SOUTH EAST QUEENSLAND PINEAPPLE STUDY GROUP

1st workshop: Fullerton Farms, 638 Old Gympie Rd, Elimbah

30 November 2018

Take home messages

A good crop starts with a good planting job:

1. Ensure correct adjustment of de-topper on the harvester to prevent damage to fruit and top
2. Use good quality planting material
3. Grade planting material
4. Dip planting material in phosphorous acid
5. Train and supervise the planting team
6. Match planter spades with the size of the planting material
7. Roll in plants on all soil type except silty soils which will compact

Regularly (every 2 – 3 months) pull up plants to check on root health. If unsure contact ASG or DAF project team members &/or watch the following video https://youtu.be/79fAigfXE3k

Maintain treatment and preventative steps for Mealy Bug Wilt

The new 4 ½ year industry funded pineapple extension project is underway and will be jointly delivered by DAF, Agri Supply Global and Growcom.

SEQ group at the nematicide trial

"Whilst every care has been taken in preparing these minutes, the Department of Agriculture and Fisheries (DAF), Growcom and Agri Supply Global (ASG) accept no responsibility for decisions or actions taken as a result of any data, information, statement or advice, expressed or implied, contained in these minutes. The views and recommendations of the speakers are not necessarily endorsed or supported by DAF, Growcom and ASG."

Present (24 + 13 = 37)

Growers (24): Chris Doyle, John Forster & Kahn, James Francis, Ian & James Fullerton, Ken & Scott Fullerton, Mark Harris, Peter Maywald, Bernadette, Steve & Christy, Don McClintock, Wayne Moffat, Col Mollenhagen, Bruce Morgan, Gordon Oakes, Stephen Pace, Sam Pike, Sam Serra, Les Williams & Phil Tatnell, Steve Wruck

Non-growers (13): Brian Coe (QRIDA), Doug Christensen (Favco), Lene Knudsen (Growcom), Rachel Abel, Bridie Carr, Simon Newett and Garth Sanewski (DAF Qld), Lionel Sach & Sam Marino (Elimbah Coop), Michelle Souter (Kraft Heinz Golden Circle), Matt Stein (Trical), James Watson (Biofilm), Tim Wolens (Agri Supply Global)

Apologies: Don Bambling, Graham Coombs, Scott Dorman, Tony French, Chris Fullerton, Doug Jones, Rachel Mackenzie, Stuart Irvine-Brown, Colin McKay, Clinton Miller, Keith Morgan, Gary & Adam Pike, Murray Oakes, Tony and Robert Polsoni

Agenda

- 12:30 pm – BBQ LUNCH sponsored by Matt Stein of 'Trical Australia' (formerly 'A-gas Rural') and drinks sponsored by Lionel Sach, manager of 'Elimbah Co-op'.
- 1 pm - Welcome, introductions, outline of the afternoon's programme & acknowledgement of BBQ and drinks sponsors
- 1:05 pm – Overview of the new pineapple extension project – DAF, Growcom & Agri Supply Global
- 1:10 pm – Update on industry matters (2019 annual field day, new pineapple award in honour of Col Scott, ethrel toxicity & rates etc) – Sam Pike & Stephen Pace
- 1:15 pm – Overview of Fullerton Farms operation – Ken Fullerton
- 1:20 pm – Nominate farm critique leaders
- 1:25 pm – First half of farm walk
    - Inspection of machinery including fumigation rig and cannery fruit harvester
    - Inspect crop destruction and land preparation sites
    - View planter
- 3 pm – DRINKS BREAK and complete the pre-project survey at shed
- 3:30 pm – Second half of farm walk
    - Visit pineapple breeding plots & discuss breeding project – Garth Sanewski
    - Inspect nematicide trial
    - Inspect spring plant crop
    - Natural flowering
    - Ratooning of hybrids
    - Inspect planting material grader
- 4:45 pm – Farm critique & discussion & HAPPY HOUR
- 5 pm finish

Fumigation/bedding up rig

The new pineapple extension project: "Pineapple Integrated Crop Protection Program"

The intended project outcome is "Improved viability and sustainability of the Australian pineapple industry".

The project commenced this month and will run for 4 ½ years. It is co-funded by pineapple grower R&D levies which are matched through the Federal Government through Hort Innovation and also co-funded by the Queensland Government through the Department of Agriculture and Fisheries (DAF).

