

Newsletter October 2021

President's Message



I began writing this message in July and in it commented that the two-day *Symposium* 'Environmental impact and solutions for horticultural and cropping systems' to celebrate 50 years of the Agronomy Society was only a few weeks away. Events or more specifically Covid-19 have again disrupted our plans and the 50-year celebration Symposium has been delayed until April 2022. We are awaiting Lincoln University's timetabling to be completed before exact dates are confirmed and communicated. Like many in New Zealand, Council is hoping that by April 2022 the higher Alert levels and the restrictions they bring will be, if not completely gone, much less frequent, especially for Auckland, and more localised than at

present. The 2021 Agronomy Society Conference is still scheduled to take place in Invercargill with the New Zealand Grassland Association and Society of Animal Production. This is the first time we have had a combined conference of the three organisations. The programme has a wide and varied range of papers being presented. I hope that at least some of you will be able to join us in Invercargill. Registrations for the conferences are now open (<https://www.grassland.org.nz/eventregister.php?eventnum=37>). There are also contingency plans if Covid-19 prevents the conference from proceeding this November, including a postponement date of 1 - 3 February 2022.

The 2021 Agronomy Society Conference will include some of the speakers who were not able to present in 2020 because of the conference cancellation. As a result, Council discussed and decided to delay the printing of hard copies of the 2020 edition of *Agronomy New Zealand*. As a consequence, there will be a combined printing of both 2020 and 2021 papers. The 2020 papers are all available as PDFs on the Agronomy Society website (<https://www.agronomysociety.org.nz/2020-journal-papers>). More long-term, Council has been discussing whether the Society should continue to print hard copies of *Agronomy New Zealand*. Council would like feedback from the membership on the proposal to no longer print *Agronomy New Zealand*. If this is agreed to, then going forward, papers will only be available for downloading on the Agronomy Society website. A short questionnaire will be distributed to you, the members, for your thoughts on no longer printing hard copies of *Agronomy New Zealand*. Please take the time to complete the questionnaire – your input is needed for the final decision.

In this edition of the Newsletter there is a profile of the Agronomy Society Secretary, Aroon Parshotam, and an article by Council members Robert Southward and Aimee Dawson on protecting our elite soils. These both represent different aspects of the work of the Agronomy Society. In Aroon's case, the voluntary work that goes on behind the scenes by Council members that keeps the Society operating is highlighted. In Robert and Aimee's article, the aim of the Society in facilitating the flow of information relevant to agronomy practice and policy is profiled. Finally, there is an update on the 50 most viewed papers this year on our website. Enjoy the Newsletter. We also invite brief articles from the wider membership for future newsletter editions.

Best wishes – Craig McGill

Short Profile: *Aroon Parshotam*

I have been Secretary of Agronomy NZ for the last three years. For me, the science of agronomy draws together my 25 years of experience as a quantitative (mathematics and statistics) scientist in the plant, climate, water, and soil sciences.

I started my career at DSIR Soil Bureau in Taitā as a soil physicist six months prior to the formation of the CRIs with a PhD in Applied Mathematics. Unlike statistics, which deals mainly with analysing data (e.g. from field trials with well-designed experiments), applied mathematics is involved with formulating theories and analysing solution of problems which arise in various areas with a view of obtaining insights into a systems behaviour, usually from identifying the dominant processes, a process I call ‘deep’ reductionism.

I spent 12 years at Landcare Research as an environmental scientist, eight years at NIWA as a catchment modelling scientist, and at least five years as a lecturer in mathematics, mathematical modelling, and environmental management, at three New Zealand Universities. I have supervised four PhD students and several post-doctoral fellows. I also spent two years in the dairy industry as a chemometrician and contributed to writing International Dairy Federation (IDF) Standards. I have produced modelling publications of national interest, e.g. Parshotam (2020); Parshotam and Robertson (2019). I have published over 100 papers.

For me, agronomy integrates many sciences but is itself one of the most fundamental of the sciences. Here is a



science where one uses simple logic and observation and cuts down the many layers of complexity found in many of the sciences today.

