

ANGORA RABBIT FIBRE :  
HUSBANDRY, PRODUCTION & FUTURE POTENTIAL IN AUSTRALIA

GILLIAN C. ABSOLON

SUMMARY

Despite its long association with man, there is still considerable ignorance about Angora Rabbits. We need to know more of the effects of intensive farming, of temperature, management and nutrition. We need to learn to control disease - reduce mortality rates. We need to overcome the trauma of shearing. We need to study processing techniques in order to reduce shedding; we need to produce a yarn more able to withstand the rigours of wear and tear, a yarn that does not matt so readily.

INTRODUCTION

Angoras are the only breed of rabbits from which wool suitable for spinning can be harvested. They are the only rabbit whose hair grows continuously throughout the animal's lifetime.

It is one of the oldest known breeds of domesticated rabbit. As such, it is the breed which has the largest selection of myths/stories surrounding it.

It is said to have been worshipped as a god by the ancient Chinese dynasties. Some theories indicate that it might have come from Angora (Ancyra), a Turkish province in the region of present day Anatolia..

There are stories of French sailors returning from Asia Minor introducing Angora to Europe in the early 18th century. Other accounts indicate they originated in Britain, where they were extensively bred. The wool was so valuable that it was illegal to export live animals or even the fibre.

It is not known what entrepreneurial skills had been brought into play, but it is recorded that by 1723\* Angora wool/hair was for sale in Bordeaux - albeit at very high prices. Since then it has been among the most sought after and expensive wools in the world.

The French and Belgium quickly developed the commercial potential of this fine silky wool. It may have been during this period when other breeds were first crossed with Angoras. This was to produce a stronger wool suitable for using when making clothing. [The French Angora & Belgium Angora]

Even in those days the medical profession was quick to appreciate the thermal anti-rheumatic qualities of the fibre. Spinners were encouraged to produce a medical yarn, known as Angoratine, used especially in the making of undergarments.

Angora was introduced to Germany in 1776. Markets opened up all over Central Europe.

By the turn of this century France was the largest producer in the world. Between the wars other major producers on the international market included Germany, Japan, Great Britain and China.

DOEBANK N.Z. RABBIT FARMING CONSULTANTS - P.O. Box 1681, Palmerston North N.Z

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\* Maitre Tearrot

To-day, China exports 10% of her total production of this fibre; and this alone makes up nearly 90% of the total international raw commodity. Other producers include France, Chile, Argentina, Brazil, Kenya, Denmark, Italy, Germany, India and New Zealand. Many small Third World states are setting up production on a cottage industry basis.

#### THE FIBRE

Because the rabbit has very few sebaceous glands in the skin, there is very little waste to be removed during preparation for spinning. It is a very fine fibre - 10-18 microns - and has high insulating qualities.

Nowadays, the wool is blended with fibre from other species, usually merino sheep. The resulting very fine soft yarn is used in the production of fashion garments and warm underwear.

#### HUSBANDRY

It is important to study and learn the indications of healthy rabbits. Even slight changes in normal activity can be a warning of impending trouble. A high standard of stockmanship/husbandry is a vital element when farming rabbits. They are animals which need frequent and individual attention. Rabbits can be kept under a variety of management systems, but it is always essential to provide an environment that will be conducive to good health, meet the behavioural needs of the animals and yet provide optimum production.

Farmed rabbits are entirely dependent on the farmer. So, the skill of the farmer, together with the available facilities will determine the number of animals kept at any one time.

Housing should provide protection from extremes of weather as needed, at any time. It should be a dry, cool environment of constant temperature of  $15^{\circ}\text{C} \pm 3^{\circ}$ .; and it must be vermin, insect and bird proof.

Units must be draught-free with no areas of stagnant stale air. In fact, a rabbit house must be adequately ventilated. This means providing even air movement throughout the shed at, and above, animal level. Adequate ventilation should assist in maintaining an even temperature, contribute towards ensuring low levels of toxic gases, and act as a dilutant of air borne disease organisms.

The correct airflow rate is relative to the volume of air space available per kilogram of rabbit combined with the correct positioning of vents.

Rabbits have a large surface area relative to their total muscles. They find it hard to cope with extremes of temperature and with wide fluctuations of temperature within a 24 hour period. Operators should remember that these animals do not have a natural method of removing excess heat from the body - such as panting or sweating. Heat creates stress, leading to sterility, exhaustion, infertility, reduced liveweight gain, slower fibre growth or even death.

When calculating shed capacity allow no less than 1.1 square metre per adult animal cage space when using flat deck system; but it is also necessary to consider the cubic air space required per kg rabbit, and the rate of airflow required relative to the ambient temperature.

A flat deck system is easier to manage than a tiered system; and using a flat deck system dung pits below the cages may/should be left undisturbed for many months.

Individual free-standing cages for breeding stock and, ideally, for woollers too, should be of a simple design. Standard cages can be divided in two and still be suitable for woollers, except in areas where temperatures are very high.

These cages made from galvanised welded 14g can be easily made, fitted onto a frame or hung on wires.

