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Fertility testing of rams

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Every year veterinarians are asked to examine rams for fertility before sale, or to fertility test rams in flocks with a poor lamb marking performance. From a practical point of view the most important test is the physical examination of the ram. All rams should be checked when determining replacement requirements and again before joining. All rams should be physically examined before purchase.

Other examinations may have a place in special circumstances, but they are not recommended for general use in commercial flocks.

Ram with epididymitis due to ovine brucellosis. On the left the testis is shrunken and the tail of the epididymis is shrunken and hardened. On the right the testis is also shrunken but the tail of the epididymis is markedly enlarged.

THE NEED FOR A FERTILITY EXAMINATION

In all breeding flocks there are rams that are poor performers, either with physical abnormalities likely to interfere with semen quality or serving ability, or with poor libido. These rams must be identified and removed so that ewes have the best chance of conceiving to service in their first oestrus, thus shortening the lambing period and aiding management at lambing and at marking.





Ram with a scrotal abscess, likely to have poor fertility—abscess at finger-tip.

Past surveys in flocks in New South Wales and Victoria have shown that 15 to 20 per cent of rams are unsound for breeding. Of these, 14 to 15 per cent have physical abnormalities. These results are similar to other surveys carried out over the last 20 years.

Ovine brucellosis is still common in many flocks. Of the 5,650 rams blood tested in the Wagga Wagga region during 1998-2002, over 12 per cent were positive on the blood test and over 44 per cent of flocks were infected. In flocks with ovine brucellosis the number of rams failing a physical examination has been as high as 80 per cent.

TYPES OF FERTILITY EXAMINATIONS

A number of different tests have been used to assess the fertility or performance of rams. Some tests only examine particular aspects of the rams' reproductive ability and can miss some rams that will have a poor reproductive performance. The tests include:

- physical examination
- scrotal measurement
- semen examination
- libido testing
- mating dexterity
- serving capacity test

PHYSICAL EXAMINATION

The prevalence of physical abnormalities, particularly arthritis and abnormalities of the testis, epididymis and penis, increases with age. The physical examination involves an examination of:

- the scrotum for thickenings, injuries, abscesses or mange, likely to interfere with cooling.

- the spermatic cord for swellings, abscesses or hernias.
- the head, body and tail of the epididymis for any swellings or abnormalities likely to interfere with the movement of sperm from the testicles to the penis.
- the testes for firmness and uniform size. Soft, flabby testes often indicate poor fertility, associated with poor nutrition, age or disease, for example footrot, foot abscess or flystrike.
- the prepuce for evidence of shearing wound balanitis or sheath rot. Ensure that the penis can protrude through the prepuce.
- the penis for obvious abnormalities likely to interfere with the ability to serve the ewe, for example, obvious injuries or infections. Ulcers, swellings and defects may cause pain when the ram attempts to serve the ewe. The absence of the urethral process is not considered a defect, unless accompanied by other lesions.
- the feet, for evidence of footrot or foot abscess. Abnormal horn growth may indicate that the ram is not walking correctly, perhaps because of joint abnormalities.
- the legs for evidence of swellings in joints or other abnormalities. Arthritis and other defects may interfere with the ability of the ram to mount and serve a ewe.
- the teeth to check for age and any abnormalities. Poor dentition may result in nutritional stress during the joining period, resulting in poor fertility.

In addition to the above points, the ram should be examined for any other conditions likely to affect his fertility, including poor condition, flystrike, cheesy gland abscesses, old age and ingrowing horns. In commercial flocks physical examination of the testes and epididymis by an experienced operator is a reliable guide to semen quality.

SCROTAL MEASUREMENT

There is a close relationship between testicular size and sperm production. Rams with small testes may not produce enough sperm throughout the joining period to maintain good fertilisation rates. Small scrotal circumference can have a number of causes, including immaturity, poor nutrition and developmental defects. Small testes in well grown young rams should be viewed with suspicion.

Scrotal circumference can be measured with a tape. The scrotal circumference should be at least 28 cm and preferably 30 cm at the time the ram is to be used. Some rams in good condition may have scrotal circumferences of up to 40 cm. Scrotal circumference increases with age.

SEMEN EXAMINATION

Semen examination has been used as an indication of the fertility of rams, particularly in those used in A.I. programs. It involves checking semen for colour, density and motility as well as the proportions of live and abnormal sperm. Semen quality can be affected by: heat stress; poor nutrition; overfeeding (often evident in show rams); diseases including foot abscess and footrot; diseases of the reproductive tract, including ovine brucellosis and *Actinobacillus seminis* infections; and any other condition causing overheating.

In commercial flocks semen examination is only worthwhile if there is some doubt as to ram fertility.