The project partners are DAF (Simon Newett and Bridie Carr), Agri Supply Global (Tim Wolens) and Growcom (Rachel Mackenzie and Natalie Brady).

DAF will:

- Lead the project
- Deliver two grower study group workshops per year for each of the four regions
- Produce two videos for growers (suggestions welcome)
- Produce two posters for growers (suggestions welcome)
- Maintain international networks
- Conduct a review of plant nutrition and pest and disease practices. This will involve a review of practices here and overseas, a review the research literature and a report with recommendations for the industry
- Collect pineapple production and forecast data for the Australian industry twice per year
- Update chapters in the Best Practice Manual as required

- Investigate software options for the collection of trial data, production data and as a tool for keeping farm records

Agri Supply Global will:

- Establish 17 to 19 demonstration trials around the industry on the following topics:
    - Site selection, layout and drainage
    - Ground preparation, fallow management and bed formation
    - Management of erosion and sedimentation
    - Best practice, new and innovative crop nutrition practices pre- and post-planting
    - Integrated pest and disease management (IPDM) strategies, with a focus on expanding the range of management options available, reducing reliance on broad-spectrum pesticides and improving environmental performance.
- Collect data and report on the progress and results of these trials
- Use these trials as the focus for many of the study group workshops.
- Regularly update growers on the progress of these trials through the "Pineapple Press" newsletter and the growers' section of the Australian Pineapples website
- Conduct cost/benefit analyses of trial treatments where appropriate

If you are interested in hosting a trial please contact Tim Wolens on 0409 848 076.

Growcom will:

- Organise and conduct the annual Pineapple Industry Field Day
- Produce and distribute the quarterly pineapple industry newsletter "Pineapple Press"
- Develop the grower section of the industry website to provide information including:
    - a 'page' for each demonstration trial with layout, treatments, progress reports, photographs, results and the ability for growers to add post comments
    - minutes from the study group meetings
    - chapters of the Best Practice Manual
    - links to the industry videos
    - upcoming events

The project will link with other activities such as DAF's project conducted by Stuart Irvine-Brown and Rachel Abel "Investing in our environment for the future"/"Resilient Rivers" (e.g. installing bioreactors, reducing fertiliser leaching etc), and Growcom's "Hort 360" project which also focusses on improving the quality of water leaving the farm.

The project partners will work together on all activities and will also set up a "community of practice" for the growers hosting trial sites.

Update on industry matters – Stephen Pace and Sam Pike

Stephen thanked everyone for their patience during the extended period it has taken to get the new extension project funded and started. A 'Project Reference Group' will be appointed for the project which will provide guidance when sought.

Stephen reminded growers about the two groups that existed to represent pineapple growers - Australian Pineapples for which Sam Pike and Tim Wolens are local members and Hort Innovation's

‘Strategic Industry Advisory Panel’ (SIAP) which includes Stephen Pace, Tim Wolens and Rachel Mackenzie, the SIAP provides advice to Hort Innovation on project investment. These are the people to talk to if you have ideas or issues.

The Back Creek diuron (and other pesticides) issue continues and a trial is to be established to try and understand why levels of pesticides in this watercourse are often high. Growers are reminded to use diuron responsibly. As you know we lost the product entirely for a time but the industry went to great lengths to get a temporary permit so it could be used again. This permit allows its use but with strict limits on the amount that can be applied and in what situations it may be used. By using it responsibly we are more likely to be able to continue to have access to this valuable weedicide.

Growers are also reminded that ‘Ethrel’ (ethephon) is a dangerous product, it is an organo-phosphate as well as being very acidic. Also please note that it is now available in various strengths so make sure you use the appropriate dilution rate for the product you have purchased.

Farm walk - Ken Fullerton

Fullerton Farms has been operating for over 100 years (founded in 1914). The main property is this one at Elimbah which they have been farming since 1956 but they also have a small farm at Beerwah growing Smooth Cayenne. Overall about half the pineapples are Smooth Cayenne (F180) and half are 73-50. Almost everything is ratooned. The top issues here are nematodes and Phytophthora root rot.

The old crop is destroyed with up to 5 passes with the rotary hoe.

Land preparation involves ploughing, ripping twice and hoeing to an optimal soil tilth. Pesticides are incorporated then beds are formed and fumigated in the one pass. Once the re-entry period has ended the beds are planted and rolled.

