HANDS ON EDUCATION - THE PRACTICAL ADVANTAGE

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SUMMARY:

Tocal college offers a range of agricultural courses designed to provide students with a diverse range of skills through first-hand experience. As part of the subjects offered, Tocal students have been involved in the running of the self-replacing Dohne flock. From this, we have witnessed the advantages of high fertility, fast growth rates and exceptional wool quality that are considered standard to the Dohne breed. Tocal students graduate as agriculturalists having experience in help running the college farms and completed commercial work placement, which prepares them to move forward into their working lives.

INTRODUCTION

Tocal Agricultural College is a 2200 ha residential college providing full and part-time courses to students aged from 16 years of age. Since the Colleges establishment 50 years ago, hands on farm skills and training has been a high priority. How we deliver knowledge is a balanced mix of theory, hands on training, and is our point of difference. Students are involved with the Tocal farm at all stages of the management cycle. Certificate III students muster, draught, drench, vaccinate, milk and handle livestock as needed. Certificate IV students are further involved in feedlotting, breeding and associated sheep management activities common in running a self-replacing sheep flock.

Tocals sheep enterprises past and present. Traditionally, Tocal has run a 200 head first crossbred ewe flock joined to Dorset rams and additional 100 Merino wether wool cutters. These enterprises were highly productive, but had low to medium educational value for students. Replacement ewes were replaced 200 at a time and all progeny sold or slaughtered in the on-farm butchery training.

As part of the Tocal sheep training program, students visited top performing sheep enterprises around the north of NSW covering fine, superfine and soft rolling skins enterprises. Exposure was also given to wool testing companies, meat enterprises and sheep meat processors/abattoirs. On our tours, we visited a number of Dohne enterprises and we were impressed with the dual-purpose performance of the breed.

Wishing to continually improve our education experiences for our students, we explored starting a self-replacing sheep flock. With production goals of achieving high fertility, high meat and wool production we were drawn to the Dohne Breed. With encouragement and support from Graham Coddington (Roseville Park Dohnes), Tocal college purchased 50 in lamb maiden ewes in 2008 (Figure 1). The next year, the students selected further cast for age ewes, which was the first of many new positive educational outcomes with guidance from Graham (Figure 1). An additional two rams were also selected to mate to the existing flock.




Figure 1. Clockwise (left to right): Tocal students inspecting sale rams with Graham Coddington from Roseville Park Dohne stud. The purchase of 50 Roseville Park cast for age Dohne ewes. (5-6 years). The visual inspection both joining of Dohne ewes .Tocal students inspecting Dohne rams on their sheep and wool tour

The Performance of the Dohne. The 100 Dohne ewes were than run side by side with the remaining 100 crossbred ewes under the same conditions to evaluate their performance (Figure 2).


Figure 2. The performance of both crossbred and Dohne ewes were evaluated at Tocal college.

Table 1 documents the wool specifications of the Dohne enterprise. Over this period, the wool produced from these ewes met the high standard required from a Merino enterprise seen within Australia.

Table 1. The wool performance of the Dohne enterprise run at Tocal college.

Year	Fibre diameter *	Fleece weight

2011	19.9	5.1
2012	19.9	4.2
2013	19.3	3.8
2014	19.4	4.2
2015	19.5	4.6

* Fibre diameter is average of wool sold at market.

The pregnancy rate was also recorded for both breeds (Table 2). The results demonstrate the fertility of the Dohne breed was comparable to the crossbred system. However, the benefits of the self-replacing nature of the Dohne breed gave it the economic advantage.

Table 2. The pregnancy rate of the dohne and the crossbred enterprise at Tocal college.

	Pregnancy rate (%)	
Year	Dohne	Crossbred
2011	120	95
2012	135	115
2013	123	123
2014	107	120

The surplus Dohne and crossbred ewes were sold into the same markets for similar comparison. Dohne wether lambs and crossbred lambs were sold for the same price over the hooks at a local meat works at 22kg carcase weight. Cast for age ewes were also sold to the local saleyards and received the same returns. Overall, being able to retain the ewe lambs from the Dohne enterprise saves Tocal college $20,000-$25,000 every 5 or 6 years through the production of replacement ewes.

In 2015, we sold store ewes for $84 and wether lambs 2 months after weaning for $75 (Figure 3). Due to extreme weather conditions in this year, there was a shortfall in the feed availability during May to August, which resulted in a lower, lambing percentage. However, in our opinion the Dohne breed still showed its prolific adaptability to a diverse variety of climate conditions.

Figure 3. Dohne ewes and wethers sold for meat production.

Challenges of sheep production at Tocal. *Rainfall* .One of the greatest challenges to running sheep at Tocal college is the high rainfall. Tocal receives an average of 950 mm of rain each year. Together with high temperatures and high humidity, any sheep run at Tocal has to be of

high quality. With high rainfall comes flooding (Figure 4) and the sheep paddock area can be inundated up 3 times a year with floodwater. The inundation comes with logistical challenges to feed stock during events. Of the 50 ha area available to the Tocal sheep flock, 10 ha is high enough to never be flooded. To overcome these conditions sheep are supplemented with home grown pasture silage.

Figure 4. The inundation of flood water at Tocal college.

Wild dogs. Tocal is a large 2200 ha farm with large amounts of scrub and is also bordered by absentee farmers and a small town blocks. This is the perfect environment for dingos, wild dogs and town dogs to attack domestic livestock in the area. Tocal runs a program of shooting, baiting and employing a sheep protection dog (Figure 5). Since the drought in 2000, close to 200 dogs have been shot, trapped or poisoned on station.

Figure 5. The sheep protection strategies utilised by Tocal college.

Internal Parasites. Due to its location and high rainfall, Tocal is the perfect environment for Barbers Pole worms (*Haemonchus contortus*). As with most farms, we have drench resistant strains of worms and we rotationally graze to minimise the reinfection of the sheep in the paddocks that they are grazing. To manage the timing of drenching we use the Haemonchus Dipstick Test kit (® Merial) to monitor the amount of Barbers pole worms being carried by the sheep. With the advent of Barbervax (® wormvax Australia) (Barbers pole vaccine) our lambs have improved weight gains from weaning to 12 months of age and carry a low burden of worms.

The Future. Over the past 7 years, Tocal has been in a flock building phase; keeping the bulk of ewe lambs on as breeders. In 2015, we have moved into our consolidation phase. Using data collected by the students, ewes were culled on fleece weight, fibre diameter, fleece visual traits, lambing performance, lamb survival and structural conformation. In the future, we will keep our flock at 200 ewe breeders of which will comprised of the selection of 50 replacement ewe hogget each year and 25 wether lambs for the student farm butchery training.

The Hands on Education. Across all the enterprises run at Tocal, the education of future agriculturalists is the overarching principal of experience. Experience through hands on real time education and back ground knowledge gained in the class room. A typical Tocal student will spend 50% of the course in the field. The educational value of participating in a self-replacing flock expanded the opportunities for students to select replacement ewes, purchase rams, shearing (Figure 6), crutching, wool classing, sheep store sales, electronic tagging/recording, joining and lambing management as part of their course.

Figure 6. The shearing of Dohne ewes at Tocal college.

All certificate III students study the sheep industry and learn basic hands on skills through lamb marking, drenching, vaccinating, culling and general livestock husbandry tasks. Over half of the returning Certificate IV students study sheep management and breeding as an elective. In this students are involved in shearing, crutching, wool classing, ram and ewe selection, joining, lambing and mothering activities.

The certificate IV sheep electives are very popular due to the hands on experiences and responsibilities the students leave with a sense of pride and accomplishment that come with working with the Tocal's Dohne flock.