of pests, weeds and diseases	\$170,000.00
9143896	Delivery of improved invertebrate pest management in the Northern Grains region	\$549,117.00
9148893	Conventional insecticide resistance in Helicoverpa – monitoring, management and novel mitigation strategies in Bollgard iii	\$41,733.00
9148923	Emerging weeds (Seed-bank biology of emerging weeds)	\$610,656.00
9148933	New knowledge to improve the timing of pest management decisions in grain crops	\$459,923.00
9148936	New uses for existing chemistry	\$239,991.00
9148942	Surveillance of herbicide resistant weeds in Australian grain cropping	\$300,039.00
9148953	National Pest Information Service (NPIS)	\$294,809.00
9163815	Insecticide resistance management in RLEM and chemical sensitivities	\$503,525.00
9166833	Biology and management of snails and slugs in grain crops	\$398,516.00
9167816	Locally Important Weeds	\$199,706.00
9174869	Grains Industry Research Scholarship - Adult plant resistance and pathogen virulence in blackleg disease of canola	\$29,716.00
9175115	Harvest weed seed control for the southern region	\$80,435.00
9175131	Understanding or evaluating the effectiveness of fungicides to manage Septoria (STB) and leaf rust	\$138,893.00
9175134	Cultural management for weed control and maintenance of crop yield	\$702,851.00
9175163	National Crown rot epidemiology and management program	\$631,372.00
9175164	Improving grower surveillance, management epidemiology knowledge and tools to manage crop disease	\$545,824.00
9175173	National nematode epidemiology and management program	\$813,127.00
9175199	Herbicide Innovation Partnership	\$9,000,000.00
9175220	Regional Agronomy SA - Improving disease management through improved agronomic practices	\$300,752.00
9175221	Regional Agronomy SA - Improving weed management in high break crop intensity farming systems	\$340,561.00
9175231	Centre for crop and disease management	\$5,976,321.00
9175260	Innovative crop weed control for northern region cropping systems	\$2,049,713.00
9175285	CSIRO snail biocontrol revisited – Phase 2	\$449,376.00
9175353	Mid-row banding nitrogen in a post-rice crop	\$10,000.00
9175355	Control of snails and slugs: New products for snail and slug control - Biological control of slugs using ciliate protozoa	\$417,515.25
9175448	Australian Cereal Rust Control Program - Continued monitoring of cereal rust pathogens in Australia	\$539,663.72
9175637	Agvet #041 Grant agreement Follow Grains - Priority Use - Imtrade	\$4,437.65
9175817	Endophytes for insect management in cereals	\$490,000.00
9175870	Grains Industry Research Scholarship - Protecting the Australian pulse industries from Diamondback Moth infestations	\$35,312.00
9175903	RnD4Profit - New biocontrol solutions for sustainable management of weed impacts to agricultural productivity	\$125,000.00
9175919	Feasibility of managing high cereal stubble loads at seeding through innovative residue cutting in the southern region	\$10,000.00
9176067	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
9176079	A 'focus farms' study to optimize weed resistance management practices in Western Australia	\$17,942.00
9176105	Snails, slugs and slaters in Western Australia: case studies of growers in WA's southern coastal region	\$40,000.00
9176110	Chafflining in the Geraldton port zone - a new, cost effective harvest weed seed control tool	\$12,500.00
9176191	Supporting the sustainable use of insecticides and local on-farm implementation of integrated pest management strategies in the GRDC southern region	\$250,000.00
9176455	Improved surveillance and management options for mice in crops	\$243,786.20
9176457	Determining the effectiveness of zinc phosphide rodenticide bait in the presence of alternative food supply	\$89,796.02
9176485	Improving Plant Pest Management Through Cross Industry Deployment of Smart Sensor, Diagnostics and Forecasting	\$375,000.00
9176496	A simple and innovative test for real-time detection of resistance in weeds	\$45,000.00
9176500	Increasing the effectiveness of nitrogen fixation in pulse crops through development of improved rhizobial strains, inoculation and crop management practices	\$115,259.00
9176535	Russian Wheat Aphid Risk Assessment and Regional Thresholds	\$761,403.00
9176601	More nitrogen from pulse crops for growers in the southern region	\$158,862.00
9176664	Post-doctoral Fellowship - When are earwigs pests and when are they beneficial?	\$178,200.00
9176713	Understanding mouse biology and ecology in zero- and no-till cropping systems to inform best practice crop production and mouse management practices	\$613,545.00
9176737	GRDC Communities - field crop diseases	\$120,000.00
