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### Selecting New Breeding Stock October 2004

Understanding the concepts involved in selecting breeding stock is very important for cat breeders, whether they are selecting foundation cats for a new cattery or contemplating adding breeding stock to an established cattery. Breeders should identify their specific goals clearly when considering the addition of new breeding stock. Important skills for the breeder to acquire include a good understanding of the breed standard, the ability to recognize excellent examples of the breed, and the ability to judge one's own cats impartially to recognize strengths and weaknesses. It is also important to learn to keep accurate breeding and health records so that information will be available for selection criteria.

Catteries may require new breeding stock for several reasons:

1. To improve the overall appearance (phenotype) of the cats as compared to the breed standard
2. To improve reproductive performance of the cattery
3. To improve the overall health of cats produced

There are a number of ways in which breeders can add new breeding stock to a cattery:

1. Selecting a kitten produced within the cattery
2. Purchasing a new kitten from another cattery
3. Purchasing a mature cat from another cattery
4. Using outside stud service for the cattery's females with the intention of keeping kittens for breeding
5. Leasing a mature cat from another cattery for a specified period of time

Certain concepts are important to understand when acquiring new breeding stock: selection (for health, reproductive performance, phenotype), prepotency, and the popular sire effect.

**Selection** implies choosing cats for breeding on the basis of individual merit or on the basis of family performance and characteristics. In general, selection causes a small decline in heterozygosity (genetic variation), perpetuation of certain genes, and increasing phenotypic similarity. Mature cats may be selected primarily on individual merit, whereas kittens may be selected primarily on the basis of family performance. Selection criteria should include health, reproductive performance and phenotype. In general, breeders must select toward a breed standard based on good temperament and sound conformation and select away from breed-related health issues and other detrimental factors (poor temperament, poor reproductive performance, etc.).

Selection for good health and temperament should be the first goal of the breeder. Breeding stock should be healthy and free of inherited defects. Select against breeding stock with:

1. Poor overall health, susceptibility to infectious diseases
2. Any inherited defects (including cryptorchidism)
3. Poor temperament with other cats or with people
4. Conformational faults or anomalies

In the case of young kittens, it will not always be possible to evaluate these factors fully until the kitten is mature. Therefore, you can evaluate these factors in the kitten's closest relatives, especially parents and full siblings.

A cat being considered for potential new breeding stock should be:

1. Free from signs of illness (such as upper respiratory infections, diarrhea, ringworm, etc.)
2. Tested negative for feline leukemia virus and feline immunodeficiency virus
3. Tested negative for intestinal parasites
4. In good body condition
5. Screened free from breed-associated genetic diseases, such as polycystic kidney disease, hip dysplasia, hypertrophic cardiomyopathy, etc.
6. Blood typed, if the breed has a significant amount of blood type B cats

Reproductive performance is often overlooked when new breeding stock is selected. If care is not taken, poor reproductive performance can be propagated into future generations. It has been suggested that reproductive performance cannot be evaluated fully until a cat has produced at least 3 litters. Queens that have a poor reproductive performance record by the third litter are unlikely to improve. Young kittens should be evaluated by the reproductive performance of close relatives. Evaluate young males by the performance of the father and full brothers. Evaluate young females by the performance of the mother and full sisters.

Select mature male and female cats that have good libido (sex drive), good breeding behaviour, and good fertility (average or above average for the cattery or the breed).

The stud male is the most important cat in the cattery due to simple statistics. The stud male can sire many more offspring in a lifetime than can any queen. In general, breeders should apply higher standards for health, reproductive performance and phenotype when selecting a stud male.

Mature queens being considered as new breeding stock should have:

1. Normal estrous cycles
2. Normal parturition: no history of complications with labour and delivery
3. Good mothering skills: no history of cannibalism or abandonment
4. Normal milk production
5. Normal kitten birth weights, low kitten mortality rates

A cat's phenotype is made up of many genetic characteristics, some of which will be intermediate in expression and some of which may be more extreme. The type of breeding program controls the expression of these characteristics. In general, fixing extreme traits requires a high degree of inbreeding. Selecting for extreme phenotypes is usually not achieved without increasing homozygosity for other genes and this may have unintended effects, such as the emergence of specific health problems or inbreeding depression.

Breeders should set clear and well thought out goals for phenotype when designing a breeding program for this will influence the selection of breeding cats. It is best not to attempt to influence too many traits in a single generation, since the selection pressure on each trait will be weakened. Some traits, such as complex traits or dominant traits, should be considered for selection early in a breeding program because they can take many generations to fix in the phenotype. In contrast, desirable recessive traits, such as some colours or patterns, may be fixed in a single generation.

**Prepotency** is the term used to describe a male or female cat that possesses the ability to produce offspring bearing a strong resemblance to itself. The term is more often applied to males because it is easier to recognize this trait in the male due to the larger number of offspring they produce. Prepotency may occur as an individual becomes more homozygous for both dominant and recessive traits. Prepotency can be a valuable asset in a breeding cat, but remember that both good and bad features are reproduced in the offspring. Using a prepotent male of superior phenotype can enhance the appearance of kittens produced by a cattery, and using a male known to produce healthy kittens can benefit the long-term health of a cattery and a breed.

The **popular sire** effect occurs when a given stud cat is overused in the breeding population. Sires may become popular because they are a top winning cat or have sired many winners or because they are known to be free of certain genetic diseases. Recognition programs such as the Distinguished Merit program of the Cat Fanciers' Assoc. can actually encourage breeders to flock to certain cats because of their proven track record. However, these programs recognize only the ability to produce show winners, not the overall health of the cat, or its reproductive performance, so caution should be used.

In less populous breeds the effect of overuse of certain cats can be extensive. When one cat's genes are widely propagated, any unknown detrimental recessives the tom carries will also be propagated, perhaps to be uncovered in future generations. This can be the mechanism behind the foundation of a new genetic defect. Popular sires also block the contributions of other stud cats and an artificial population bottleneck can occur.

For Further Reading:

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