

NSW Association of Agriculture Teachers



SUMMER 2019

NSW DPI SCHOOL PROGRAM

Tocal Virtual Farm

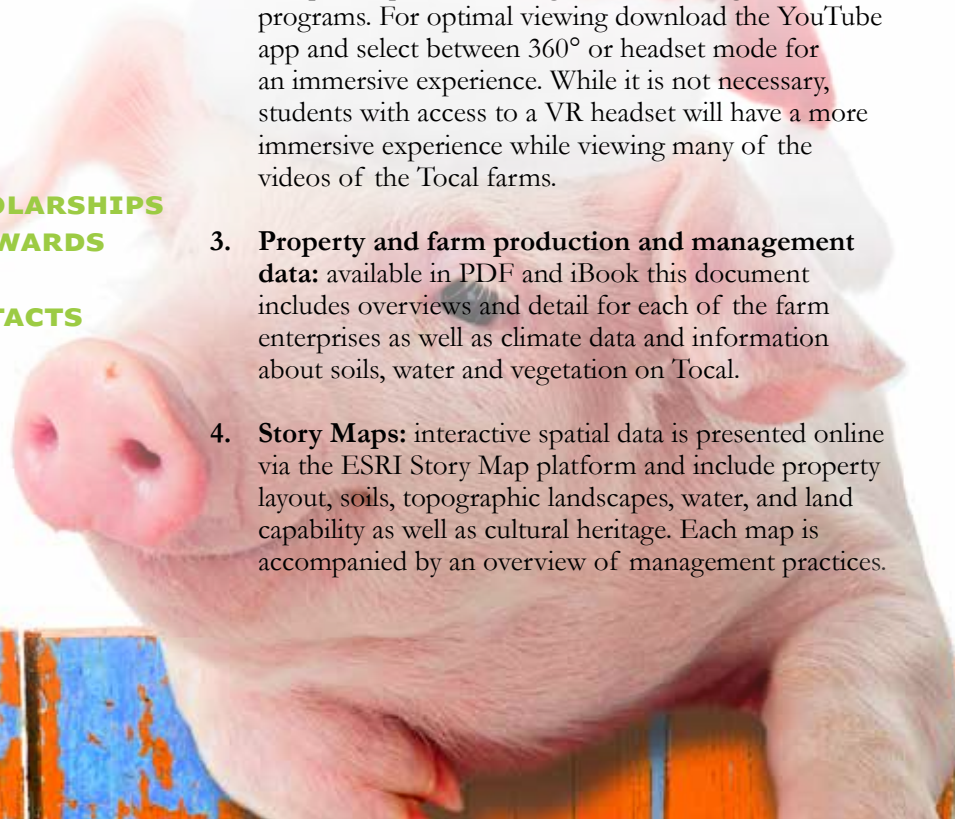
The Tocal Virtual Farm is a set of resources that together provide an insight into the Tocal property and farms including how they are managed and used for education as well as production. Each resource is described below and can be found at <https://www.dpi.nsw.gov.au/education-and-training/tocal-virtual-farm>

1. **Virtual reality 360 videos:** <https://bit.ly/2P6I1W6>
2. Looking for exciting new ways to teach agriculture? Explore the NSW DPI Schools Program's set of new engaging, immersive Virtual Reality 360° videos. The set of videos allows students to virtually explore the Tocal farms landscape, dairy, beef and sheep enterprises, shearing, horse breeding, and bee programs. For optimal viewing download the YouTube app and select between 360° or headset mode for an immersive experience. While it is not necessary, students with access to a VR headset will have a more immersive experience while viewing many of the videos of the Tocal farms.
3. **Property and farm production and management data:** available in PDF and iBook this document includes overviews and detail for each of the farm enterprises as well as climate data and information about soils, water and vegetation on Tocal.
4. **Story Maps:** interactive spatial data is presented online via the ESRI Story Map platform and include property layout, soils, topographic landscapes, water, and land capability as well as cultural heritage. Each map is accompanied by an overview of management practices.



