

EP Stubbles Extravaganza Report for Distribution

9 November 2017, Port Lincoln Hotel

Total attendees: 39, including 10 speakers

Time	Who	Topic
9.30am	Naomi Scholz, SARDI	Welcome, introductions, overview of project and day
9.45	Rick Llewellyn, CSIRO	Weeds in stubble retained systems (focus on barley grass, rye grass)
10.25	Greg Baker, SARDI	Snails in retained stubble systems
10.55		MORNING TEA
11.10	Gupta Vadakattu, CSIRO	N cycling in stubble retained systems
12.00	Jack Desbiolles, University of SA	Considerations for successful residue handling at seeding (disc and tine seeders)
12.30	Andrew Ware, SARDI	Blackleg in canola stubble
12.45	Amanda Cook, SARDI Jake Giles, SARDI	Herbicide efficacy in retained stubbles
1.05pm		LUNCH
2.00	Nigel Wilhelm, SARDI	Overcoming water repellence in retained stubble systems
2.15	Greg Mutze, PIRSA	Effect of stubble management on mice
2.45	Marg Evans, SARDI	Stubble management implications for disease (Crown rot, Eyespot, YLS, Barley net form of net blotch, Take-all)
3.15	Jeanette Long	Summary of outcomes/ Evaluation session
3.55pm	FINISH	



Left to right - back row: Aaron Long (GRDC), Andrew Ware, Greg Mutze, Jack Desbiolles, Rick Llewellyn, Greg Baker. Front row: Amanda Cook, Marg Evans, Gupta Vadakattu, Nigel Wilhelm.

My brief notes from speakers (definitely not extensive!):

Mice (Greg Mutze): Mouse plagues occur in areas with unusually high yields (not consistently high yields). Need to make decisions on a paddock x paddock basis NOT a regional basis (too much variation). Distribution for mice is not as important an issue as for snails. Mice are going to get worse. Looking at new baits. Need to reduce grain loss at harvest to zero to have real impact. Do mice move in from boundaries? Long term effects – exposure to grass weeds. Barley grass is highly nutritious for mice. Zinc phosphate will keep well in an airtight drum only.

N cycling (Gupta Vadakattu): stubble provides a biological engine. Only up to 50% N efficiency in the first crop application (volatilisation?), over the next 2 years ranges from 2-13% efficiency (from first application). In our areas (2-3 t/ha) cereal stubble is not a direct source of N. Less than 10% of N is taken up by next crop from stubbles. Stubbles provide a contribution to microbial activity rather than a direct source of N. Factors affecting timing of N release and tie-up of N: how long the stubble has been there, what type of stubble, how much stubble. How do we unlock the N not being used?? Soils types behave differently in amount of N released.

Weed mgmt. strategies (Rick Llewellyn): crop competition (row spacing, sowing rate), on-row sowing for water repellent sands. Have people used the RIM model – some, not many. Brome model ready soon, Barley Grass ready 2018.

Snails (Greg Baker): minimum 30 baits/m², ideal 50-60 baits/m². Up rates to 15 kg/ha metaldehyde. Rolling in summer (over 35 degrees) is very effective. There was an obvious loss of soil moisture as a result of burning on YP in 2017. Double cut – go back and cut stubble lower after harvest. HWSM – windrows also providing snail control.

Herbicide efficacy (Amanda Cook and Jake Giles): UEP stubble loads and stubble management (standing stubble, windrows, stubble on ground) haven't affected herbicide efficacy at higher water rates in 3 seasons on UEP with substantial stubble loads (1.5-3.2 t/ha). Barley grass germination pattern is later in-crop. Monitor paddocks compared to fenceline populations for timing of germination. LEP – Sakura best option for ryegrass on LEP, Boxer Gold also performed well. Water rate – keep it up at 100L/ha to improve coverage. Stubble height (15-40cm) affected amount chemical hitting soil, higher stubble resulted in less soil contact.

Crop establishment (Jack Debiolles): wet stubble increases clumping, so does narrow row spacing. Vertical clearance rule of thumb: greater than or equal to 1.5 times the stubble height. Inter-row sowing is effective if 2cm RTK is used. To improve establishment, avoid blockages (ideal tyne spacings in presentation) and minimize clumping.

Water repellence (Nigel Wilhelm): rotary hoeing (equivalent to spading) had a one year effect only. Clay spreading/delving/mouldboard ploughing is the best way to fix water repellence. Wetters have worked

well. Managing to get much better establishment, but it's not increasing yield – need to address poor subsoils which are limiting yield potential.

Disease (Marg Evans): Crown rot – burning does not help. Net blotches – it doesn't matter what you do to stubbles in the paddock, as the spores will travel large distances on wind. YLS – stems feel like sandpaper/use rotation.