I currently run Waikato Taro-leaf farms, and Narrows Nursery, a plant and fruit tree nursery. My wife and I run the Narrows Retreat, a meditation and Yoga Centre in Hamilton situated along the Waikato River. I am also an active viola player in the Waikato Symphony Orchestra and active committee member of the Waikato Tree Crops Association. I run my own consultancy, Cleanwaters NZ Ltd with the purpose of helping “grass-roots community groups” with catchment management.

Aroon with a 9.1 kg Solomon Island taro grown in streams entering the Waikato River and downstream from some farms. This may be by far, the largest taro-root ever grown in New Zealand

References

- Parshotam, A. (2020). GIS challenges in applying SWAT to predict national-scale instream sediment loads and concentrations in New Zealand. *Journal of Hydrology (NZ)*, 59(2), 83-108. <https://www.hydrologynz.org.nz/post/journal-59>
- Parshotam, A., & Robertson, D. (2019). Chapter 2. Modelling for catchment management. In: *Lake restoration handbook: A New Zealand perspective*. Springer. <https://www.springer.com/gp/book/9783319930428>

We need to protect our elite soils

Robert Southward & Aimee Dawson

A 2021 paper reports that over the past two decades a high proportion of elite soils have been effectively lost to vegetable production across New Zealand, especially in the Auckland region.

NZ land is divided into eight Land Use Capability (LUC) classes – class 1, 2 & 3 are the best & most suitable for regular arable & horticultural cropping, especially vegetable production.

A recent paper¹ categorised all NZ into LUC classes & then analysed the extent of fragmentation – where land is broken up into smaller life-style blocks & creeping urbanisation. Furthermore, in addition to directly losing land to subdivision, there are additional flow-on effects from agricultural activities such as spraying, fertilising, trucks, tractors & machinery noise. These can indirectly lead to further withdrawal by vegetable growers from elite land bordering these subdivisions.

In 2017, [Statistics NZ data](#) reveals that the Auckland region – primarily Pukekohe – had the largest single outdoor area used for growing vegetables and herbs – 6,574 ha – about 19% of NZ's total vegetable production area. However, the Auckland region has had the greatest loss of LUC 1, 2 & 3 classed land, some 40%, 44% & 25%, respectively, over the nearly two-decade study period. Not only is this a tragic loss, but unless arrested is an ominous sign for future generations of New Zealanders. This ongoing fragmentation & development is reducing the availability of this highly versatile LUC



Under threat: Pukekohe vegetable production



Housing encroaching onto elite soils in Pukekohe

1 & 2 land - the best cropping land in New Zealand. The paper referenced calls for national attention to protect this land. A documentary broadcast on TV1 earlier in 2021, draws attention to this important & urgent issue².

We as agronomists need to support the protection of this valuable resource to ensure highly productive soils remain for future generations of food production.



Production activities tend to result in further land loss

¹ Curran-Cournanea, F., Carrick, S., Barnes, M.G., Ausseil, A-G., Drewry, J.J., Baine, I.A., Golubiewskia, N.E., Jones, H.S., Barringer, J., & Morell, L. (2021). Cumulative effects of fragmentation and development on highly productive land in New Zealand. *New Zealand Journal of Agricultural Research*, <https://www.tandfonline.com/doi/full/10.1080/00288233.2021.1918185>

² Sunday, 17 May 2021 - [Taking stock of our soil: How housing developments are threatening NZ's fertile land.](#)

NZGA Conference - Invercargill 9-11 November

Grazing the Deep South

This Conference is being held for the first time in conjunction with both the **Agronomy Society** and the **NZ Society of Animal Production** enabling us to cover most research aspects of New Zealand agricultural systems.

Highlights of the conference will include field tour options (the Southern Dairy Hub, a visit to a working flax museum, or an Agronomy focussed tour to the Foundation for Arable Research Cereal Performance Trials and Blueberry Country) plus an evening at the Bill Richardson Transport Museum.