9177236	Australian Fungicide Resistance Extension Network (AFREN): fungicide resistance management targeted at regional level	\$300,000.00
9100806	Australian Wheat and Barley Molecular Marker Program - Genetic Analysis	\$500,000.00
9100878	National Canola Pathology Program including new molecular knowledge, pathogen evolution and control technologies	\$1,256,961.00
9100893	National Barley Foliar Pathogen Variety Improvement Program (NBPVPIP)	\$575,000.00
9112863	Genetically improving wheat's ability to outcompete weeds	\$380,000.00
9145796	Improved genetic solutions for management of yellow spot in wheat	\$397,194.00

Project code	Title	2018-19 expenditure
9148796	Effective genetic control of Stagonospora nodorum blotch	\$393,500.00
9148808	Development of gene deployment strategies: using evolutionary principles to optimise the development of genetic resistance in crops	\$350,000.00
9149053	Molecular markers for root hair traits and enhanced phosphorus use efficiency (PUE) in wheat	\$878,662.00
9174916	Grains Industry Research Scholarship - F. graminearum cell wall	\$29,716.00
9175149	Managing crop diseases - Improving crown rot resistance in durum	\$115,000.00
9175176	Identification and utilization of novel sources of resistance to crown rot and the root lesion nematodes in adapted spring and durum wheat	\$71,000.00
9175255	Development of tools to accelerate nematode resistance gene deployment	\$275,000.00
9175257	Integrated Genetic Solutions to Crown Rot in Wheat	\$1,246,245.50
9175261	Genetic control of nematode species affecting major crops - Germplasm enhancement for nematode control in cereals and pulses	\$572,666.00
9175262	Effective control of barley yellow dwarf virus (BYDV) in wheat	\$300,000.00
9175583	Australian Herbicide Resistance Initiative - Phase 5	\$1,000,000.00
9175880	Grains Industry Research Scholarship - Evolution and management of Group J resistance in annual ryegrass (Lolium rigidum)	\$35,545.00
9175890	Grains Industry Research Scholarship - Extent, distribution and management of herbicide resistant common sowthistle and prickly lettuce in lentils	\$35,312.00
9175899	Grains Industry Research Scholarship - Understanding Invasiveness of Wild Oat in - Wheat Production under Drought and Heat Stress in Conservation Agriculture	\$35,312.00
9175910	Grains Industry Research Scholarship - Hyperspectral Data for Estimating Crop Leaf Biochemistry	\$19,882.00
9175952	Australian Cereal Rust Control Program -Wheat and barley breeding support	\$213,396.61
9175962	Low weed seed bank persistence under sustained integrated weed management	\$175,104.00
9175981	Australian Cereal Rust Control Program - Novel sources of stem rust resistance from uncultivated wild relatives of wheat	\$249,595.00
9176010	Australian Cereal Rust Control Program (ACRCP): Delivering genetic tools and knowledge required to breed wheat and barley with resistance to leaf rust, stripe rust and stem rust	\$1,775,602.00
9176057	Australian Cereal Rust Control Program (ACRCP): Delivering genetic tools and knowledge required to breed wheat and barley with resistance to leaf rust, stripe rust and stem rust	\$1,193,145.52
9176589	Canola pre-breeding investment	\$30,500.00
9176702	Improving Australian malt barley flavour to address Chinese brewing requirements	\$381,846.00
9176776	Coordination of Genetic Control of Crown Rot and Nematode Projects	\$37,001.96
9176923	Localised barley grass seed collection for subsequent herbicide resistance testing in low rainfall farming systems	\$23,850.00
9176934	Grains Industry Research Scholarship - Extracellular vesicles from Zygoesporia tritici: investigating the non-classical secretion of pathogenicity factors by a fungal wheat pathogen	\$11,899.00
9176958	Post Doctoral Fellowship -Maximising crops and minimising weeds with smart phase farming	\$108,000.00
9176977	Grains Industry Research Scholarship - Development of herbicide cocktails with a novel mode of action for circumventing resistance mechanisms	\$11,899.00
9176981	Demonstrating and validating the implementation of integrated weed management strategies to control barley grass in the low rainfall zone farming systems	\$163,407.00
9177137	Validation of spray droplet movement under different surface air inversion conditions	\$146,000.00
9177279	Pilot workshops - why weeds grow where they do and how to control them	\$200,000.00
9177410	Durum Crown Rot benchmarking for improved grower access to durum varieties with greater Crown Rot resistance	\$200,761.00
9177430	Virtual fencing for better crop integrated weed management	\$23,385.00
