Meat rabbit farming – an introduction

Information prepared by the Crusader meat rabbit team

Introduction

Meat rabbit farming is one of Australia's fastest growing new industries. While its long term size will never rival that of our traditional meat industries, it is providing a useful source of income diversification for a number of people in regional and rural areas where farm incomes have plummeted in recent years.

Rabbit farming was prohibited throughout Australia until 1987 because of the pest status of wild rabbits. Prohibition was first lifted in Western Australia, though strict controls on commercial rabbit farming were applied. Over the last five to six years state legislation has been changed to allow commercial rabbit farming. Commercial rabbit farming is now undertaken in all states except Queensland which has a total ban on keeping rabbits.

The essential features of meat rabbit production are discussed briefly in this information bulletin and further reading is suggested for more details. This document is not meant to be a comprehensive study of all the options for rabbit farming, but provides a starting point for those who have little background knowledge of the industry. Information is drawn from a number of sources both published and anecdotal. It should be noted that none of the information has been validated by CSIRO research. Rabbit farmers using this information do so at their own risk.

There is a growing wealth of information and experience being built up amongst rabbit farmers so the various rabbit associations are a particularly useful source of information.

Breeding stock

For commercial meat production, New Zealand White appears to be the principal breed being used in Australia. New Zealand Whites have many desirable traits such as rapid growth rate, good carcass quality, good prolificacy and mothering ability (McNitt *et al.* 1996). The other major meat breed is Californian. Although it finishes at a lower weight than New Zealand White, it has higher carcass yield and meat-to-bone ratio. In Europe and the US, hybrids produced by crossing Californian bucks

with New Zealand White does, are used extensively for commercial farming thereby combining the best qualities of both breeds. Flemish Giant, a heavier slower growing breed, has potential as a terminal sire breed despite its poor reproductive performance and high maintenance costs. As rabbit production becomes improved further, the growth potential of Flemish Giant could be exploited through terminal sire development.

However, in Australia breed selection is limited by the availability of different breeds. Availability of stock for sale can be obtained directly from existing rabbit breeders, advertisements in rural newspapers and rabbit breeders associations. As rabbit farmers are licensed in each state, your relevant Department of Agriculture may be able to assist with the location of rabbit breeders in your district.

Housing

In general, the type of housing is dependent upon the climate, location and size of the rabbitry. The optimum temperature in a rabbit shed is around 10 - 25^{0}C (SCARM 1998). Effective ventilation is required to control extremes of temperature and also to remove ammonia. Housing is a critical issue for rabbit health. Poor ventilation will result in irritation to the respiratory tract and susceptibility to infection from bacteria. Heat stress will cause major rabbit mortalities and reproductive failure.

1. Ventilation

A discussion of different ventilation systems can be found in McNitt *et al.* 1996. The following summary covers the main points. Natural ventilation systems can use wind and animal heat to move air. Natural ventilation is low cost, the disadvantages being lack of control over air movement, inability to lower the inside temperature of the rabbitry below that outside, and over-ventilation. Natural ventilation can be provided with a high gable roof, a ridge vent, and open sides with flaps that can be opened or closed depending on the atmospheric requirements. In high wind areas, a stub wall or wind baffle outside the open sided sheds is needed to reduce wind velocity. Mechanical ventilation systems are used in environmentally controlled buildings, using fans to provide required airflow. The advantage of this system is the ability to control rate of airflow for effective removal of moisture, heat and ammonia; disadvantages being the high initial and operating cost and the need for back up systems in case of power failure. Evaporative cooling systems may be used in a hot, dry climate. A water sprinkling system on the roof of the rabbit shed will help to reduce high temperatures.

2. Space requirements

The following information is drawn from the code of practice published for intensive husbandry of rabbits in Australia (SCARM 1998). Sufficient room is required for caged rabbits to move around, to feed and drink without difficulty. The minimum legal standards for different classes of rabbits are given below:

- Doe and litter (5 weeks) 0.56 sq.m (total area)
- Doe and litter (8 weeks) 0.74 sq.m (total area)
- Rabbits (5-12 weeks) 0.07 sq.m (per rabbit)
- Rabbits (12 weeks or more) 0.18 sq.m (per rabbit)
- Adult does and bucks for breeding 0.56 sq.m Cage height (>12 weeks) 45 cm

If the floor of the cage is of wire mesh material it should be of woven or flat construction. The square mesh of the floor should not exceed 19 x 19 mm for adults and 13 x 13 mm for kittens. The optimum for rectangular mesh is 50 x 13 mm. The thickness of the wire mesh should not be less than 2.5 mm diameter (12 gauge). Cage arrangement can vary depending on the size of the enterprise. Multiple deck configurations require a faeces diverter or multideck conveyor belt.