The draft **Conference programme** can be downloaded here or is available on the NZGA website (www.grassland.org.nz).

Note that attendees can attend any session/paper during the conference. Concurrent sessions aim to run to the same timetable to enable attendees to move (quietly) between sessions if they wish.

Covid-19

The Conference has contingency plans around Covid-19 level rises, key to that is a **postponement date of 1-3 February 2022**. Registrations will be automatically transferred. Airlines and accommodation providers are accustomed to Covid-19 level changes and generally refund or transfer. Full conference fee refunds will be made if the conference is cancelled.

Finally, please refer to the next page for the list of the 50 most viewed papers this year on our website.

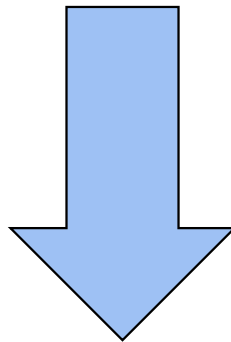


Table 1. Top 50 papers by hits downloaded during 2021 (1st Jan to 18th Oct) from the Agronomy Society of NZ website <https://www.agronomysociety.org.nz/>

	Paper name	Year of original publication	Authors	Paper web address	Numbers of hits so far this year	Publication web address
1	A review of Brassica species, cross-pollination and implications for pure seed production in New Zealand	2002	A.V. Stewart	https://www.agronomysociety.org.nz/files/2002_9_Review_-_Brassica_cross-pollination.pdf	1,351	https://www.agronomysociety.org.nz/files/2002_9_Review_-_Brassica_cross-pollination.pdf
2	The potential of peanuts as a crop in New Zealand	1991	J.A.D. Anderson	https://www.agronomysociety.org.nz/files/S/P7_22_Peanut_potential_in_NZ.pdf	1,000	https://www.agronomysociety.org.nz/7.-grain-legumes.html
3	Magnesium deficiency in crops and its relevance to arable farming in New Zealand - a review	2001	M. Craighead	https://www.agronomysociety.org.nz/files/2001_7_Review_-_Mg_deficiency_in_NZ_crops.pdf	823	https://www.agronomysociety.org.nz/2001-journal-papers.html
4	Soybean production in Northland	1980	G.J. Piggot, C.A. Farrell and E.N. Honore	https://www.agronomysociety.org.nz/files/1980_12_Northland_soybean_production.pdf	713	https://www.agronomysociety.org.nz/1980-journal-papers.html
5	The importance of peas in New Zealand arable agriculture	1987	J.G.H. White	https://www.agronomysociety.org.nz/files/S/P6_2_Importance_of_peas_in_NZ_arable_ag.pdf	499	https://www.agronomysociety.org.nz/6.-peas.html
6	Selective herbicides for dahlia production	1998	R.C. Southward, K.C. Harrington, J.G. Hampton and H. Han	https://www.agronomysociety.org.nz/files/1998_4_Selective_herbicides_for_dahlia_prod.pdf	475	https://www.agronomysociety.org.nz/1998-journal-papers.html
7	Growing taro in Waikato streams	2017	A. Parshotam, V. Parshotam and O.M. Parshotam	https://www.agronomysociety.org.nz/files/2017_9_Growing_Taro_in_Waikato_streams.pdf	444	https://www.agronomysociety.org.nz/2017-journal-papers.html
8	Performance of new Californian strawberry cultivars in Auckland	2005	W.T. Bussell, I.L. Ennis, C.M. Triggs and G.J. Pringle	https://www.agronomysociety.org.nz/uploads/94803/files/2005_4_Perf_new_Californian_strawberry_cv.pdf	406	https://www.agronomysociety.org.nz/2005-journal-papers.html
9	World production and trade in grain legumes	1991	G.D. Hill	https://www.agronomysociety.org.nz/files/S/P7_1_World_grain_legume_prod_and_trade.pdf	397	https://www.agronomysociety.org.nz/page/7.-grain-legumes.html
10	Plant growth regulators and grain legumes	1991	R.J. Field, G.D. Hill, H.J. Attiya, H. Effendi	https://www.agronomysociety.org.nz/files/S/P7_12_Plant_growth_regulators.pdf	372	https://www.agronomysociety.org.nz/7.-grain-legumes
11=	The effects of temperature on pasture production	1979	J.A. Baars and J.E. Waller	https://www.agronomysociety.org.nz/uploads/94803/files/1979_21_Temp_effects_on_pasture_production.pdf	365	https://www.agronomysociety.org.nz/1979-journal-papers.html