EVALUATION SESSION

Table groups had time to discuss and provide written answers to the following questions:

1. *What facts stood out?* 2. *What challenges need more research?* 3. *What 'on ground' applications?* 4. *How can we encourage practice change?*

1. What facts stood out?

- Half the N disappeared!!!
- Vertical vs horizontal stubble
- Wetting agents worked but no yield increase
- Increase rate of snail bait and mouse bait
- Grain loss at harvest – cut losses, cut mice
- Crop weed competition
- Stubble tie up with herbicides
- Blackleg spores over season
- 50% fertilizer nitrogen use efficiency
- 50-60 baits/m² of snail bait is target
- Plant density on non-wetting sands did not impact yield
- NUE differences in different soil types more than seasonal changes
- Stubble retention is causing disease issues
- Harvest early to catch weed seed, RIM

- Snail bait rate is too low
- Stubbles don't give back too much N mineralization potential in soils
- Cut stubbles lower than tine height
- Sub lethal dose on mice
- Snail bait dosage at least 30 baits/m²
- Livestock can play a big role
- ZP baiting not effective
- Grow crops efficiently, but creating issues with disease and vermin
- 60 baits/m² (15 kg/ha) meta snail bait

2. What challenges need more research?

- Find the N
- Increasing seed bed utilization
- Carbendazim
- Find ways to increase fertilizer efficiency
- \$ economics of non-herbicide weed control in SA eg tram lining chaff
- Interaction of stubble and baits and control of snails
- Chaff lines vs other strategies
- Alternative snail controls
- Grass loss limits guides
- Crop establishment in thick stubble
- Snails
- Timing of mice baiting
- Cost effective long term weed management
- Disease carryover in stubbles
- Further research into row spacings and spreader boots
- Further research into different seeding systems and machinery
- Further research into herbicide efficacy in stubble retained systems
- Nitrogen efficiency and cycling

3. What 'on ground' applications?

- On-row (increase how close) for non-wetting sands to get benefits of crop establish
- Learning of blackleg spore release over season from standing canola stubble – reinforcing rotation and stubble management
- 50% fertilizer use efficiency
- Disease sampling in hot spots before it's forgotten
- Herbicide efficacy in dry sowing
- Use higher rate of snail bait
- RIM
- Soil wetter trials/research
- Increase crop competition
- Interaction of seeding rates and tine set up
- Use higher rate of snail bait
- Using livestock/increasing numbers
- Increase snail baiting rates
- Disease diagnosing
- Blackleg monitoring – all year round
- Mouse baiting – higher rates (no sub-lethal doses)
- Regular Predicta B testing (encouraging this)

4. How can we encourage practice change?

- Convince them that it will make them extra \$
- Try it on a paddock, have a go
- Twitter!
- Work on effect of insecticides on termites and their benefits in the rotations and stubble breakdown
- Speakers – face to face
- Provide independent, replicated information
- Informing advisors
- Regional activities
- Package info for agronomists to present to farmers (via powerpoint)
- Small scale trials/demos
- Target areas of improvement specific to the farmers system
- Showing the value of change
- Local trials and demos
- Having a seeing a disaster in your own area
- Stubble app for growers and advisors
- Pass on information to growers
- Encourage on farm trials

Closing comment from each person:

- Good day, would like to see more of them
- Diverse group was good
- Good to hear about better ways to establish crops
- How do we bring conflicting messages together (eg burn, don't burn)
- Keen to try RIM model
- Good day
- Quality speakers
- Picked up something from every speaker
- Don't know much about cropping so it was good to hear/learn more
- Appears that we have the same issues for snails and mice
- It showed me that an issue needs engagement for a number of years to really understand the problem
- Nitrogen information was good
- The high quality of speakers attracted me to the event (not the title!)
- Was great to be amongst a diverse group
- Would like to see a similar event each year
- Good day x 2
- Quality speakers
- Having an overall theme worked well
- Great to see so many people from the industry here
- Came to see if my current research is relevant and to gain ideas for new research that will have the most impact – from today: How far away is too far away from last year's row?
- Interested in what resonated with people and made an impact
- We cannot assume things will always be the same – always room to learn new things
- I picked up something from everybody today
- Great day x 2

- Good mix of speakers and advisors
- Good method of evaluation – better than the paper questionnaires!
- I can now sell 50% more N if we are only utilizing 50% of what's applied
- Learnt a lot
- What's happening to the missing N?
- The title "Stubbles Extravaganza" was certainly not the attraction to the event, but the speakers listed were. Don't have a better title though sorry.
- Chance to capture future research issues
- Highlighted how much farming systems change
- Good to see LEADA and EPARF working together
- Jack's information was useful
- The round table format with people mixed up worked well
- Happy with the day, excellent speakers, NUE was new
- Good to get everyone together
- When's the next one?
- Split rows/spreader boots is something I will now look into further
- Good learning experience
- Relevant right across EP, which is unusual
- So hard to predict diseases!
- So many variables
- Good to interact with others
- Will take back some ideas and feedback to GRDC
- Appreciate the work researchers do – we get really good useful information and are privileged to have access to it.

Following the event:

- Best bums on seats event I have been to for a long time!
- One of the best things was being allocated to a table, which split people up and gave me the chance to meet new people/talk to people I don't normally get a chance to talk to. Otherwise I would have sat with my own company reps as usual.
- Well done to you and the team on yesterday. You must be very pleased with the extremely positive feedback from the agronomist audience. I hope GRDC get to hear about how well received the event and program content was. The program you pulled together and the interaction/issues that were raised highlighted that there's a lot of value and current relevance there - with the role of the grower groups in the RD&E being critical in gaining the impact it is getting.