BAAT CONTENTS

- 1 NSW DPI SCHOOL PROGRAM
- 3 THE ARCHIBULL PRIZE WINNERS
- 4 NAAE AGM
- 4 HSC BAND 6's BY SCHOOL
- 5 DPI DATA
- 5 YANCO AGRICULTURAL
- 9 DROUGHT BREAK
- 10 CLIMATE ELECTIVE
- 10 AUSLAN VIDEOS
- 11 REGIONAL & REMOTE SCHOLARSHIPS
- 11 WEE WAA @ ARCHIBULL AWARDS
- 13 EXECUTIVE SUGGESTIONS
- 13 NSWAAAT EXECUTIVE CONTACTS



5. **Teacher guides and workbooks:** link to a range of fully writable pdf documents mapped to various K-12 NSW syllabus outcomes and KLA areas including 7 Stage 6 Farm Case Study workbooks.

Stage 4 Technology Mandatory teaching resources

Tocal Virtual Farm Technology Mandatory unit

This document will guide students in an investigation of the Tocal Virtual Farm and is designed to meet the outcomes of the agriculture technologies component of the 2017 Technology Mandatory syllabus for years 7 & 8. It will be of particular interest to teachers with limited experience or opportunity to deliver the agricultural technologies outcomes. Completion of this unit can be used to position students to go on to work towards either the food technologies outcomes or digital technologies (or both).

The Australian Hamburgers unit

In this unit of work, students investigate the main Australian agricultural industries (wheat, beef, dairy, sheep, pork, poultry and horticulture) from paddock to plate. The unit is designed to cover all outcomes from the NSW Technology Mandatory Stage 4 Syllabus Agricultural technologies and Food technologies contexts and consists of three resources: a workbook, an answer guide, and a design folio.

It includes guides for practical activities, in-class extension investigations, mini design projects and an answer guide which will challenge student understanding and prepare them to complete the major project - to design and prepare a nutritious food product: a hamburger using an ingredient from each of the seven Australian agricultural industries investigated.

Suggested additional activities in this involve students developing a vegetable or herb garden to grow ingredients for their burger and also learning food preparation and cooking techniques.



The Yabby unit

This unit of work provides students with the opportunity to investigate the importance of aquaculture production to our society through focusing on Australian freshwater crayfish production. The Yabby unit is designed to cover outcomes from the NSW Technology Mandatory Stage 4 Syllabus Agricultural technologies, Engineered systems and Digital technologies contexts and consists of four resources including a workbook, answer guide, and choice of two major design folios.

The unit includes guides for practical activities, in-class extension investigations, mini design projects which will challenge student understanding and prepare them to complete one of two major projects for the unit - to design and build an aquaponics system or automate it using control technologies.

Suggested additional activities involve students growing, managing and making observations on aquaponic plants and freshwater crayfish.



THE ARCHIBULL PRIZE WINNERS



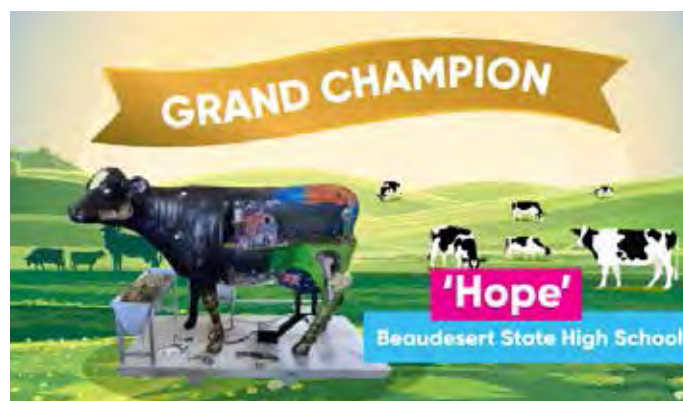
Students from Beaudesert State High School celebrate their win with Costa Georgiadis

Representing the Australian dairy industry Queensland's Beaudesert State High School has been named Grand Champion Archibull in the 2019 Archibull Prize, edging out previous winner Hurlstone Agricultural High School from New South Wales.

