

# Massey University FLRC 35th Annual Workshop Programme



## DIVERSE SOLUTIONS FOR EFFICIENT LAND, WATER AND NUTRIENT USE

### Wednesday 8th February

- 10.10am Welcome & Opening Remarks - Prof Chris Anderson, *Director, Farmed Landscapes Research Centre*  
10.20am Prof Ray Geor, *Pro-Vice Chancellor, College of Sciences, Massey University*

#### Session 1: Diverse Solutions - The Big Picture *Chair: Chris Anderson*

- 10.30am **Richard McDowell (*Invited Speaker*)**  
*AgResearch*  
OVERVIEW OF 'GROWING FOR GOOD'
- 11.05am **Jacqueline Rowarth**  
*Lincoln University*  
THE GOAL, THE CONCEPTS, AND THE PATH TO SUCCESS
- 11.25am **Alec Mackay**  
*AgResearch*  
THE GRASS IS TELLING US SOMETHING DIFFERENT
- 11.45am **Discussion**

### Lunch: 12.00pm - 1.10pm

#### Session 2: Diverse Solutions for Carbon *Chair: Lucy Burkitt*

- 1.10pm **Beverley Henry (*Keynote Speaker*)**  
*School of Biology and Environmental Science, Queensland University of Technology*  
SOIL CARBON CREDITS – HUGE OPPORTUNITY OR POTENTIALLY HIGH RISK? IT'S COMPLEX!
- 1.50pm **Dan Bloomer**  
*LandWISE*  
CAN WE REGENERATE SOIL CARBON IN SOILS USED FOR INTENSIVE FIELD CROPPING?
- 2.00pm **Neha Jha**  
*Massey University*  
BUILDING SOIL CARBON STOCK BY PLANTING SHELTERBELTS IN TEMPERATE GRAZED PASTURES
- 2.10pm **Miko Kirschbaum**  
*Manaaki Whenua - Landcare Research*  
OBSERVED AND MODELLED CARBON FLUXES AT A GRAZED SITE WITH CO2 ENRICHMENT
- 2.20pm **Discussion**

### Afternoon Tea: 2.35pm - 3.05pm

## Session 3: Diverse Solutions for GHGs

*Chair: James Hanly*

- 3.05pm **Keren Ding**  
*AgResearch*  
THE EFFECTS OF DIFFERENT URINARY NITROGEN RATES ON GASEOUS NITROGEN FLUXES AFTER SYNTHETIC COW URINE DEPOSITION
- 3.15pm **Donna Giltrap**  
*Manaaki Whenua - Landcare Research*  
THE CHALLENGE OF ENSURING GOOD PHYSICAL MIXING OF INHIBITOR APPLIED TO A URINE PATCH
- 3.25pm **Grace Chibuike**  
*AgResearch*  
AN ASSESSMENT OF THE THRESHOLD CONCENTRATIONS OF NITRIFICATION INHIBITORS TO REDUCE URINE NITROGEN NITRIFICATION RATES ON PASTURES SOILS
- 3.35pm **Jiafa Luo**  
*AgResearch*  
THE EFFECTS OF DIFFERENT PLANTAIN (PLANTAGO LANCEOLATA) PROPORTIONS IN PASTURE ON GASEOUS NITROGEN LOSS AFTER URINE DEPOSITIONS ON CONTRASTING SOIL TYPES
- 3.45pm **Priscila Simon**  
*AgResearch*  
SOIL N STATUS AND MOISTURE AFFECTING THE ABILITY OF PLANTAIN TO REDUCE N<sub>2</sub>O EMISSIONS FROM CATTLE URINE
- 3.55pm **Bill Carlson**  
*AgResearch*  
COMPARISON OF NITROUS OXIDE EMISSIONS AND SOIL NITROGEN LEVELS FROM PLANTAIN AND RYEGRASS/ WHITE CLOVER PASTURES ON A WAIKATO FARM
- 4.05pm **Liyin Liang**  
*Manaaki Whenua - Landcare Research*  
LOWERING FOLIAGE N CONTENT BY CHANGING PASTURE PLANT SPECIES COULD REDUCE N<sub>2</sub>O EMISSIONS AND INCREASE FORAGE PRODUCTION: AN ANALYSIS COMBINING EDDY COVARIANCE MEASUREMENTS WITH PROCESS-BASED MODELLING
- 4.15pm **Nigel Meads**  
*Alltech New Zealand*  
THE RELATIONSHIP BETWEEN DIETARY INCLUSION OF WHEAT AND PALM KERNEL AND METHANE EMISSIONS DETERMINED USING IN VITRO METHODOLOGY
- 4.25pm **Di Lucas / Larry Burrows**  
*LandPlan Trust*  
LANDPLAN - THE ONLINE TOOL FOR TESTING VIRTUAL CHANGES IN LAND USE MANAGEMENT ON GHG EMISSIONS
- 4.35pm **Catherine Sangster**  
*Ministry for Primary Industries - Manatū Ahu Matua*  
INCLUSION OF SUPPLEMENTARY FEED IN THE AGRICULTURAL INVENTORY MODEL FOR DAIRY, SHEEP AND BEEF
- 4.45pm **Discussion**

