# Farrer White Suffolk Breeding Program

## Video worksheet

**General questions**

Outline the objective of the breeding program at Farrer Memorial Agricultural High School and how they aim to achieve it.

Breeding elite sires for commercial sheep production. These rams are used by commercial prime lamb producers as terminal sires.

What genetic attributes does Farrer breed for in their White Suffolk breeding program?

* Low birthweight
* High growth
* Moderate fat
* High muscle content
* High fertility
* Structural soundness
* High lambing percentages
* Worm resistance

List the types of data collected on individual sheep within the breeding program at Farrer.

* Birthweight
* Litter type
* Weaning weight
* Post-weaning weight
* Adult weights

Describe the program LAMBPLAN.

A national database for collection of sheep data that identifies, ranks, and compares sheep according to their genetic data submitted by producers. It analyses performance and pedigree information to provide an estimate of the animals’ genetic merit for a range of traits, expressed as Australian Sheep Breeding Values (ASBVs).

Define ASBVs.

ASBVs are a projection of how an animal’s progeny will perform.

Describe how ASBVs are used at Farrer within the breeding program.

They help students determine which ram’s semen will be used to inseminate which ewe based on the genetic merit to improve the genetics of the next generation.

**Selecting traits**

Explain why low birthweight is a genetic trait that Farrer is interested in monitoring for their flock.

Low birthweights mean less difficulty when lambing, but there is a balance between too high and too low, so understanding the projected birthweight for both the dam and sire can assist in maintaining a suitable weight for lambs that is a happy medium.

Calculate the following. If an ewe has an ASBV of 0.60 for birthweight and a ram has an ASBV of 0.49 for birthweight, what is the estimated birthweight trait of the progeny?

0.55

Calculate the following. If an ewe has an ASBV of 0.60 for birthweight and a ram has an ASBV of -0.16 for birthweight, what is the estimated birthweight trait of the progeny?

0.22

Use the previous examples to develop an equation for determining how the progeny estimated data is calculated.

Ewe ASBV + Ram ASBV/2 = progeny estimated trait

After students make their ideal ram and ewe selections, they input the data to MateSel. Explain why this is an important step in the process.

This program makes joining recommendations. MateSel also compares pedigrees and reports on inbreeding so that any risks of closely related animals can be avoided.

**Oestrus synchronisation**

The ewes in the Farrer breeding program are artificially inseminated. Students use hormones to manipulate the reproductive cycle of the ewes within the mob. Outline the advantages to the program of using this technique.

It ensures that ewes all cycle at the same time and artificial insemination (AI) can be carried out on one day. It also means the lambs are then all due around the same time.

Explain the process of oestrus synchronisation and the steps conducted onsite at Farrer for the breeding program.

A seeder or controlled internal drug release device is inserted into the vagina of the ewe which slowly releases progesterone into the bloodstream. The progesterone tricks the body into thinking it is pregnant and the ewe will not come into oestrus. After 12 days, seeders are removed and ewes are injected with another hormone, PMSG, to stimulate ovarian activity. Ewes will then commence oestrus within 36 hours and ovulation will take place within days.

List the other husbandry activities carried out around the time of oestrus synchronisation activities.

Other activities are drenching and annual vaccinations.

**Artificial insemination (AI)**

Outline the precautions or activities that are conducted to ensure the right semen is placed within the correct ewe.

Ewes are marked with a large paint number on their backs that relates to a ram’s number, for example, number 5, the day prior to the insemination. On the day of insemination, ewes are drafted into sire groups and then electronic identification (EID) tags scanned prior to insemination to ensure the correct ewe is tagged for the correct sire.

Describe the process of AI in sheep.

* Sheep are left off food overnight to empty out and create more abdominal cavity space.
* Ewes are lightly sedated on the day of AI.
* Ewes are placed in a cradle and strapped in.
* The vet inserts a laparoscopic probe into the abdomen and pumps in gas to blow that cavity up for ease of viewing.
* A second probe is inserted into the other side and thawed semen is placed into this side.
* The vet guides the probes into the correct placement for fertilisation.
* Probes are removed and incisions stitched back up and sprayed with antiseptic.
* Ewes are moved back to their paddock.

**Lambing**

List the types of data recorded for each lamb during lambing.

Weight, sex, number in the litter, identity of dam.

**Lamb marking**

Identify when lamb marking is carried out in the breeding program at Farrer.

Lamb marking is done when the lambs are 4-6 weeks old.

List the tasks conducted at lamb marking.

Ear marking, tail docking, vaccination, B12 injections and tissue sample collection. Ram lambs at Farrer do not get castrated as they are sold as rams the following year.

During marking, Farrer students collect tissue samples of each lamb. Explain why this is done.

It is sent away for DNA testing which provides information about the lambs’ genetic makeup and pedigree. It also provides an opportunity to make certain that each lamb is the offspring from the correct sire and dam.

**Shearing**

List the types of data collected during shearing.

Fleece weights for individual animals.

Explain the purpose of shearing White Suffolk sheep.

A White Suffolk fleece is not comparable to Merino fleece in quality, but still needs to be removed for health and hygiene purposes. It is still sold however, just at lower prices than a wool breed fleece.

**Muscle scanning**

Farrer breeds specifically for genetic traits that are high muscling and moderate fat. This cannot be seen by visually assessing the sheep. Describe how Farrer tests the lambs for these traits.

Ultrasound technology is used after weaning (between 210 and 300 days of age). Fat depth and eye muscle depth are scanned, and their depths measured.

Locate the placement on the lambs’ body that the scanning takes place.

This is between the 12th and 13th long ribs.

Outline why carcase fat depth is an important genetic trait.

It influences flavour.

Describe what eye muscle depth is and why it is important.

The depth of the eye muscle indicates the yield of meat for the animals. The meat is what consumers want.

Are negative or positive values important for fat depth and eye muscle depth?

A negative value is preferred for fat depth as it indicates a leaner animal. A positive value is preferred for eye muscle depth as it indicates a larger eye muscle or bigger lamb chop.

Identify other data collected at this time of year and outline why it is important.

Scrotal circumference of rams which can indicate fertility.

**Sale day**

Explain why sale day is important to the breeding program at Farrer.

It signals the end of an 18-month breeding program where students can work together to show their hard work and see the profits for their genetic selections made in the previous year.

**Conclusion**

Use the information from the video to create a calendar of operations for the breeding program at Farrer Memorial Agricultural High School.

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| Month | Activity |
| January | N/A |
| February | Mid Feb - oestrus synchronisation  Mid Feb – ewe vaccination and drenching  Late Feb – Artificial Insemination  Following year – muscle scanning |
| March | N/A |
| April | N/A |
| May | N/A |
| June | N/A |
| July | Late July – lambing  Late July – tagging of lambs |
| August | N/A |
| September | lamb marking (castration, vaccination, B12 injection, ear marking, genetic testing, tail docking)  Following year – sale day |
| October | N/A |
| November | shearing |
| December | N/A |