Eighteen secondary schools across New South Wales, Queensland and Victoria took part in the annual competition held by Picture You in Agriculture (PYiA) designed to connect students with agriculture and give farmers a face and voice. The schools are joined by Young Farming Champions as they research their nominated agricultural industry and present their findings in blogs,

infographics and multi-media, however the highlight is the creation of an interpretative artwork on a life-sized fibreglass cow, known as the Archie.

"We have come to expect quirky and



imaginative Archies from Beaudesert and this year was no exception incorporating real bovine bones, braille, a cut-out Herringbone dairy and a robotic milking arm. But more than that Beaudesert has embraced their local dairy community and taken them on their Archibull journey."

Thanks to a partnership with Subtropical Dairy, Dairy Fields Cooperative and Dover and Son students at Beaudesert delved deep into the challenges and opportunities facing dairy in Australia to create their Archie named Hope. They explored drought, mental health of farmers and a tightening retail market and posed the question: How much do we value our Australian dairy industry? "If our cow can make an impact and make people understand perhaps farmers can get more help and assistance through these tough times. Milk needs to be treated like the 'white gold' that it is and not something that



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Those interested can register here: <https://www.australianagriculturalcentre.com/blank-page-4>



Reserve Grand Champion Archibull was awarded to Hurlstone Agricultural High School who looked at the wool industry in Western NSW. From discussions with their Young Farming Champion Anika Molesworth students learnt about African breeds of drought tolerant sheep used in Australia. “From this, we decided to delve further into the rich culture of Africa. Witch doctors, in essence, are members of societies who aid others using magic and medicine. This concept of healing felt extremely appropriate as a message of hope in a tough, overwhelming time,” the students said.

The Archibull awards were presented at a ceremony held at Sydney Olympic Park on Tuesday 19th November, attended by sponsors and special guests including celebrity gardener Costa Georgiadis.

The Archibull Prize Awards event photos can be found [here](#)

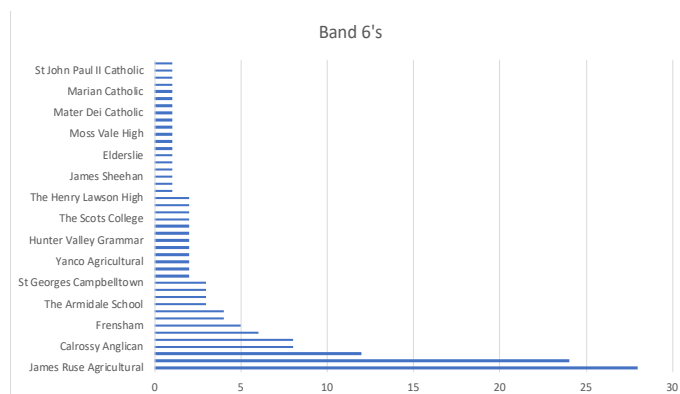
Watch the Archibull Prize Awards Events highlights [here](#)

NAAE AGM

National Association of Agricultural Educators (NAAE) AGM will be held on 14 January 2020

Appointment of Proxy forms and Nomination Form for Election of NAAE Committee 2020-2021 can be obtained from the NSWAAAT President.

HSC BAND 6's BY SCHOOL



2019 saw a significantly higher number of Band 6's across the state with approx 9.3% of students achieving Band 6 in 2019 up from approx 7% in 2018 as well as approx 300 extra students finishing the HSC In 2019.





THE AUSTRALIAN COTTON INDUSTRY INVITES YOU TO ATTEND

Teach the Teacher

An opportunity to visit a local cotton farm, engage directly with cotton growers and industry experts, and discuss learning tools and activities to take back to the classroom.