9134831	Mechanisms of Weed Suppression By Early Vigour and Other Novel Wheat Genotypes	\$7,250.00
9175263	Emerging foliar diseases of canola	\$170,000.00
9175787	Development of a New Rodenticide	\$50,000.00
9176684	Post-doctoral Fellowship - An integrative approach towards sustainable management of sorghum stalk rot in the GRDC northern region	\$92,978.00
9176775	Wild Oats Tips and Tactics	\$6,458.75
9176799	nitrogen management workshop	\$6,161.00
9176867	Improved data services to enable optimal investment decisions	\$115,165.73
9177186	Survey of vertebrate and invertebrate pests and beneficials harbouring in harvest weed-seed control systems	\$17,700.00
9177205	Survey Of The Summer/Autumn Brassica Refuges For Diamondback Moth In The western region To Predict Early Season Risk Of Infestation	\$120,150.00
9177280	Novel suppression and resistance management of invertebrate pests	\$544,997.00
9177427	Understanding the fertiliser innovation landscape: organisations and companies conducting fertiliser research, development and approaches to enhancing fertiliser technologies with potential to benefit Australian grain growers	\$30,000.00
9100849	Services agreement	\$51,840.00
9111833	Services agreement	\$80,074.00
9112819	Services agreement	\$284,087.00
9112820	Services agreement	\$107,675.50
9112835	Services agreement	\$129,102.00
9112851	Services agreement	\$81,000.00
9112852	Services agreement	\$29,036.00
9134802	Yield loss response curves for host resistance to leaf, crown and root diseases	\$950,000.00
9134814	Development of Yield Response Curves for cereal foliar and root and crown pathogens	\$36,000.00
9148797	Cereal and pulse cultivar resistance ratings for the southern region	\$271,763.00
9148922	Grain Weeds Advisory Committee	\$150,000.00
9148937	Mechanisms, evolution and inheritance of resistance	\$299,745.40
9161830	Developing and Applying an Equilibrium Displacement Model (EDM)	\$45,108.00
9170845	Genetic solution to crown rot in barley	\$260,183.00
9175113	Economic thresholds for the major pests reducing profitability in the Australian grains industry	\$145,900.00
9175174	Assessment of N and water co-limitations by remote sensing as a tool to improve wheat and canola profitability and manage risk	\$378,994.00
9175253	Accelerating the utilisation and deployment of durable adult plant resistance to leaf rust in barley	\$199,079.00
9175254	Development of genetic tools for Australian barley crops against leaf rust	\$599,615.19
9175616	NSW DPI Bilateral agreement - Winter Pathology	\$2,458,800.00
9175633	Agvet #045 Grant agreement-Mungbeans-powdery mildew-Priority Use-Adama	\$22,317.00
9175635	Agvet #044 Grant agreement -Adzuki beans/Mungbeans -Mites-Priority Use-Adama	\$50,728.00
9175849	Pathways to Registration - Minor Use	\$213,221.00
9175942	Grains Industry Research Scholarship - Common rust of maize	\$35,312.00
9175959	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.	\$1,252,990.00
9175960	GRDC Research Scholarship - Genome-wide identification of disease resistance genes in the Brassicaceae and characterisation of their DNA methylation status in Brassica napus	\$35,312.00
9176016	Improving crop emergence through the better use of seeding technologies.	\$9,040.00
9176017	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).	\$1,022,246.00
9176023	Return on investment for using drones to monitor growth patterns in broadacre cropping in Western Australia	\$8,000.00
9176121	PulseBio 4: Biosecure pulse seeds	\$135,575.00
9176123	Assessing the economic value of precision agricultural tools for grain farming businesses in the southern region	\$109,300.00
9176151	Making lupins profitable again in the northern wheatbelt of the western region	\$17,300.00
9176152	Best practice glyphosate use for Esperance port zone growers	\$10,000.00
9176190	Practical and applied workshops and communications to promote key messages and resources to maximise the effectiveness of spray applications in the southern region	\$54,018.00
9176489	Intelligent robotic non-chemical weeding	\$485,130.00
9176530	Applying technology solutions for improved frost detection, diagnostics and precision management decisions	\$40,000.00
9176604	Using soil and plant testing data to better inform nutrient management and optimise fertiliser investments for grain growers in the southern region	\$369,890.00
9176685	Agvet R2#006 Grant agreement - field peas x silver grass - priority Use	\$24,237.10
9176689	Agvet R2#007 Grant agreement - lentils x grass weeds & lentils x broadleaf weeds - Priority Use	\$38,148.30
9176690	Agvet R2#008 Grant agreement - lupins x wild radish & other broadleaf weeds - priority use	\$5,142.90