## Thursday 9th February

### Session 4: Delivery of Diverse Solutions

*Chair: Ants Roberts*

- 8.30am **John Roche (Invited Speaker)**  
*Ministry for Primary Industries - Manatū Ahu Matua*  
AN INTRODUCTION TO ON FARM SUPPORT, A NEW SERVICE FOR FARMERS AND GROWERS
- 9.00am **Simon Rosendahl Bjorholm (Keynote Speaker)**  
*SEGES Innovation*  
DANISH EXPERIENCE WITH CATCHMENT OFFICERS AND IMPLEMENTATION OF NITROGEN MITIGATION PRACTICES
- 9.45am **Adrian Brocksopp**  
*Element Environmental Ltd*  
BUILDING CAPABILITY AND CAPACITY FOR RESOURCE MANAGEMENT
- 9.55am **Discussion**

### Morning Tea: 10.10am - 10.35am

### Session 5: Diverse Solutions On-Farm

*Chair: Dave Horne*

- 10.35am **Erica van Reenen**  
*AgFirst NZ*  
A CASE FOR AN INTEGRATED ENVIRONMENTAL POLICY FRAMEWORK, AND THE CONSEQUENCES OF NOT HAVING ONE
- 10.45am **Estelle Dominati**  
*AgResearch*  
FARM PLANNING: MOVING FROM COMPLIANCE TO STRATEGIC PLANNING
- 10.55am **Laura Grundy**  
*AgResearch*  
CHALLENGES TO ENABLING OPEN DATA: A FARM SYSTEMS CASE STUDY
- 11.05am **Tom Stephens**  
*Te Kaunihera o Tāmaki Makaurau - Auckland Council*  
ACCOUNTING FOR CHANGE: A PIONEERING APPROACH TO OPTIMISED CATCHMENT ACTION PLANNING USING THE FRESHWATER MANAGEMENT TOOL
- 11.15am **Carla Muller**  
*Perrin Ag*  
IMPROVED UNDERSTANDING OF HORTICULTURAL GROWER SYSTEMS WITHIN THE PUKEKOHE AREA TO INFORM THE FRESHWATER MANAGEMENT TOOL
- 11.25am **Eva Harris**  
*Enviro Collective*  
PRINCIPLES OF SUCCESSFUL SUSTAINABLE CHANGE SOLUTIONS – A CASE STUDY
- 11.35am **Shane Gilmer**  
*Environment Canterbury*  
ŌTŪWHAREKAI – ASHBURTON ALPINE LAKES ADVANCED FARM PLANNING
- 11.45am **Lisa Arnold**  
*WSP New Zealand*  
LAND USE FEASIBILITY STUDY FOR NGĀTI TAHU NGĀTI WHAOA (WAIKATO)
- 11.55am **Discussion**