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- Narromine
- Griffith
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- Gunnedah
- Emerald
- St George

To register your interest:
jennyh@cotton.org.au



YANCO AGRICULTURAL

Sowing Rate Experiment:

Stuart McVittie, Yanco Agricultural High School & Kathryn Bechaz, Technical Officer NSW DPI



Department of Primary Industries

Introduction:

Since 2017, Year 11 and 12 students from Yanco Agricultural High School have collaborated with the NSW DPI with a sowing rate experiment conducted in the field. This collaboration came about through a School Open Day at NSW DPI (Yanco Agricultural Institute) in late 2016. Agriculture teachers from YAHS approached NSW DPI staff (Kathryn Bechaz, Dionne Wornes, Peter Davidson and Glenn Morris) to assist them with their school curriculum by conducting a randomised experiment under field conditions.



The purpose of the connection with the NSW DPI was not only to build community relationships but also to provide students with a learning experience from professionals in cropping research management, whilst also meeting many outcomes from the Preliminary and HSC syllabus.

DPI DATA

The 2019 DPI Performance, data and insights publication has been released.



It is a great resource summarising the year's production, market and economic performance of all NSW Primary industries.

The resource is available in an interactive webpage (great for students) or pdf download. Find these at:

<https://www.dpi.nsw.gov.au/about-us/publications/pdi/2019>

The syllabus outcomes achieved from this partnership includes:

- recognise elements of experimental design including control, randomisation, replication and standardisation of conditions
- conduct a simple plant trial using appropriate methodology
- outline the phases of growth of one agricultural monocotyledon and dicotyledon used in agriculture
- describe sources of competition in plant communities
- investigate how farmers manage plant competition through plant density and weed control strategies
- perform a first-hand investigation to determine the effects of planting density on plant growth and/or yield

Experimental Background:

The field experiment that the students have been involved with is a sowing rate experiment (plant density trial) using a common cultivar of Wheat (Spitfire). The sowing rates have varied from 25kgs/ha up to 200kgs/ha. The purpose of the experiment is to determine if the sowing rate affects the growth of the plants and ultimately yield. At the conclusion of the experiment for each season the results are analysed and then presented to students. The discussion with students revolves around the differences that each sowing rate has on the growth of Spitfire throughout the season.

Student Involvement:

During the season students travel to the Yanco Agricultural Institute (YAI) to be involved in sowing, collecting of the samples at various stages and harvest, with the experiment starting in April and concluding in December. Several measurements are taken by the students throughout the growing season which includes plant establishment counts, early biomass (Z31) dry weight and tiller number, plant heights and plot lengths, harvest index cuts, biomass and grain weight and harvest for yield. The students also take general observations of each plot to ascertain any visual differences between the plots.

Major learning experiences and practical activities for students include the following:

Plant Establishment Counts:

The number of plants are counted at two places in a plot which are chosen at random. The measurement is 2 rows x 50cm in length. They are usually measured at either end of the plot and the count is done on the 2nd and 3rd row and the 5th and 6th row (there are 8 row in each treatment, with the two outer rows acting as buffers). If the difference in the count between the two areas is 10 or more then another count is done to account for variability. The Plant Establishment Count can influence the final yield as it is directly influenced by crop establishment. As the experiment is a sowing density trial it is very important to count plant establishment to determine the influence of different seeding rates on the final yield. It can also pick



KEEP AN EYE ON THE COMPETITION

The Young Judges competitions give you the opportunity to network with industry leaders, develop your public speaking skills, improve your ability to present reasons for your decisions and receive valuable feedback on your performance. Young Judges from 15 to 25 years of age can compete in horticulture, merino fleece, grain, goat, pig, poultry, beef cattle, ponies and more.

Visit www.rasnsw.com.au/youngjudges for more details.



Royal Agricultural Society of NSW

up any problems at sowing such as soil conditions and seed quality (i.e. germination).