9176694	Agvet R2#009 Grant agreement - mung beans x grass weeds & mung beans x broadleaf weeds - priority use	-\$24,493.70
9176695	Agvet R2#010 Grant agreement -oats x grasses and broadleaf weeds - priority use	-\$2,413.00
9176705	Making Better Fertiliser Decision for Cropping Systems in Australia, phase 3	\$77,000.00
9177015	Analysis of NVT Pathology investments prior to reinvestment proposal	\$37,421.14
9177023	Assist in the development of KIT 3.1	\$5,031.30
9177085	Oat Master Herbicide; post-emergent late season control of wild oat in chickpea	\$30,000.00
9177096	Titan Azoxystrobin Extra Fungicide: for the use on chickpea and lentil	\$37,111.82
9177098	Provision of Good Lab Practise (GLP) residue analysis for halsulfuron-methyl in soybean plant samples	\$30,650.00
9177151	Upskilling Tasmanian growers and advisors to manage annual ryegrass through exposure to external knowledge and peer-to-peer learning	\$13,000.00
9177337	Frost communication audit	\$16,007.50
9177379	Integrated weed management of herbicide resistant annual ryegrass at Lake Bolac	\$20,000.00
9177386	Herbicide options for the management of emerging summer grass weeds in winter cereals	\$35,000.00
9177488	Glyphosate use in barley, for pre-harvest desiccation and spray topping of weeds.	\$32,365.00

Project code	Title	2018-19 expenditure
9052947	Regional soil testing guidelines for the northern grains region	\$560,000.00
9148834	Evaluating testing methods for phosphorus and potassium soil reserves	\$25,250.00
9148852	Deep placement of nutrients	\$230,870.25
9174953	Grains Industry Research Scholarship - A data based approach to diagnosis and management of yield variability attributed to soil constraints	\$19,811.00
9175189	Improving N fixation in lentils	\$42,000.00
9175481	Methods to predict plant available water capacity (PAWC)	\$450,000.00
9175500	Fertiliser form and soil interactions when applied in high concentration bands – Post-doctoral fellow	\$25,000.00
9175532	Improved sampling methods to better predict nutrient availability and supply for soils in the western region	\$132,352.34
9175716	Nutrient re-distribution and availability in ameliorated and cultivated soils in the western region	\$548,308.00
9175970	Grains Industry Research Scholarship - Optimising crop predicted and produced yield through an intuitive and cost effective decision support tool	\$35,545.00
9176494	Stealth Plow: mechanical control of hard to kill weeds with minimum soil disturbance	\$50,000.00
9176714	GRDC Communities - crop nutrition	\$120,000.00
9176876	Grains Industry Research Scholarship - Hyperspectral remote sensing of wheat crops for rapid assessment of effective nutrient status and improved crop growth model performance	\$11,899.00
9177363	Assist in Development of KIT 3.6 strategy	\$4,000.00
9177482	Increasing regional capacity in identification of crown root infection of Rhizoctonia in the low rainfall zone of the southern region	\$25,000.00
9177506	Investigating snail rollers to clean small conical snails out of barley and canola	\$20,000.00
<b>TOTAL</b>		<b>\$65,413,866.73</b>
<b>Objective 4 - Reduce post-farmgate costs</b>		
9176953	Market acceptance of adding SAS to grain to control insects	\$50,000.00
9149057	Improving on-farm grain storage management practices through technical training	\$600,000.00
9176003	Bagging Grain profits – technical assessment of the use of silo bags in the WA supply chain.	\$15,014.00
9176106	Australian Grains Genebank 2017-2022	\$1,452,259.00
9176721	Australian Grains Gene Banks (AGG) Capacity and Capability Enhancement - Infrastructure	\$1,000,000.00
9176881	From paddock to port: supply chain opportunities for central Queensland with the Port of Townsville (POT), Port of Mackay (North Queensland Bulk Ports Corporation) (NQBPC) and Gladstone Port Corporation (GPC)	\$7,500.00
9177170	Scoping Study: post farm gate transport & logistics	\$2,750.00
<b>TOTAL</b>		<b>\$3,127,523.00</b>
<b>Objective 5 - Manage risk to maximise profit and minimise losses</b>		
9100887	Improving grower surveillance, management, epidemiology knowledge and tools to manage crop disease in Victoria	\$500,000.00
9163814	Air inversion modelling to manage spray drift	\$169,198.00
9167811	Biosecurity preparedness for the grains industry	\$77,740.00
9176662	Spray Drift Awareness Workshops in the Maranoa	\$14,000.00
9175709	Conduct Frost Risk Management Field Trials	-\$109,619.00
9176862	Pulse Chemical Stewardship Program	\$78,000.00
9176935	Spray Drift Inversion Hazard System Program Coordination	\$53,488.72
9176973	Updating GRDC spray application resources	\$28,850.00
9176993	Updating Spray Application Resources	\$20,400.00