### Lunch: 12.10pm - 1.10pm

## Session 6: Diverse Solutions for Water

Chair: Chris Tanner

- 1.10pm **Fleur Matheson**  
*National Institute of Water and Atmospheric Research (NIWA)*  
NEW DESIGN GUIDE FOR RIPARIAN BUFFERS TO MEET WATER QUALITY OBJECTIVES
- 1.20pm **Reza Moghaddam**  
*University of Waikato*  
METHANOL DOSING INCREASES NITRATE REMOVAL IN WOODCHIP BIOREACTORS WITH NO SUBSTANTIAL ADVERSE EFFECTS: LABORATORY AND FIELD EVIDENCE
- 1.30pm **Gimhani Perera**  
*University of Waikato*  
BIOGEOCHEMICAL PATHWAYS FOR PHOSPHORUS REMOVAL IN WOODCHIP BIOREACTORS
- 1.40pm **Dorisel Torres-Rojas**  
*University of Waikato*  
SIMULTANEOUS PHOSPHORUS REMOVAL AND REDOX BUFFERING OF DENITRIFYING BIOREACTORS USING ORGANO-MINERAL COMPOSITES
- 1.50pm **Rupert Craggs**  
*National Institute of Water and Atmospheric Research (NIWA)*  
FILAMENTOUS ALGAE NUTRIENT SCRUBBERS FOR AGRICULTURAL DRAINAGE TREATMENT AND NUTRIENT RECOVERY
- 2.00pm **Harizah Hariz**  
*National Institute of Water and Atmospheric Research (NIWA)*  
FILAMENTOUS ALGAE AS A NUTRIENT SCRUBBER FOR AGRICULTURAL DRAINAGE TREATMENT
- 2.10pm **James Sukias**  
*National Institute of Water and Atmospheric Research (NIWA)*  
A CONSTRUCTED WETLAND RECEIVING DAIRY FARM RUN-OFF: EFFECTIVENESS DURING HIGH FLOW EVENTS COMPARED WITH BASEFLOW
- 2.20pm **Ben Woodward**  
*National Institute of Water and Atmospheric Research (NIWA)*  
MITIGATING THE POTENTIAL FOR CONSTRUCTED WETLANDS TO RELEASE DISSOLVED REACTIVE PHOSPHORUS
- 2.30pm **Chris Tanner**  
*National Institute of Water and Atmospheric Research (NIWA)*  
DIVERSE SOLUTIONS FOR DIFFUSE CONTAMINANT MITIGATION: WHICH GOES WHERE FOR WHAT?
- 2.40pm **Discussion**

**Afternoon Tea: 2.55pm - 3.20pm**

## Session 7: More Diverse Solutions for Water

Chair: Ranvir Singh

- 3.20pm **Lee Burbery**  
*DairyNZ*  
A COMPARISON OF THREE DIFFERENT EDGE-OF-FIELD NITRATE MITIGATION PRACTICES, AS REALISED FROM FIELD TRIALS
- 3.30pm **John Paterson**  
*Phosphorus Mitigation Project Inc.*  
DETAINMENT BUNDS PS120 AS A TOOL FOR MITIGATING THE HYDROLOGICAL IMPACT OF POST-SETTLEMENT LAND DISTURBANCE AND CLIMATE CHANGE
- 3.40pm **Andrew Hughes**  
*National Institute of Water and Atmospheric Research (NIWA)*  
HOW EFFECTIVE ARE DETAINMENT BUNDS PS120 AS A POLLUTANT MITIGATION TOOL IN NEW ZEALAND?
- 3.50pm **Linh Hoang**  
*National Institute of Water and Atmospheric Research (NIWA)*  
HYDROLOGICAL MODELLING FOR DETAINMENT BUNDS

- 4:00pm **Zachary Dewhurst**  
*AgResearch*  
SPATIAL DISTRIBUTION OF DUNG UNDER REGENERATIVE AND CONVENTIONAL GRAZING PRACTICES
- 4:10pm **Ryan Barlow**  
*AgResearch*  
NITROGEN LEACHING IN A DAIRY FARMLET GRAZING STUDY AS AFFECTED BY USE OF SPIKEY®
- 4:20pm **Joseph Pollacco**  
*Manaaki Whenua - Landcare Research*  
REDUCING NITRATE LEACHING AND IRRIGATION BY BRINGING USER-FRIENDLY, PHYSICAL AGRO-HYDROLOGICAL MODELS TO THE FARMING COMMUNITY
- 4:30pm **Rowland Tsimba**  
*Genetic Technologies Ltd*  
DEVELOPING A SUCCESSFUL NITROGEN MITIGATION STRATEGY IN A MAIZE GRAIN - CATCH CROP PRODUCTION SYSTEM
- 4:40pm **Alex Dickson**  
*LandWISE*  
BEST PRACTICE MANAGEMENT OF NITRATES IN PROCESS CROPPING
- 4:50pm **Suha Sanwar**  
*Massey University*  
CHARACTERISATION OF HYDROLOGY AND DENITRIFICATION POTENTIAL IN HILL COUNTRY SEEPAGE WETLANDS
- 5:00pm **Discussion**