They can be removed for regular cleaning/sterilizing outside the shed with minimum difficulty. Regular hygiene is one of the most successful methods of disease control. Clean cages are particularly important during pregnancy, parturition and lactation, at weaning and after shearing.

When cages are fitted along wall excrement splashes against it, creating an ideal reservoir for disease pathogens. Not only is it difficult and tedious to have to keep this wall cleaned - it is a non-income earning task; and the area within the vicinity of an outside wall is most immediately affected by ambient temperatures. A passageway along the wall will cushion the impact of external temperatures, thus going some way towards maintaining a comfortable environment for stock.

A cage floor, made from 12g wire, area of 0.56 sq.m<sup>2</sup> is the minimum recommended size for adult rabbits. Woollers and young stock may be housed in smaller areas, but health of the stock must be monitored at all times. An old-fashioned rule of thumb guide - 2 lbs live rabbit per 1 sq. ft cage space (0.9 kg live rabbit / 0.09 sq.m cage space).

Various designs of feed hoppers are on the market. Openings from which rabbits obtain feed need to be of an adequate size, so that an adult may feed with no discomfort whatsoever. The hopper must be free of sharp edges, easy to clean and easy to service from outside the cage. Hoppers are placed at a height that reduces risk of contamination from excreta, and yet are not so high that kits cannot have access to feed.

Automatic nipple drinkers are the easiest way of distributing water with a minimum risk of contamination from dust, fluff, excreta and disease organisms. It is important to remember that the nipples be cleaned every time the cage is taken away for cleaning. Ensure that the nipple design allows for a sufficient flow of water to meet the rabbit's requirements. Restricted water can result in loss of production, or disease and consequent economic problems.

Nest boxes are introduced on 28th day after mating. A good nest box is either disposable or very easily cleaned after each litter. It must provide the doe with a sense of privacy and security, while - at the same time - maintaining a micro-climate suitable to meet the kits needs.

It is sensible to make sure equipment has been designed for the convenience of the operator - ease of removal from the unit, ease of cleaning, ease of daily working. The rabbit industry is sufficiently labour intensive without adding to it by using badly designed equipment.

As disinfectants are not fully effective in the presence of organic matter, a blow torch, used in conjunction with a wire brush and elbow grease, will remove unwanted material; and the naked flame will give surface sterilisation to the cages, but burning must never be carried out inside the shed.

Record cards are essential. Receipts and expenses; feed deliveries and feed consumption; feed conversion efficiency can be regularly monitored from these. Buck and doe cards to show dates of mating, conception rates, numbers of kits born, reared and weaning details. Shearing cards will give details of total end product.

Regular reference to these cards will allow management, production, health and financial progress to be regularly monitored.

It is normal practice to wait until after the third shearing (at 8 months of age) before breeding. After this shearing it is possible to guesstimate class and annual wool yield, and assess whether or not the animal will be suitable for breeding.

Does are mated as soon as the oestrus rhythm peaks after shearing. This means the wool will be of a reasonable length at kindling - yet not so long that it will strangle newborn kits.

The doe is always taken to the buck. Gestation is 31 days. The nest box, put in 28 days after mating, is covered with sawdust (about 5cm deep) and this is topped with a layer of clean barley straw. Shortly before kindling the doe will pluck wool from her belly or rib area to make a soft lining.

Kits are born naked, deaf and blind. Wool can be seen to be growing within 2/3 days of birth. Eyes begin to open at about 10 days of age; and soon after this kits begin exploring beyond the confines of the-nest box.

On average, 5 kits per litter will reach weaning. Weaning systems vary, but weaning kits before they are 6 weeks old does increase disease/stress risks. Because bucks produce less wool than does, some operators slaughter all male kits at 2/3 days old - except those from matings of top production animals which might turn out to be replacement stock.

Carefully balanced diets are essential for rabbits subjected to intensive production. Small quantities of good quality of meadow hay or barley straw can be used to supplement pellets, but hay should never be allowed to accumulate/lie on the cage floor as it then become contaminated with urine and faeces.

There are no magic formulae for guaranteed 'correct' feed formulations. This is because the health and production of each unit can be affected by so many other factors, e.g. ventilation, hygiene, etc.

## PRODUCTION

The economics of Angora rabbit farming are dependent on quantity and quality (class) of wool produced per animal.

Wool should be of high density over the whole body, not merely on the sides and hindquarters; and an animal with a long, well-proportioned body will have more room on which to grow wool than a rabbit with a short, squat body.

A wool of good quality feels slightly greasy. There should be a sufficient proportion of guard hairs so that the wool does not lie flat and lifeless. Where there is a good density of underwool, the coat will stand up all over the body.

Twenty per cent guard hair in the wool is acceptable for the manufacture of underwear. However, too much guard hair gives a coarse, poor quality wool.

The annual yield from a high production adult doe can be 1.4 kg. She can remain a good producer for up to 3 years. However, it would be reasonable to assume that- initial yields from newly established units of bought-in stock might be as low as 1 kg/doe/year.