9176643	Risk Management in Australian Agriculture	\$17,400.00
9176969	A holistic approach to seep management for preventing land degradation in the landscape	\$100,000.00
9176971	Building the resilience and profitability of cropping and grazing farmers in the high rainfall zone of Southern Australia	\$100,000.00
9176634	Rural R&D for Profit: Forewarned is forearmed: managing the impacts of extreme climate events	\$50,000.00
9177503	Agronomic strategies for late breaking seasons	\$10,000.00
9176744	2018 Grower survey	\$125,290.00
9176788	Grower communications & extension Adelaide workshop	\$16,099.20
9176857	2018 Harvester fire workshops	\$72,432.00
9176026	Building grower capacity & knowledge in the development of farm business management strategy Farm Business Strategic Review Pilot - Grains, South Australia	\$10,000.00
9176117	Using seasonal forecast information and tools to manage risk and increase profitability in the southern region - Agriculture Victoria expands The Break	\$193,510.00
9176148	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	\$87,113.00
9176296	GRDC 'Opportunity for Profit' workshops	\$101,977.50
9176731	Farm Business Management Workshops for the western region	\$20,000.00
9177076	GRDC Farm Business Update series	\$346,987.00
9177288	Planning & facilitation of workshops and assistance in the development of KIT 5.2 investment strategy	\$21,920.00
9177398	Presentation at KIT 5.2 development (Sydney 21-3-2019)	\$2,615.92
9177475	2019 Grower survey	\$67,965.00
<b>TOTAL</b>		<b>\$2,175,367.34</b>
<b>Framework - Biosecurity</b>		
9176863	Disease epidemiology and management tools for Australian grain growers	\$634,067.00
<b>TOTAL</b>		<b>\$634,067.00</b>
<b>Framework - Capacity and Ability</b>		
9175407	Improving physical, mental and safe work environments for Australian grain growers	-\$1,198.18
9175652	USQ Glasshouses - Infrastructure	\$500,000.00
9175804	NSW DPI Bilateral Agreement	-\$894,495.00
9176332	Molecular Diagnostic Centre national disease surveillance	\$771,292.00
9176340	Ensuring long-term, applied, field-based cereal pathology and capability for South Australia	\$243,966.00
9176405	Ongoing delivery of Australian wheat classification	\$562,500.00
9176597	Conference Sponsorship - Innovation Generation	\$25,000.00
9176621	Conference Sponsorship: Crawford Fund Annual Development Conference 2018, 2019, 2020	\$10,000.00
9176865	Prepare finding discussion paper for AGIDG workshop	\$7,272.73
9177377	Services Agreement	\$237,331.80
9177387	Services Agreement	\$132,510.00
9177391	Services Agreement	\$157,012.50
9177392	Services Agreement	\$289,033.70
9177394	Services Agreement	\$101,670.00
9177396	Services Agreement	\$26,250.00
9177445	GRDC Emerging Leader Award - Felicity Harris	\$10,000.00
9177449	GRDC Recognising and Rewarding Excellence Award - Deb Slinger	\$18,750.00
9015504	Wheat Variety Classification Services	-\$100,000.00
9063819	Nuffield Australia Farming Scholarships*	\$121,500.00
9100796	Support of the Australian Glyphosate Sustainability Working Group	\$20,000.00
9110840	Science and Innovation Awards for Young People in Agriculture	\$45,454.54
9110841	The Horizon Scholarship	\$105,000.00
9134895	Building research capacity in the northern grains region - NSW	\$190,024.00
9134900	Building research capacity in the northern grains region - Queensland	\$474,613.00
9149004	APH zone expansion season 3	\$971.00
9149121	GRDC support for the Australian Rural Leadership Program (ARL00009)	\$100,000.00
9175076	WAFarmers Annual Conference "AgVersity"	-\$10,000.00
9175272	Australian Pastures Genebank	\$62,500.00
9175277	SARDI Bilateral Agreement	-\$412,858.00
9175465	State-of-the-art plant growth facilities dedicated to grains research	-\$54,127.00
9175489	Charles Sturt University Controlled Environments for Grains Research	\$0.02
9175497	State-of-the-art Automated Pipe Through the Bank irrigation layout	-\$2,545.40
9175502	CSIRO Storage building at Boorowa Agricultural Research Station	\$60,000.00
9175510	Grain Phenomics Climate Facility	\$120,000.00
9175658	Horizon Scholarships	\$100,000.00
9175704	Longerenong Agricultural College Victoria	\$21,000.00
9175705	Western Australian College of Agriculture	\$9,000.00
9175717	SAGI South Masters Scholarship Agreement	\$86,312.00
9175738	Tocal College Agricultural Training Awards	\$21,000.00
9175805	NSW DPI Bilateral Agreement	-\$321,213.00
9175892	People in Agriculture	\$28,000.00
9176325	Mentoring a new scientist to manage soilborne fungal diseases	\$224,652.00

Project code	Title	2018-19 expenditure
9176341	Ensuring long-term, applied, field-based cereal entomology and capability for South Australia.	\$190,286.00