3. Feeders and watering equipment
Good feeding and watering equipment will supply feed and water in hygienic condition and will avoid causing discomfort or stress to the rabbits. "J" type feeders are most widely used. A feed hopper in a cage should have a sufficiently big opening and should be large enough to feed all the rabbits in the cage at the same time. An automatic watering system can be installed. The drinking nipples of the watering system should be at optimum height from the floor of the cage, around 10 cm from the floor of the cage and they should not project more than 2.5 cm into the cage (SCARM 1998). It is always advisable to have a backup system to ensure that rabbits have access to water in case of a failure of an automated system.

4. Floor of the shed
The following anecdotal information has been gathered from rabbit farmers in Australia and the Thumper Newsletter. Earthern floor is preferred by some breeders as it absorbs urine and thereby reduces ammonia accumulation in the shed. Earthern floors combined with compost worms under the cages require less cleaning than concrete floors thereby saving a lot of labour. Mucking out is only required about three times a year. Concrete flooring needs regular cleaning and a high quality epoxy coating is desirable to completely seal the pores of the concrete. Development guidelines for rabbit sheds are available from your local council. In most instances you will be required to lodge a development application with your local council to construct a rabbitry. This is to ensure proper disposal of waste and to guard against environmental impact that may be detrimental to ground water, waterways and your neighbours!

Feeding

There are some detailed publications on rabbit feeding such as the book by Cheeke (1987). The following information has been reproduced from the Thumper Newsletter. The average daily requirement of pelleted feed for rabbits of different ages is given below:

- Does 100g
- Pregnant does 160g
- Lactating does 350g

Oaten chaff can be fed at the rate of 20 g per day per adult rabbit.
Pellets should be formulated to give basic nutrient requirements for rabbits. This information is available in Cheeke (1987).

Many Australian feed companies are now supplying a commercial rabbit pellet. It is important to have a very consistent feed product for rabbits as breeders report that their rabbits are particularly fussy about changes in diet, and variation in feed supply can cause major problems with diarrhea. Many of the commercial suppliers of rabbit

pellets are now aware of these issues and are becoming more consistent in the mix of ingredients they use to make up a ration of specified energy, protein and fibre content. As there is no published information on the performance of rabbits on different diets in Australia, deciding on the best source of feed is largely trial and error and it is worth talking to as many breeders as possible about their experiences.

Handling

Rabbits should be handled with care as rough handling may cause irreparable damage to muscles and may lower the carcass quality (SCARM 1998). Lifting rabbits by the ears should be avoided. They may be lifted by grasping with one hand the loose skin over the shoulders and placing the other hand under the rump to support their weight. Nails of adult rabbit may have to be trimmed to prevent them catching on the wire mesh of a cage. Rabbits will bite and scratch their handler if distressed or frightened and it is wise to wear cotton gloves to protect your hands.

Reproduction

The *Thumper* Newsletter and McNitt *et al.* (1996) are useful sources of information on reproduction. Generally a doe is ready for mating from 16 weeks of age and bucks mature at 18 - 20 weeks. Breeds will vary in age of sexual maturity with most New Zealand Whites and Californians ready to breed at 4.5 to 5.5 months, whereas Flemish Giants aren't ready until 6-7 months. Does give an indication of being receptive to mate by behaving restlessly. It is important that does are taken to the buck's cage for mating as does are territorial and a strange rabbit in their own cage causes agitation and may result in failure to mate. Does are fertile 24 hours after kindling (giving birth). High conception rates can be expected upto 5-6 days after kindling and again after 21 days. A typical Australian farm rabbit produces eight litters a year and around forty kittens survive to be marketed.

The gestation period is 32 days and may vary between 29 - 33 days depending on the litter size. Larger litters tend to have shorter gestation periods. A nest box should be provided in the cage around 3 days before the expected kindling. Suitable inside dimensions of the nest box for most of the breeds are 40 x 25 x 140 cm. Bedding material to be supplied in the nest box could be straw, wood chips, sawdust and shredded paper products. The doe will also pluck fur to add to the nest a few days before kindling.

The newborn kittens are blind, devoid of fur and weigh less than 100g. Over the first 6 days the kittens double their weight and grow a good covering of fur. The dead ones, if any, should be removed from the nest box as soon as possible. Daily checking of nest boxes is essential. Frequently, does give birth to a larger number of young than they can nurse. Most rabbits have 8 teats. It is common to foster a doe's excess kittens to another doe with a small litter of about the same age. The kittens open their eyes between 7 - 10 days and care is needed during this period to avoid any eye infections. At about 14 days of age kittens start jumping out of the nest box and within 2-3 days all will come out. Kittens can be weaned at about 4-5 weeks of age. The minimum average weaning weight of kittens is about 600g. Weaners are generally ready for slaughter at about 11-13 weeks of age when they weigh between 2.8 - 3.0 kg. In some instances market premiums are paid for rabbits in excess of 3kg liveweight at slaughter.