Cannery harvester

The cannery harvester built by ‘Red Back’ engineering has a 50’ boom and incorporates a juice grader and a spinning blade de-topper. On a good day they can harvest 170 cannery bins. Safety features include a number of stop buttons located along the boom, an emergency stop cord that runs the length of the boom and a cage surrounding the saw.

The tractor towing the harvester can go as slow as 0.8 km/hour. The fork lift driver is fully occupied removing full bins and supplying fresh bins. 7 to 8 bins are loaded onto to each of two body trucks which shuttle them back to the shed where they are loaded onto semi-trailers.

Cannery harvester with de-topper. Stickers with fruit measurements along the boom.

Fumigation/bedding up rig

The Telone fumigation rig which hills up at the same time. Matt Stein providing information on fumigants.

The better the soil tilth the better the effectiveness of the fumigation. In most crops black plastic is used to seal in the fumigant but since this is rarely used in pineapples it is important to have suitable soil moisture present. The registered rate of fumigants is given as a range - Doug Christensen advised growers not to always opt for the lower end of the rate because conditions are often less than ideal. Training, especially in the safety aspects, is essential for personnel operating the fumigator. Fullerton Farms wait a minimum of 10 days after fumigation before returning to the field. Approximately 1 gas bottle of nitrogen is used per 10 bottles of C35 and it is put out at a pressure of 35 psi. Matt Stein from Trical Australia (formerly 'A-gas Rural') addressed the group & provided brochures.

Various fumigants are available with different proportions of telone and chloropicrin. For example C35 contains 35% chloropicrin and 65% telone. Telone is effective against nematodes whereas

chloropicrin is effective against diseases and weeds. The new project will be looking at a number of current and new fumigants – Telone C60 which contains 60% chloropicrin and the new Methyl Bromide replacement. Since the loss of Nemacur Tim mentioned that growers are moving back to fumigation.

Planter

The planter is a McIntyre design which, with a team of 3 people, can establish 20,000 plants per day.

Tim said that in general planting was not being done well across the industry today. Poor planting practices will have repercussions for the next 3 years, you only have one chance to get it right. The main issues are:

1. Using poor quality planting material
2. Using a range of sizes of planting material in the same block i.e. absence of grading
3. Inexperienced staff on the planting team (often backpackers)
4. Spades on the planter not being changed to match the size of the planting material

Fullerton Farms do grade their planting material.

Beds have 4'4" centres (1.32m) and plants are spaced 9 ½" (24cm) apart down the row with 22" (0.56m) between rows in the bed, giving a planting density of 25,000/acre (63,000 plants/ha).

Crop destruction and land preparation at Fullerton Farms

The ratoon is hoed twice, then following rain is hoed two or three more times including a cross hoeing, the incorporated trash is then left to rot. Thereafter the ground is ploughed, ripped and hoed and is then ready for the fumigation/hilling up pass. Typically there is a 6 month turn around. This can be faster for a crop of 73-50. Chemicals such as lorsban and bifenthrin are incorporated by the last pass of the rotary hoe.

A fall of 1m is aimed for between drains.

Soil analysis is conducted prior to planting and usually dolomite needs to be applied. Soil pH averages about 4.4. No pre-plant fertiliser is applied but once they are established plants are top dressed two or three times with 77S at ½ t/acre.

All planting material is dipped in phosphorous acid. After planting beds are rolled to improve soil contact with planting material. Immediately after planting diuron is applied at 2kg/ha. Uragan (bromacil) is subsequently applied twice. Ridomil is applied at 2 months of age. Lorsban and bifenthrin are applied 5 times per year in a heavy drench of 4,500 L/ha. There is virtually no mealy bug wilt (MBW) on the farm.

Sam Pike said that at Sandy Creek farm they mix 'Transformer®' (a soil conditioner manufactured by Oro Agri) with the pre-plant fertiliser. The product improves water penetration and distribution in the soil and seems to result in more efficient use of moisture and fertiliser. Transformer® can be mixed with anything and is not phytotoxic. It costs about 4c per plant.

Weed control

Ken Fullerton, Les Williams and Sam Pike are all committed to reducing the weed seed bank in the paddock by removing weeds that have gone to seed from the paddock and burning them. The weedicide Associate® (metsulfuron methyl) is used on the headlands to kill broadleaved weeds.