9176599	Australian Grains Industry Conference 2018, 2019 & 2020 (AGIC)	\$15,000.00
9176600	Australian Universities Crops Competition (AUCC) 2018, 2019 & 2020	\$15,000.00
9176612	WISA Funds - Project Management Services: Grains Industry Good Project	\$82,047.99
9176647	Traineeship in Applied Grain Research	\$78,291.00
9176747	Follow the Farmer sponsorship	\$9,500.00
9176781	CWFS 2019 Women & Youth in Agriculture Conference	\$5,000.00
9176844	DAF Hermitage Research Facility Schools Plant Science Competition	\$3,750.00
9176887	USA Grower Study Tour	\$20,000.00
9176888	SCF Study Tour of Western Victoria and Tasmania	\$11,175.00
9176900	Bellata Farming Group Subcontinent Tour	\$30,000.00
9176902	Study Tour to the Third International Controlled Traffic Farming Conference	\$12,000.00
9176918	Elders Jamestown Tasmanian Study Tour	\$12,000.00
9177209	Wheat Breeding Assembly 2019	\$15,000.00
9177210	Australasian meeting of International Biometric Society	\$3,750.00
9177217	19th Australian Agronomy Conference	\$11,250.00
9177222	22nd Precision Agriculture Symposium	\$3,750.00
9177229	Grains: A Global Food Resource	\$3,750.00
9177241	ASF Seed Business 2019 Convention	\$2,250.00
9177333	Primary Industries Education Foundation of Australia (PIEFA) Partnership	\$37,500.00
9177343	Australian Grains Innovation Program – Capturing Innovation from Growers and non-traditional sources (Growers and Innovators)	\$55,000.00
9177487	GRDC Recognising and Rewarding Excellence Award - Southern Region	\$10,000.00
9177544	21st and 22nd Australasian Weeds Conference	\$5,000.00
<b>TOTAL</b>		<b>\$3,717,478.70</b>
<b>Framework - Data Management and Analytics</b>		
9175588	Statistics for the Australian Grains Industry - Northern Node	\$653,648.37
9175596	SAGI-STH: Southern regional node of Statistics for the Australian Grains Industry (SAGI)	\$868,442.00
9175128	Statistics for the Australian Grains Industry (SAGI): Western Node	\$724,534.00
9175585	SAGI: EsCargoT	\$370,575.27
9175589	SAGI3 Node Agreement Bioinformatics and Biometrics for the Australian Grains Industry	\$1,154,000.00
<b>TOTAL</b>		<b>\$3,771,199.64</b>
<b>Framework- Grower Communication and Extension</b>		
9149192	Build on existing experience and information in Australia on the use of cover crops	-\$3,250.00
9175543	Editing and Revision of Southern Region GrowNotes: Durum	-\$1,200.00
9176162	Grass-Roots Agronomy for Women in Farm Business	\$1,250.00
9176271	Mallee Sustainable Farming - Farming the Future Forum	\$5,000.00
9176770	Regional communication and extension support - South	\$1,800.00
9176771	Communication Support - North	\$12,140.00
9176774	Communication services	\$16,500.00
9176779	Online Final Reports	\$90,000.00
9176786	Regional communications and extension support - West	\$18,772.44
9176856	2018 Southern Spring Tour Support	\$10,000.00
9176896	Grower Study Trip - Southern Queensland, Northern NSW	\$11,500.00
9177411	Delivering Impact Publication	\$39,521.00
9177416	Storage and distribution of GRDC hard copy publications	\$50,037.89
9177484	Sorghum Crop Variety Guide – Production Management 2019	\$10,000.00
9177536	GRDC website improvements, support and hosting	\$134,000.00
9108842	Ground Cover Newspaper and Supplement	\$644,244.07
9112805	Warehouse and distribution of GRDC's publications, periodicals and promotional materials	-\$7,063.61
9143906	Improving practices & adoption through strengthening D & E capability & delivery	\$774,623.00
9148968	GRDC Research Updates – Northern Region	\$222,840.00
9148969	GRDC Business Updates - Northern Region	\$75,000.00
9148980	GRDC Grower Solutions- North	\$559,536.00
9148988	GRDC Research Updates - Southern Region	\$370,000.00
9148989	GRDC Farm Business Updates - Southern Region	\$402,500.00
9161805	GRDC Farm Business Updates Western Region	\$125,000.00
9161806	GRDC Grains Research Updates - Western Region	\$163,981.00
9164808	GRDC Grower Solutions Extension for the Northern Region (Central Queensland)	\$269,766.00
9175090	RCSN Facilitation and Coordination – Western Region	\$464,380.00
9175129	Regional Science Writers - Southern	-\$9,002.71
9175130	Coordination and Facilitation Services to the Grdc's Regional Cropping Solution Network (RCSN) in the Southern Region	\$442,089.00
9175140	Southern NSW Regional Cropping Solutions Technical Facilitator	\$167,500.00
9175158	Delivery of the 2017 and 2018 Sowing Guides	\$57,085.53
9175351	Victorian Winter Crop Summary Guides for 2016, 2017, 2018 and 2019	\$31,818.18
9175375	Maintenance and Enhancement of Existing Systems for Effective Delivery of GRDC Products and Information Services	-\$1,198.00