Early Biomass Weight:

Early biomass cuts are completed at the stem elongation stage (Z30/31). 4 rows x 30cm samples are randomly cut from the middle 5 rows of the plot. The samples are then dried in a dehydrator at 70°C for three days. After this the dry matter weight of each sample is recorded. The accumulation of biomass is important for final yield. At this early stage students can notice differences in biomass accumulation and then relate those differences to final yield. By comparing the final harvest index biomass with the early biomass, students can determine how well the plant has used water (i.e. biomass may have been lost due to a lack of water).



Tiller Numbers at Stem Elongation:

The number of tillers that are produced by plants is counted at the stem elongation stage (Z30/31). The counts are done in two places which are chosen at random from the 5 inside rows. The measurement is 2 rows x 30cm. Tiller number is an indication of the ability of wheat to maximise yield. Inadequate and excess tillers affect yield in different ways. Low tiller number limits the number of heads produced and therefore lowers yield potential. Higher tiller number wastes resources such as light and soil moisture that lowers yield by increasing screenings (small grain) especially with a dry finish. The competition

for resources (light and water) is apparent and the lower densities compensate through more tillering and more efficient use of the resources. More tiller death may occur with high tiller number especially in poor seasons where the finish is dry.



Harvest Index Cuts and Grain Weight:

Harvest index cuts are sampled at maturity (just before harvest). The samples are taken randomly from the middle 5 rows in each plot where 3 rows x 50cm are cut. The samples are weighed for total biomass, threshed and the weight of the grain taken. From these samples Harvest Index of each plot can be determined. The Harvest Index is the ratio of grain produced to total biomass or dry matter (grain and straw together). Low harvest index can indicate a problem through the growing season such as disease, frost or heat shock. For healthy crops harvest index is an indication of water use before and after flowering and the efficiency with which the plant has used this water. Given our experiment is a sowing density experiment we can use harvest index to indicate if lower or higher sowing densities affect grain yield. Harvest Index is also a check for whole plot grain yield.

Plant Heights:

Plant heights are measured at maturity (just before harvest). A random grab sample of the plants is taken and height assessed by taking the average of the plants between the top of the wheat head and the base of the wheat head. Plant height is important as it is an indication of environmental factors that the plant has encountered. Optimal plant height is good for productivity and yield



stability. Given we are using the same cultivar (Spitfire); the differences in plant height could be related to sowing density and water use. Due to the fact that all plots are treated the same and we are using the same cultivar there should be no differences in plant height. Plant height is important in experiments where different dwarfing genes are present and you want to determine the percentage reduction in height that occurs for each dwarfing gene.

Plot Lengths:

Plot lengths are measured by a tape measure (held by two people) placed at either end of each plot. Plot lengths are important in determining the overall yield of each plot on a unit per area basis (t/ha). Without plot lengths you cannot determine the yield for each individual plot. In this trial grain yield is important as it can determine the effect of the sowing densities (plant competition) on final grain yield.



Harvest (or Grain Yield):

Grain yield is measured by harvesting each plot with a harvester. The individual weights of each plot are weighed by an automatic weighing system inside the harvester. After weighing, the grain for each plot is bagged off inside the cabin. If automatic weighing is not possible for each plot, then bagged samples are weighed manually. Grain yields are important in determining the overall yield of each plot on



a unit per area basis (t/ha). Without grain yield you cannot determine the yield for each individual plot for comparison of the treatments to determine the effect of our sowing densities on final grain yield.

Results Presentation:

DPI Technical Officer Kathryn Bechaz visited YAHS at the start of Term 1 of the following year to present the results of the trial. Students discussed the outcomes of the experiment and the factors that influenced the results. It turned out the hypothesis and results of the experiment are not always as expected.