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11=	Temperature and growth of <i>Pinus radiata</i>	1979	D.A. Rook and D. Whitehead	https://www.agronomysociety.org.nz/files/1979_23.Temp_and_growth_of_radiata_pine.pdf	365	https://www.agronomysociety.org.nz/1979-journal-papers.html
13	The influence of tree species on forest soils: Processes and patterns	1995	D. Blinkley	https://www.agronomysociety.org.nz/files/S10_1.KA_-_tree_spp_influence_on_forest_soils.pdf	346	https://www.agronomysociety.org.nz/page/10.-trees-and-soils.html
14	Relationships between chlorophyll meter readings and leaf chlorophyll concentration, N status, and crop yield: A review	1993	C.W. Wood, D.W. Reeves and D.G. Himelri	https://www.agronomysociety.org.nz/uploads/94803/files/1993_1.Chlorophyll_relationships_-_a_review.pdf	336	https://www.agronomysociety.org.nz/1993-journal-papers.html
15	The effect of temperature on flowering	1979	R.G. Thomas	https://www.agronomysociety.org.nz/uploads/94803/files/1979_13.Effect_of_temperature_on_flowering.pdf	335	https://www.agronomysociety.org.nz/1979-journal-papers.html
16	Ryegrass seed production in New Zealand: Achieving 3000+ kg/ha yields	2018	M.P. Rolston, R.J. Chynoweth, S.R. Vreugdenhil, and A.M. Gunnarsson	https://www.agronomysociety.org.nz/files/ASNZ_2018_11.NZ_ryegrass_seed_production_3000_kg.pdf	322	https://www.agronomysociety.org.nz/2018-journal-papers
17	Grain yield of winter feed wheat in response to sowing date and sowing rate	2015	R.A. Craigie, H.E. Brown and M. George	https://www.agronomysociety.org.nz/files/2015_1.Winter_feed_wheat_grain_yields.pdf	320	https://www.agronomysociety.org.nz/2015-journal-papers
18=	Seedling emergence of wheat as affected by sowing depth, seed size and sowing date	1985	S.M. Goodman and W.R. Scott	https://www.agronomysociety.org.nz/files/1985_12.Seedling_emergence_of_wheat.pdf	319	https://www.agronomysociety.org.nz/page/1985-journal-papers.html
18=	Phacelia: Some management notes	1991	K. Stevenson	https://www.agronomysociety.org.nz/files/1991_15.Phacelia_-_Some_management_notes.pdf	319	https://www.agronomysociety.org.nz/1991-journal-papers.html
20	Plant density effects on yield parameters of three industrial hemp cultivars in the Manawatu	2017	L.H.J. Kerckhoffs, S. O'Neill, R. Barge and E. Kawana-Brown	https://www.agronomysociety.org.nz/files/2017_6.Plant_density_effects_on_3_hemp_cvs.pdf	314	https://www.agronomysociety.org.nz/2017-journal-papers.html
21	Sainfoin: Curiosity or crop?	1980	J. A. Fortune and N. J. Withers	https://www.agronomysociety.org.nz/uploads/94803/files/1980_18.Sainfoin_-_curiosity_or_crop.pdf	298	https://www.agronomysociety.org.nz/page/1980-journal-papers.html
22	Utilization of legumes: The present and future	1991	G. P. Savage	https://www.agronomysociety.org.nz/files/S10_1.P7_8.WS_-_Legume_utilization_-_present_future_B.pdf	294	https://www.agronomysociety.org.nz/7.-grain-legumes.html
23	Machinery for silage making, storage and feeding out	1975	G.H. Tullock	https://www.agronomysociety.org.nz/files/1975_24.Machinery_for_silage.pdf	277	https://www.agronomysociety.org.nz/1975-journal-papers