9175381	Maintenance and Enhancement of Existing Systems for Effective Delivery of GRDC Products and Information Services	-\$1,198.00
9175389	Growers Solutions project for Coastal/Hinterland Queensland and NSW North Coast	\$377,754.00
9175398	GRDC Grower Solutions - North	\$1,230,010.00
9175423	GRDC Online Farm Trials system – Phase 2	\$370,000.00
9175461	GRDC Communication Products and Services Market Research 2017 - 2019	\$203,000.00
9175582	Improving physical, mental and safe work environments for Australian grain growers	-\$1,198.00
9175685	Identification and sourcing of insect, crop nutrition and disease images for GRDC	\$6,000.00
9175689	Ongoing Updating and Maintenance of GRDC's Image Library	\$25,380.00
9175824	Open Ag technologies for Australian grain farms	\$28,805.20
9176177	GRDC branded publications	\$199,740.00
9176345	Provision of GroundCover Editorial Content	\$476,393.00
9176347	National, regional and local video and podcasts	\$488,073.06
9176366	Customer Relationship Management (CRM) database and campaign development	\$218,496.49
9176459	GRDC GroundCover Suite	\$1,042,534.62
9176476	Publications Library	\$21,925.00
9176734	GRDC Strategic Plan - Corporate Videos	\$12,200.00
9176736	GRDC Publications Audit	\$22,600.00
9176802	2019 Australian Summer Grains Conference	\$37,500.00
9176809	VFF Grains Conference	\$15,000.00
9176815	SADGA durum forums and crop walks	\$4,000.00
9176840	Agro Outlook	\$2,000.00
9177118	WA Farmers Annual Conference	\$10,000.00
9177122	Communication support services for the southern region	\$7,312.50
9177127	SEPWA Ladies Day	\$10,000.00
9177129	Groundcover – Fairfax Media News Now Training	\$48,217.48
9177133	Growing SA Conference 2019	\$7,500.00
9177149	2019 Australasia-Pacific Extension Network Conference - Extending Horizons: Extension's role in climate, rural industry, and community challenges.	\$4,500.00
9177188	CCA Cropping Solutions Seminar	\$500.00
9177195	2019 Tasmanian Agriculture Conference - Farming in Action	\$3,750.00
9177197	Growth Adoption Productivity and Profitability Young Farmer Conference	\$3,750.00
9177204	"Under Cover Downunder - Getting Fair Dinkum About Soil Health"	\$5,625.00
9177242	Northern Territory Agriculture - Pathways to Potential Field Days	\$7,500.00
9177264	Content for 2019 NVT Queensland Wheat, Barley and Chickpeas Variety Guide	\$18,500.00
9177274	NSW Farmers Conference	\$3,750.00
9177296	NSW Farmers Annual Conference 2019	\$11,250.00
9177298	Red Meat Updates	\$10,000.00
9177562	Australian Farmer of the Year Awards 2019	\$15,000.00
9176835	SANTFA conference	\$8,000.00
9177002	Discussion groups: managing drought conditions and planning for post drought recovery	\$32,280.00
9177010	Facilitated discussion groups: Managing Drought Conditions and planning for post drought recovery	\$49,980.00

Project code	Title	2018-19 expenditure
TOTAL		\$10,185,600.14
<b>Research Management costs</b>		
9176831	Precision Ag EXPOS	\$5,625.00
9177156	ANZ Smart Farm & Agtech Forum	\$14,400.00
9175459	Review of current QA services for legume inoculants and exploration of future options	-\$3,437.20
9175893	Adaptation of fast winter wheat genotypes to the Mediterranean semi-arid cropping regions of southern Australia	\$35,312.00
9176649	Gap Analysis Consultancy for Plant Growth Regulator (PGR)	-\$500.00
9176652	Licence and Support Contract – Crop Diseases Mobile Application	\$90,000.00
9113043	Exploitation of international grains in Australia: coordinated importation, quarantine and evaluation, data management and communication	\$58,219.00
9177472	Capacity-building: SAGI North and National University of Rosario, Argentina scholarships	\$68,650.00
9177535	Joint-RDC Community Trust Program	\$35,000.00
9176785	Australasian Plant Pathology Society Conference	\$11,250.00
9176833	World Congress on Oils and Fats 2020	\$18,750.00
9052876	Capacity building to support research and plant breeding at the I.A. Watson Grains Research Centre	-\$341,979.00
9112843	The facilitation of Category 25 submissions in the Australian grain industry	\$150,000.00
9148835	Knowquestion External Collaboration and Workflow System	-\$18,000.00
9148903	Recognising and rewarding excellence award	-\$6,250.00
9170846	Alumni Communications Services	-\$175,000.00
9175088	Industry representative of the GRDC Regional Research Agronomists Steering Committee	\$1,000.00
9175286	Industry representative and Chairman of the GRDC Regional Research Agronomists Steering Committee	\$2,796.90
9175446	Grain Field Research Facilities at TAIC	\$165,726.40
9175517	UK Study Tour	-\$30,000.00
9175786	Conference Sponsorship - 14th Annual Conference	\$3,750.00