**Networking in AgHort Foyer: 5.15pm - 6.15pm**

**Workshop Dinner at Refectory: 6.30pm**

## Friday 10th February

### Session 8: Developments with Overseer

*Chair: Alastair Taylor*

- 9.00am **Donna Giltrap**  
*Manaaki Whenua - Landcare Research*  
MULTI-LAYER SOIL HYDROLOGY MODELLING IN OVERSEER
- 9.10am **Jean-Paul Tavernet**  
*Overseer*  
IMPACT OF USING DIFFERENT CLIMATE DATASETS IN THE OVERSEER MODEL
- 9.20am **Hamish Brown**  
*Plant and Food Research*  
ACCOUNTING FOR DEEP ROOT N UPTAKE IN OVERSEER
- 9.30am **Hamish Brown**  
*Plant and Food Research*  
IMPROVEMENTS TO THE OVERSEER CROP MODEL
- 9.40am **Jean-Paul Tavernet**  
*Overseer*  
SENSITIVITY AND UNCERTAINTY ANALYSES FOR N-LOSS ESTIMATES BY THE OVERSEER MODEL
- 9.50am **Discussion**

### Morning Tea: 10.05am to 10.35am

### Session 9: Diverse Solutions for Soils and Pastures

*Chair: Ian Power*

- 10.35am **Nicole Schon**  
*AgResearch*  
ON FARM-SOIL HEALTH ASSESSMENT AND DECISION MAKING
- 10.45am **Duy Tran**  
*AgResearch*  
APPLYING ADVANCED GEOSPATIAL TECHNOLOGIES TO QUANTIFY SOIL HEALTH VARIATIONS IN AGROECOLOGICAL LANDSCAPES: A CASE STUDY IN NEW ZEALAND HILL COUNTRY FARM
- 10.55am **Matthew Taylor**  
*Waikato Regional Council*  
RECOVERY OF SOIL AFTER OVERIRRIGATING WITH DAIRYSHED EFFLUENT
- 11.05am **Katie Beecroft**  
*Low Environmental Impact*  
MATCHING SOILS AND IRRIGATION AUTOMATION FOR SUSTAINABLE USE OF WASTEWATER
- 11:15am **Janani Palihakkara**  
*Massey University*  
REDOX-INDUCED PHOSPHORUS RELEASE IN CRITICAL SOURCE AREAS UNDER SHORT-TERM SUBMERGENCE IN WINTER
- 11.25am **Dugald Hamilton and Jeff Brown**  
*Respond International and Fonterra*  
FIELD TRIALS OF MULTISPECIES PASTURES AND ACTIVE BIOLOGICS TO ENHANCE PRODUCTIVITY AND NUTRIENT UPTAKE
- 11.35am **Jeff Morton**  
*MortonAg*  
STARTER NITROGEN AND PHOSPHORUS FERTILISER TO ESTABLISH CLOVER SWARDS
- 11.45am **Jeff Morton**  
*MortonAg*  
CLOVER TEST STRIPS FOR IDENTIFICATION OF MOLYBDENUM DEFICIENCY
- 11.55am **Discussion**

Lunch: 12.10pm - 1.20pm

## Session 10: Diverse Solutions for Animals

Chair: Callum Rees

- 1.20pm **Rene Corner-Thomas**  
*Massey University*  
INFLUENCE ON SHELTER ON THE SPATIAL BEHAVIOUR OF EWES DURING LAMBING
- 1.30pm **Muhammad Wasim Iqbal**  
*Massey University*  
FACTORS AFFECTING GRAZING AND RUMINATION BEHAVIOURS OF DAIRY COWS IN A PASTURE-BASED SYSTEM IN NEW ZEALAND
- 1.40pm **Rachel Durie**  
*Perrin Ag Consultants*  
INCORPORATING COMPOSTING SHELTERS ON FARM: FINDINGS FROM RECENT FARMER CASE STUDIES
- 1.50pm **Yin Ying Chin**  
*Massey University*  
THE QUANTIFICATION OF RELATIVE STOCK UNITS FOR HORSES WITHIN A PASTURE-BASED PRODUCTION SYSTEM
- 2.00pm **Yin Ying Chin**  
*Massey University*  
SEASONAL FLUCTUATION OF LIVESTOCK NUMBERS ON EQUINE STUD FARMS AND THE IMPACT ON MODELLING OF FARM LEVEL NITROGEN LEACHING
- 2.10pm **Discussion**

Concluding remarks: 2.25pm - 2.40pm

THANK YOU TO THE FOLLOWING SPONSORS FOR THEIR ONGOING SUPPORT OF FLRC AND OUR WORKSHOP