Conclusion:

The collaboration between Yanco Agricultural High School and NSW DPI has been well worthwhile for the development and curriculum needs of the students. The practical experience is especially important to the students and allows them to gain an understanding of how and why field experiments in science and agriculture are conducted. By having hands on experience of how basic research is conducted the students gain knowledge of how scientists conduct experiments and what is involved with experiments. They also have an appreciation of other careers that can be pursued through agriculture and science. There also has been several students who have gone on to make connections with DPI Researchers and have conducted work placement as a result of this partnership.



Many thanks to DPI staff Kathryn Beechaz, Peter Davidson, Dionne Wornes, Glenn Morris and Alan Boulton for your continued support and guidance over that past 4 years. Yanco Agricultural High School values its partnership with the NSW DPI and looks forward to continuing this venture into the future.



This initiative aims to provide support to young people effected by the drought during the Christmas/January holiday period.

Over the Christmas break, the department is offering a wide range of fee-free vocational education training courses in areas such as hospitality, first aid, construction, and drone operations.

The program is open to people aged 15 to 24 years old in Western, North Western and Far Western NSW. Learn more: bit.ly/2LB6iF7



DROUGHT BREAK

Summer Fun For Regional Youth

The NSW Government, through Training Services NSW, is subsidising skills training for young people impacted by the drought to support youth engagement and increase employability skills during January 2020.

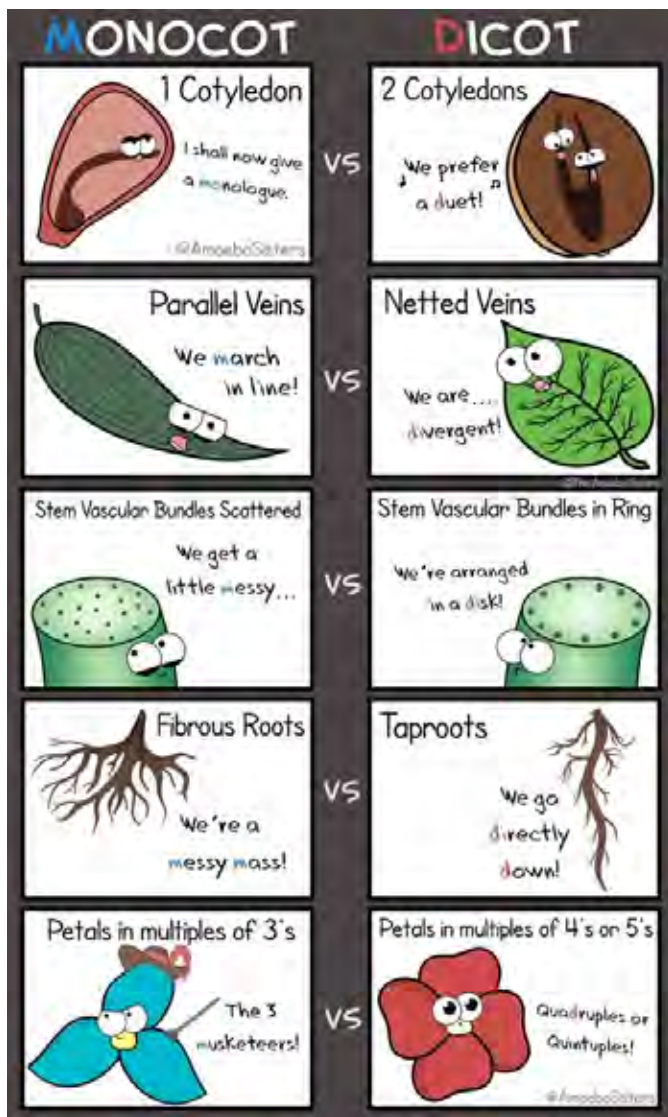
This is one initiative within a package of government programs available to support farmers, their families and rural communities.



save the date

10-14 JANUARY 2021

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AUSLAN VIDEOS

NSW DPI schools program is proud to release Auslan interpreted videos of our popular children's books 'Bosley and Bruce' and 'Charlotte'.