9175792	Conference Sponsorship - Innovation Generation 2016	-\$6,250.00
9176140	Making Science Useful for Agriculture	\$750.00
9176153	CCA Cropping Solutions Seminar 2018	\$750.00
9176193	Growing SA 2018	\$2,500.00
9176198	Agricultural Education Symposium: Growing the Future	\$500.00
9176201	Financial Support for 10th Australasian Soilborne Disease Symposium 2018 in Adelaide	\$1,250.00
9176207	AusCanola 2018: 20th Australian Research Assembly on Brassicas	\$2,500.00
9176229	2018 and 2019 Ag Excellence Forum & Awards	\$6,750.00
9176259	Sponsorship of the 5th International Plant Phenotyping Symposium, to be held in Adelaide 2-5 October 2018, hosted by the Australian Plant Phenomics Facility, The University of Adelaide, Waite Campus	\$2,500.00
9176724	Scoping study - Summer cropping in the northern region	\$127,782.00
9176780	22nd Congress of the International Farm Management Association	\$10,000.00
9176838	3rd International Controlled Traffic Farming Conference (CTF19)	\$10,000.00
9176839	GRDC Communities website support	\$8,380.20
9176843	Soil Quality Symposium : Challenges and opportunities for managing soil biological fertility	\$5,000.00
9176849	Brave New World: Ag to 2030, the Ag Institute Australia National Conference	\$3,000.00
9176858	Review of GRDC Environmental Plan	\$4,919.90
9176872	Feed Grain Partnership 2017-2018	\$5,000.00
9176892	Identification and measure of drivers of agricultural land value change	\$12,000.00
9177024	Provision of Advice on potential chickpea breeding structures	\$3,000.00
9177047	Grains Industry National RD&E Strategy Capacity Audit	\$7,500.00
9177332	Understanding GRDC's contribution to Regional Investment and Employment	\$30,651.24
9177336	Examining the Grain Industry's Importance in Regional Economies	\$55,000.00
9177338	GRDC Nominee Director Wheat Quality Australia	\$18,090.55
9177348	Case Studies	\$14,000.00
9177470	Research Support 2018-19	\$57,675.00
9177491	Australian Agricultural and Grazing Industries Survey (AAGIS) 2019-20 ABARES	\$125,035.00
9177501	Partnership for Climate Research Strategy for Primary Industries (CRSPI)	\$10,000.00
9148963	National Agribusiness Reference Group	\$84,900.00
9167829	Branding Strategy Implementation	\$11,080.00
9175216	Evaluation of Barley Breeding Lines in the Northern Region	\$21,658.00
9175234	Annual Membership to SAI Platform Australia	\$8,000.00
9175243	Nominee Director Agreement AGT	\$27,875.13
9175444	Improving the productivity and cost of GRDC plant breeding investments	-\$2,400.00
9175569	National annual investment area forums for collaboration and technical review	\$267,445.00
9175648	Grant Agreement Grass weeds in canola - Priority Use -Imtrade	-\$927.50
9175726	AGT Nominee Director Agreement - Peter Graham	\$37,475.24
9175740	Services Agreement 2017-18	\$6,335.00
9175791	Project Management Services for specified GRDC projects (GRDC Northern and Southern Regions)	\$2,800.05
9175831	AGT Nominee Director Agreement	\$37,345.40
9175835	Future Farm Phase II Workshop	-\$5,091.00
9175848	INSPIRE Summit 2018	-\$7,500.00
9176150	From Seed to Pasta III' (FSTPIII): International Durum Congress, Bologna, Italy	\$750.00
9176644	Research Partner Survey	\$13,600.00
9176700	Levy Payer Register Pilot - May 2018	\$67,500.00
9176710	Australian Agricultural and Grazing Industries Survey (AAGIS) and Grains Reports: 2018-19	\$490,331.00
9176792	International Federation of Automatic Control: Sensing, Control and Automation Technologies for Agriculture - 6th AGRICONTROL 2019	\$6,000.00
9176810	ABARES Outlook 2019, 2020 and 2021 conference	\$9,000.00
9177013	Participation and advice for negotiation meetings between GRDC and DPIRD	\$5,215.80
9177014	Participation and advice for negotiation meetings between GRDC and DPIRD	\$10,851.83
9177066	AgriFutures Australia: Phase II - \$100bn growth strategy	\$10,000.00
9177192	AgFrontier Regional AgTech Incubator (incorporating AgTeCH19 Emerald & AgTeCH20 Mungindi events)	\$7,500.00
9177196	Translational photosynthesis conference 2019: Innovations in Agriculture for food security	\$7,500.00
9177198	7th International Symposium on Soil Organic Matter	\$7,500.00
9177273	2019 evokeAG	\$20,000.00
9176699	Soil Water App maintenance in 2018	\$5,150.00
DAV00102		\$6,062.56
DAV00105		\$12,500.00
DAV00106		\$10,706.50
DAV00138		\$33,948.39
DAV00148		\$7,375.00
DAW00260		\$139.00
GCS10995		\$5,000.00
IP MANAGEMENT		\$223,709.92
NVT Regional Committees		\$36,299.62
Panel Costs		\$1,409,719.87
R&DSUPPORT		\$340,183.28
RESEARCH & DEVELOPMENT		\$14,454.73
TOTAL		\$3,853,589.81
GRAND TOTAL RD&E expenditure 2018-19		\$174,043,667.40