Pineapple breeding project - Garth Sanewski

Garth explained that this 5 year project is focussed on producing more resilient varieties:

- Resistance to Phytophthora root rot (Garth has the DNA markers for resistance to Phytophthora root rot)
- Less susceptible to natural flowering (this is difficult to breed for because of the multiple factors that can trigger it)
- Resistance to *Dickeya* sp. (bacterial wilt), which occurs in the Philippines, Hawaii and Malaysia and which MD-2 is highly susceptible to

We have different strains of *Dickeya* in Australia but not the very bad one, so we need to prepare for it in case it gets here.

MD2 is being used as a major parent in the breeding programme. It stores well, has good flavour and has a short peduncle but on the negative side it is very susceptible to phytophthora root rot, Dickeya and natural flowering.

Garth is confident that he has the NI (natural initiation = natural flowering) markers for tolerance to drought stress and heat, but cold stress markers are harder to identify.

There are three trial sites in SEQ and trials are also being established in Wide Bay, Yeppoon and North Queensland. Each site consists of about 4,000 plants.

Garth has recently commenced an industry funded pineapple breeding project and has trial sites like this one for new seedlings in each growing region.

The programme uses conventional breeding techniques, GM is not being used. A range of different parents are being used to produce large numbers of unique seedlings that are then tested.

A genetic marker is a short section of DNA that controls a particular trait. Knowing what these are fast tracks the selection process because the DNA of a new seedling can be assessed for its presence thus eliminating the lengthy process of planting it out in the field and waiting for the characteristic to show up. The multiplication and testing stage can take a long time.

All plants are rolled in at Fullerton Farms

Fresh fruit harvester

The fresh fruit harvester has two belts, one for fruit and other for tops. Tops are removed carefully using hand operated guillotines mounted at regular intervals along the boom.

The fresh fruit harvester has no de-topper but hand operated guillotines are mounted along the boom. Care is taken not to damage the crown or the fruit when the top is cut off. Growth of the top will be delayed if it cut off too short or at an angle.

The cut ends of the fruit are sprayed with Sportak (prochloraz) and/or Scholar (fludioxonil) on the harvester to protect them from water blister and post-harvest moulds respectively.

Rig for picking up tops

This rig was set up to allow tops to be collected efficiently from both sides of the roadway.

The 'top picker' is operated with a team of 8 and allows 60 to 80,000 tops to be collected per day from where they are deposited along the edge rows during the harvest operation.

Nematicide trial

A chemical company is conducting a trial with new nematicides including Nimitz and comparing them with Telone. Nematodes were actually introduced to this site for the trial. Nimitz has been found to be phytotoxic to pineapples at high rates.

Mealy bug wilt (MBW)

Tim Wolens believes many growers have taken their eyes of the ball with this pest.

MBW requires an integrated programme which involves:

1. Using 'clean' i.e. non-infected planting material
2. A regular programme of diazinon sprays to control mealybugs
3. Spraying to control the ants that spread and 'farm' the mealybugs

Refer to Chapter 21 of the 'Pineapple Best Practice Manual' for more information.

Mealy bug are now being found inside fruit across many farms.

Mealy Bug at many different stages of their lifecycle present in the floral cavities

Planting material grader

The bin containing the planting material is tipped onto the moving belt using the grey metal cradle (left). A staff member is located under each of the three shade structures and each person is responsible for selecting a different size (large, medium & small) from the belt. What is left over is discarded.

Farm critique

Bruce Morgan commented on the critical need for uniform planting material and the need for it to be of a decent size too, he thought that Fullerton Farms had an effective way of doing this. Kahn liked the way the tops were collected from the field. He thought that the farm was looking really good and also liked the large harvester.

Acknowledgements

Many thanks to the Fullerton family (Ken, Chris & Scott) for hosting the workshop and preparing the BBQ. Thanks too to Trical Australia (through Matt Stein) for sponsoring the BBQ and to Elimbah Coop (through Lionel Sach) for sponsoring the drinks.

Simon Newett, Bridie Carr and Tim Wolens

These workshops are part of the project "Improved viability and sustainability of the Australian pineapple industry" (PI17001) which is a strategic levy investment under the Hort Innovation Pineapple Fund. The project is delivered by the Department of Agriculture and Fisheries, Agri Supply Global and Growcom and funded by Hort Innovation using the pineapple industry research and development levy, with co-investment from the Queensland Department of Agriculture and Fisheries, and contributions from the Australian Government.