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24	Soil fertility limitations to wheat yield and quality	1993	W. R. Scott, R. J. Martin and K. R. Stevenson	https://www.agronomysociety.org.nz/uploads/94803/files/SP8_8_Soil_fertility_limitations.pdf	264	https://www.agronomysociety.org.nz/8.-wheat-limits-to-production
25	One drill for all establishment systems: Is it possible?	2004	E.J. Stevens, P.K. Jarman, P.J. Clarke, J.G. Hampton	https://www.agronomysociety.org.nz/files/2004_16_One_drill_for_all_est_systems.pdf	262	https://www.agronomysociety.org.nz/2004-journal-papers
26	Initial research on the production of water-grown wasabi in the Waikato	1992	J.A. Douglas and J.M. Follett	https://www.agronomysociety.org.nz/uploads/94803/files/1992_11_Water-grown_wasabi_prod_in_Waikato.pdf	255	https://www.agronomysociety.org.nz/1992-journal-papers
27	Effects of diseases and pests on yield and quality of wheat	1993	M.G. Crome, I.C. Harvey, M. Braithwaite, J.A.K. Farrell, S. Ganey	https://www.agronomysociety.org.nz/uploads/94803/files/SP8_10_Effects_of_diseases_and_pests.pdf	254	https://www.agronomysociety.org.nz/8.-wheat-limits-to-production
28	The effects of temperature and photoperiod on onion bulb growth and development	1986	J.M. de Ruiter	https://www.agronomysociety.org.nz/uploads/94803/files/1986_16_Temp_photoperiod_effects_on_onion_bulbs.pdf	249	https://www.agronomysociety.org.nz/1986-journal-papers
29	How water availability affects wheat yield and quality	1993	A. Davoren	https://www.agronomysociety.org.nz/files/SP8_9_Water_availability_affects_wheat.pdf	244	https://www.agronomysociety.org.nz/8.-wheat-limits-to-production
30	Agronomic requirements of ulluco (<i>Ullucus tuberosus</i>): A South American tuber	2002	J.J.C. Scheffer, J.A. Douglas, R.J. Martin, C.M. Triggs, S. Halloy and B. Deo	https://www.agronomysociety.org.nz/files/2002_6_Agronomic_requirements_of_ulluco.pdf	239	https://www.agronomysociety.org.nz/2002-journal-papers
31	The place of wheat growing in the New Zealand economy	1993	D.W. Ritchie	https://www.agronomysociety.org.nz/files/SP8_2_Wheat_growing_in_NZ_economy.pdf	238	https://www.agronomysociety.org.nz/8.-wheat-limits-to-production
32	Overview and vision for white clover	1996	J.R. Caradus, D.R. Woodfield and A.V. Stewart	https://www.agronomysociety.org.nz/uploads/94803/files/SP11_1_Overview_vision_for_white_clover.pdf	233	https://www.agronomysociety.org.nz/2002-journal-papers
33	Producing quality seed: the problem of seed vigour	2000	J.G. Hampton	https://www.agronomysociety.org.nz/uploads/94803/files/SP12_7_The_problem_of_seed_vigour.pdf	230	https://www.agronomysociety.org.nz/12.-seed-research-in-nz
34	Hybrid maize seed production	1985	M.J. Connell	https://www.agronomysociety.org.nz/files/SP4_11_Hybrid_maize_seed_production.pdf	228	https://www.agronomysociety.org.nz/4.-maize