A number of factors like sterility, physical condition of the animal, pseudo pregnancy, sore hocks and retained foetus play a role in preventing conception. High temperatures, improperly balanced rations, malnutrition, molting can all cause temporary sterility. Another factor for seasonal fertility is the lighting. Hence it is advisable to have a light in the shed so as to maintain day light hours to a minimum of 16 hours a day.

Diseases

Rabbits should be inspected daily for any signs of ill health. All sick rabbits and those exposed to diseases should be isolated and held in quarantine. Dead rabbits should be removed immediately and disposed of hygienically. These precautionary measures will reduce spread of infection in the rabbitry in cases of communicable diseases. Prevention of a disease outbreak is better than cure, and more so because most of the diseases do not have a ready and effective treatment.

Disease control has been one of the major hurdles for new rabbit breeders. It is vital you seek as much information on rabbit health as you can find. Although we are unable to offer specific advice on disease control we have listed some of the most common diseases below. For a comprehensive description of rabbit diseases see McNitt et al. (1996).

Pasteurella is a bacterium that is common in animals, usually causing few ill effects in healthy rabbits in a low stress environment. When the bacteria multiplies rapidly, the most common manifestation of pasteurellosis is the condition called snuffles. Pasteurellosis is also evidenced by pneumonia, abscesses, weepy eyes, vaginal discharge, enlarged testicles and wryneck. Snuffles is characterized by nasal discharge and is extremely contagious. Strict sanitation and good ventilation are required for effective control. The condition can be readily suppressed by antibiotic treatment but a cure is difficult. If snuffles is allowed to go untreated, rabbits will begin to die from pneumonia. Abscesses are usually seen in the subcutaneous areas and can be treated with antibiotics.

Coccidia, a protozoan parasite, causes diarrheal disease and/or liver damage. Liver coccidiosis is of greatest concern for the rabbitry. Sulfaquinaxilone is one of the drugs available for control and prevention of cocciosis. Veterinary assistance is needed for the supply and use of a coccidiostat. These are usually administered in the drinking water or the feed. Prevention of coccidiosis can be aided by daily removal of faecal material from cages with a wire brush.

Myxoma virus causes the devastating condition called myxomatosis. The virus was introduced into Australia to kill wild rabbits. It can be transmitted from wild to domestic rabbits by mosquitoes and fleas, which act as mechanical vectors. Rabbits of all ages are affected and swelling of eyelids, lips, face and ears is noticed in the chronic form of the disease. Keeping flying insects out of the rabbitry is vital in preventing this disease. Culling affected animals immediately is the best way of preventing further spread of the disease. There is no treatment or vaccine for myxomatosis available in Australia.

Calicivirus causes the disease commonly known as Rabbit Calicivirus Disease (RCD) or viral haemorrhagic disease. It is used for biological control of wild rabbits in

Australia and is transmitted through flies, mosquitoes, direct or indirect animal contact and through the air. Adult animals mostly die rapidly, showing few clinical signs, although in some instances fever, blood stained mucus and respiratory difficulty may be seen. Kittens up to the age of 4-5 weeks appear to have some natural resistance against the disease. The protection of breeding stock with RCD vaccine is essential. The first dose of vaccine can be given at the age of 12 weeks and a booster dose is essential after 12 months of age.

Marketing

The following information has been gathered from rabbit breeders in NSW and Victoria. It is a guide only as to the marketing arrangements that are operating in the industry.

Regional groups of rabbit farmers have worked together to set up certified rabbit slaughtering facilities, as purpose built abattoirs or as part of existing livestock abattoirs. Marketing of the meat is usually undertaken by one of the larger producers, the abattoir manager or a meat wholesaler associated with a particular slaughtering facility. The important point for new farmers to appreciate is that there is no established, state-wide marketing system as we see for other livestock industries. Marketing your rabbits will mean tapping into groups that are already established or establishing your own from scratch!

However, there appears to be good domestic demand for meat rabbit, especially in the cooler months, and there is plenty of room for growth. In the early 1990s we were harvesting over 2.7 million wild rabbits per annum for the meat trade. This has dropped to just over 100,000. The number of farmed rabbits marketed in 1998 was approximately 86,000 (Foster 1999). Prices being paid for rabbits vary from group to group and are in the range of $6.00 to $7.50 per kg dressed weight. Rabbits usually dress out at 50% of liveweight at slaughter. There is a small residual value for pelts and by-products. Slaughtering costs are about $2.00 per rabbit.

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