Find them Here




NSW BUSHFIRES

BLAZE AID

Volunteers Needed

- Nymboida (this Thursday)
 - Glenn Innes (ASAP)
 - Yarrowitch (ASAP)
 - Wauchope (ASAP)
- Braidwood (Major's Creek)
 - Tamworth

www.emergency.nsw.gov.au

CLIMATE ELECTIVE

A good resource here sent to me to post for the climate elective on the effects of drought and climate variability on Australian farms

<https://www.agriculture.gov.au/sites/default/files/documents/>



REGIONAL & REMOTE SCHOLARSHIPS

2020 Applications Now Open!!!

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To apply you must:

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- meet the entry requirements for the course as displayed on the course page of our website.
- complete and lodge this application form by 31 January 2020
- the successful applicants must complete all required enrolment procedures by 28 February 2020
- one scholarship is reserved for a young student aged 18- 30 years of age the other is open to all ages

If you would like more information about the scholarship or the course please contact Melanie on 02 6884 8812 or via email on mmoeller@ruralbiztraining.com.au

*** to see a more detailed map go to

<https://www.health.gov.au/resources/apps-and-tools/health-workforce-locator/health-workforce-locator>

and select the ASGS Remoteness Areas (2016) filter. to be eligible you must live in RA3, RA4 or RA5

WEE WAA @ ARCHIBULL AWARDS

The Archibull Prize program was run at Wee Waa High school this year for the first time and involved Stage 5 Agriculture, Stage 5 Art and an Archibull team comprising students in Year 8, 10 and 11.

On Sunday 17th November, 6 students along with Art teacher Ms Cherrie Pocock and Agriculture teacher Verity Gett left for Sydney on the school bus with our Archie “Chronibull” loaded up in the horse float. It was certainly a different experience transporting the Archie in the float that is usually designated to transporting the schools show steers to various shows around the country side. We were allocated the grains industry for our study and Our artwork “Chronibull” aim was to chronicle the development of the grains industry to the sustainable industry it is today and providing grains to feed and power the worlds growing population.

We arrived in Sydney very late Sunday evening and were delighted with the hospitality and offer of lodging at Hurlestone Ag High School. Monday saw us get up early and head into Homebush to drop off Archie for judging as well as attend a workshop with the Young Farming Champions and Heywire program.



Along with Lake Cargellico Central School, the students and staff from Wee Waa headed out to the University of Western Sydney on Monday afternoon for a very informative tour of the water cycle and the way the university is using recycled water in its livestock and cropping program. We followed the journey of the water from the storm water drain to the filtration ponds and then to the paddock where it is applied through lateral move irrigators.

The students were then treated to a visit to the University’s world class glass house facility to witness several scientific plant experiments in action including the growing of different cultivars of eggplant and pollination with native bees.





On Monday afternoon after our students were given a fantastic tour of Western Sydney University and had begun seriously considering attending Western Sydney Uni after being so inspired, we headed back to Homebush for our judging interviews with our artwork.



Tuesday morning was the awards ceremony. What a great event, with so much excitement in the room and so much inspiration for the future of agriculture and farming, despite challenges like climate change and drought. It was very exciting for our students to meet and speak to Costa.



We are looking forward to skyping him one day from our school farm and maybe getting him out here to visit. Such a great opportunity for our small rural school to be involved in such a program we had such a great time and learnt so much! Also very proud to have received Highly commended(or 2nd place!!) in the artwork section for our Chronibull. We would like to thank Hurlestone Agricultural High School for their very generous hospitality in providing accommodation and feeding us and also to Western Sydney University for the fantastic informative tour.



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EXECUTIVE SUGGESTIONS

Your executive is always looking to get feedback and suggestions from our members.

If you would like to reach-out to us please use the following contact details to share your ideas and feedback.

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FROM THE EDITOR

I hope everyone has a great holiday season and I look forward to what 2020 will bring.

All Best

Greg