Semen examination does have a role in artificial insemination programs or in flocks where single sire joining groups are used. However, a ram should not be condemned on the basis of one semen examination. A second sample should be taken 7 to 14 days later before rejecting a ram. The quality of the semen will reflect conditions 7 weeks earlier when sperm was being formed.



Ram with faulty dentition that should be culled.

LIBIDO TESTING

Libido testing measures the sexual urge or sexual desire of the ram. It is not a measure of fertility or mating ability.

Rams are libido tested by placing them with ewes in oestrus and observing their behaviour. Rams with no libido will take no interest in the ewes. Rams with high libido will actively chase and mount ewes.

Ram with very small testes. This ram should not have been purchased.



MATING DEXTERITY

The mating dexterity of the ram involves not only the ability of the ram to mount the ewe, but also the ability to inseminate into the vagina. The age and previous experience of the ram will influence it.

Some rams particularly older rams may mount but not serve because of hind limb lameness and arthritis that may not be obvious on a physical examination.

Other rams may mount but not inseminate the ewe because of abnormalities of the penis or prepuce.

Mating dexterity can be observed by watching the ram serving ewes.

SERVING CAPACITY

The test for serving capacity combines the libido and mating dexterity tests in an attempt to provide an estimate of the ram's paddock performance.

The test can be performed either as a single ram test involving a single ram in a small pen with a small number of ewes, or as a multi ram test in a larger yard ewes restrained .

In either test, the rams are observed over varying periods between 20 minutes and 1 hour and the number of mounts and services is recorded.



Chronic foot abscess, affecting both fertility and serving capacity.

The serving capacity test will remove rams with no libido or with faults in mating dexterity. The remaining rams can then be divided into 'high', 'medium' and 'low' serving capacity groups. However, there is conflicting evidence on the performance of rams in these different categories, with several reports suggesting little or no difference between the groups. There is general agreement that there is no difference in the lambing performance of ewes joined to rams of the different categories, provided that they are joined

Ram with marked body wrinkle, very susceptible to flystrike and heat stress.



for 5 weeks or more and that rams with obvious physical defects are removed and 'normal' ram percentages are used, for example 2 per cent or greater. There is no evidence to support any claim that ewes joined to high serving capacity rams will have a higher twinning rate than ewes joined to low serving capacity rams.

RECOMMENDATIONS FOR FERTILITY EXAMINATION OF RAMS

The following recommendations are made for four situations:

Rams in commercial flocks

- All rams should undergo a thorough physical examination each year before replacement rams are bought. This should remove rams with obvious physical faults, as well as aged rams. Rams should be checked again at joining.
- All replacement rams should be bought from ovine brucellosis free accredited flocks and undergo a physical examination before purchase.

Serving capacity tests, mating dexterity tests or semen examination are not generally recommended for use in commercial flocks.

RAMS USED AS SIRES IN STUD FLOCKS

All sires should have a physical examination each year. A serving capacity test is recommended where single sire joinings or high mating loads are used. This will identify the poor performing rams before joining starts.

The identification of high performing rams may also allow a reduction in the number of sires needed, thus increasing selection pressure and increasing the number of rams available for sale.

RAMS USED IN A.I. PROGRAMS

It is important that rams used in A.I. programs should have a high libido and should be free from physical defects. Any ram that has a physical defect or that does not have a high serving capacity should not be used. It is important that rams with faults should not be used in A.I. programs because of their potential for much greater influence.

Rams used in an A.I. program should have a semen examination. With A.I., poor quality semen will result in poor conception rates. Good results with A.I. will only be obtained with good quality semen.

SALE OF RAMS FROM STUDS

All rams offered for sale from stud flocks should have passed a physical examination before sale.

Studs should be in the Ovine Brucellosis Accreditation Scheme, where the rams are palpated each year and blood tested according to the guidelines of the scheme. Studs should consider asking their veterinarian to issue a health certificate for the rams examined.

In summary, the minimum requirements are:

- All rams, irrespective of the flock, must undergo a physical examination each year and be checked again just before use.
- all sale rams should have a physical examination before sale.
- all stud sires should have a physical examination, and a serving capacity test may be warranted under some circumstances.

FURTHER READING

Agfact A3.9.2, Ovine brucellosis.

FURTHER INFORMATION

For further information consult your local veterinarian or local office of the Department of Agriculture.

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DISCLAIMER

The information contained in this publication is based on knowledge and understanding at the time of review (July 2004). However, because of advances in knowledge, users are reminded of the need to ensure that information upon which they rely is up to date and to check currency of the information with the appropriate officer of NSW Department of Primary Industries or the user's independent adviser.