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35	Development of a laboratory procedure to determine dry matter in maize forage	2004	R.J. Hill and S. Ballinger	https://www.agronomysociety.org.nz/files/2004_14_Determining_maize_forage_lab_DM.pdf	226	https://www.agronomysociety.org.nz/2004-journal-papers
36=	Soil requirements of blueberries in relationship to their nutrition	1988	R.J. Hayes	https://www.agronomysociety.org.nz/files/1988_27_Soil_requirements_of_blueberries.pdf	221	https://www.agronomysociety.org.nz/1988-journal-papers
36=	Lucerne establishment: Oversowing and overdrilling	1982	D.J. Musgrave	https://www.agronomysociety.org.nz/files/S_P1_3_Lucerne_est_-_oversowing_and_overdrilling.pdf	221	https://www.agronomysociety.org.nz/1.-lucerne-for-the-1980s
38=	Potatoes: the quest for processing quality	1992	R.A. Genet	https://www.agronomysociety.org.nz/files/1992_2_Potatoes_-_quest_for_processing_quality.pdf	218	https://www.agronomysociety.org.nz/1992-journal-papers
38=	Potato agronomy: An overview	1985	R.A. Genet	https://www.agronomysociety.org.nz/files/S_P3_1_Potato_agronomy_-_an_overview.pdf	218	https://www.agronomysociety.org.nz/3.-potato-growing
38=	The use of tissue culture techniques in kiwifruit breeding	1986	L.G. Fraser and C.F. Harvey	https://www.agronomysociety.org.nz/files/S_P5_67_Tissue_culture_in_kiwifruit_breeding.pdf	218	https://www.agronomysociety.org.nz/5.-plant-breeding
41	Problems of growing and harvesting barley	1983	F.A. Bull	https://www.agronomysociety.org.nz/files/S_P2_5_Problems_growing_barley.pdf	212	https://www.agronomysociety.org.nz/2.-barley
42=	Pests of maize in New Zealand	1985	R.N. Watson and M.G. Hill	https://www.agronomysociety.org.nz/files/S_P4_9_Pests_of_maize_in_NZ.pdf	210	https://www.agronomysociety.org.nz/4.-maize
42=	Mechanisation in potato production	1985	G.G. Lindsay	https://www.agronomysociety.org.nz/files/S_P3_2_Mechanisation_in_potato_production.pdf	210	https://www.agronomysociety.org.nz/3.-potato-growing
44	Cost savings in lucerne production	1982	T.P. Palmer and R.B. Wynn-Williams	https://www.agronomysociety.org.nz/files/S_P1_6_Cost_savings_in_lucerne_production.pdf	209	https://www.agronomysociety.org.nz/1.-lucerne-for-the-1980s
45=	Chickpeas	1991	D.L. McNeil	https://www.agronomysociety.org.nz/files/S_P7_23_Chickpeas.pdf	208	https://www.agronomysociety.org.nz/7.-grain-legumes
45=	History and present status of maize production in New Zealand	1985	R.K. Bansal and H.A. Eagles	https://www.agronomysociety.org.nz/files/S_P4_1_History_of_maize_production_in_NZ.pdf	208	https://www.agronomysociety.org.nz/4.-maize

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47=	The production of Burdock (<i>Arctium lappa</i> L.) root in New Zealand: a preliminary study of a new vegetable	1992	M.H. Douglas, J.L. Burgmans, L.C. Burton and B.M. Smallfield	https://www.agronomysociety.org.nz/files/1992_13_Production_of_Burdock_root_in_NZ.pdf	204	https://www.agronomysociety.org.nz/1992-journal-papers
47=	Weed control in maize in New Zealand	1985	A. Rahman	https://www.agronomysociety.org.nz/files/S/P4_8_Weed_control_in_maize_in_NZ.pdf	204	https://www.agronomysociety.org.nz/4-maize
49	Quality and seed production in New Zealand	1994	J.G. Hampton	https://www.agronomysociety.org.nz/files/S/P9_22_Quality_and_seed_production_in_NZ.pdf	203	https://www.agronomysociety.org.nz/9-seed-dev-germination
50	Lucerne: a fresh look	1989	R.G. Purves and R.B. Wynn-Williams	https://www.agronomysociety.org.nz/uploads/94803/files/1989_13_Lucerne_-_a_fresh_look.pdf	195	https://www.agronomysociety.org.nz/1989-journal-papers