Bucks produce 15%-20% less total wool than does; and a buck will have a

higher proportion of low grade wool than a doe. The quality of his wool begins to decline after 18 months of age. Yet the labour required to maintain and shear a buck is no less than that required for a doe. Nor are the other costs any less.

Rabbits are shorn for the first time at weaning or when they are 2 months old. It is very important that this baby wool is removed at this time. Failure to do so will result in the animal being under considerable stress because of the matted mess which will quickly develop as adult wool starts to grow.

The yield from this shearing could be up to 90 gms. If it is clean, this wool could grade as juvenile.

The next shearing, at 5 months of age, can yield between 200 & 280 gms of wool, and is 3rd grade. At 8 months old, the wool yield from top production commercial Angora does has been recorded as being as high as 380 gms, but - on average - you can expect 250-300 gms.

Thereafter, shearing needs to be carried out regularly at 90 day intervals when the fibre length should be no less than 60 mm long.

It is a fundamental of good husbandry that rabbits are placed in a clean cage after shearing. During the winter it may be necessary to keep newly shorn animals in a warm room for a few days to avoid chilling.

It may also be necessary to increase feed rations for a few days until it can be seen the wool is growing again.

Conversely, in the summer/autumn it may be wise to put newly shorn animals in a cool room during the heat of the day. A bald rabbit will suffer considerable distress from heat.

The wool is harvested by plucking or shearing. Plucking may be done in small units where the cost of shearing equipment is not justified. The process is carried out over a period of several days as the wool does not become 'ripe' all at once.

With one hand holding the rabbit's skin onto its' own body, use the thumb and index finger of the other hand to gently pluck wool, using very little pull. If the fibre does not come away easily, it is not ready.

Shearing can be done with electric clippers - such as are in use in veterinary clinics.

The wool on the legs, feet, ears and face (and known as 'furnishings') should not be left on commercial animals. It easily becomes matted. Trimming with the scissors is the quickest way to remove these.

Before the rabbits are placed in their clean cages in an area of a suitable temperature, it is wise to check toenails. They grow very quickly and can do intense (well, it feels intense) harm to operators, kits and each other (as in mating).

Trim the nails with a small animal nail trimmer, but do not cut into the quick - try to stay 50mm below the blood line.

Check ears for ear-mite. Treat if necessary. In a well-run unit there should be no other external parasites, but it is a wise precaution to be on the lookout for them.

Any nicks/cuts caused by the clippers should be treated with tamed iodine.

Ninety days after shearing, the wool should again be no less than 60mm long. On a high-production animal this wool is evenly distributed over the whole body.

Wool should be kept in containers in which it can 'breathe', Paper bags or cardboard boxes are ideal for short term storage, but when it is necessary to keep the wool for any length of time, the container needs to be vermin and insect proof. Cardboard drums have tight fitting lids, and they will stack well. Stored in a dry place, the wool will keep in good condition for years.

Sorting is normally done during shearing. Some buyers may ask for 6 grades although the more usual requirement is 3 grades :

1. Pure white wool, min. 60mm long and free from all felt/matting; approximately 70% of total adult doe fleece. .
2. Pure white wool, 40mm - 60mm free from matting.
3. Pure white wool, less than 40mm long.
4. Clean felt/matting.
5. Juvenile
6. All dirty wool and felt/matting, and 2nd cuts approximately 5% of total adult doe fleece.

#### FUTURE POTENTIAL IN AUSTRALIA

Angora rabbit fibre potential is a new venture in Australasia.

Assessing potential for the future could be complicated by a wide range of variables that have to be considered.

- \* Where are the potential markets?
- \* If, in Australia, who is supplying these markets now?
- \* Why will the local product be an improvement?
- \* Will it be cheaper than the imported fibre?
- \* If the potential is to export, what is happening in other parts of the world that will affect the sale of Angora products?
- \* Is consumer buying power for luxury products increasing/declining?
- \* Is production from other sources increasing/declining?
- \* Where is this product being placed?
- \* What are Australian production costs in comparison to overseas?
- \* How far away are the markets?
- \* Are there alternative uses for Angora"?

Estimating on farm production can only be based on supposition. This is because production is largely dependent on the operator's ability to relate to the animal's needs; and theory is all too often quite different from reality,

An added problem is that because rabbit farming is new to Australia, most intending farmers have little or no idea of the commitment necessary to successfully run an intensive unit.

As far as Angora is concerned, the commercial wool buyer is working with a very specialised and up-market commodity. Length, class, colour have to meet very specific standards; and these standards have been set on an experienced international market.

Market research will be the foundation on which to base costings, to work out viability of the new enterprise, but it is not easy to work out a budget and cashflow with no idea of real activity in the marketplace or ability of producers on the farm.

Bearing in mind that Australia has no advantage in terms of equipment costs, labour costs or expertise, and that this country is far from major world markets, some questions need to be considered :

- \* If Angora rabbits have been farmed in Europe and Asia for hundreds of years, and the fibre been highly valued, why is this not an established traditional farming system?
- \* There has always been a demand for this particular fibre. Why has this demand not been met long ago?
- \* What happens when a product which is valuable by its very rarity, suddenly becomes commonplace?