A knowledge of animal behavior is essential to understanding the whole animal and its ability to adapt to various management systems utilized by livestock and poultry producers. For example, the value and performance of farm animals can be increased when managers apply their knowledge of animal behavior.

Animal behavior is a complex process involving the interaction of inherited abilities and learned experiences to which the animal is subjected. Behavioral changes enable animals to adjust to changing conditions, improve their chances of survival, and serve humans. Producers who understand patterns of behavior can manage and train animals more effectively and efficiently.

Basically, there are two major fields of animal behavior: one is psychology and the other is ethology. Historically, psychology has been directed toward studying learning in humans and applying insights gained from nonhuman animal studies to understanding human behavior. There are many different schools within the broad field of psychology. Ethology, however, originated with naturalists (going back to Aristotle) who originally emphasized instinctive behavior, but who also studied learned behavior.

Instinct (reflexes and behavioral patterns) is inherently present at birth. All mammals, at birth, have the instinct to nurse even though they must first learn the location of the teat. Shortly after hatching, chicks begin pecking to obtain feed.

Habituation is lack of response to a repeated stimulus such as a low-flying aircraft. When animals first see and hear the airplane, the novelty of it may frighten them. However, after they are repeatedly exposed to this experience, they become habituated and are no longer frightened.


**Visual**

Conditioning is the process whereby an animal makes an association between a previously neutral stimulus (e.g., a bell) or behavioral response (e.g., lifting its foot) and a previously significant stimulus, such as a shock or food. There are two types of conditioning:

1. **Classical conditioning**—e.g., Pavlov's noted study showed an association formed between an unconditioned stimulus (the sight of food, which caused salivation) and a neutral stimulus (the sound of a bell). The animal initially salivated at the sight of food; later, the mere sound of the bell produced salivation because of the previous association between the two stimuli.

2. **Operant conditioning** is learning to respond in a particular way to a stimulus as a result of reinforcement when the proper response is made. Reinforcement is a punishment or reward for making the proper response. Animals avoiding an electric fence and cattle coming to the feedbunk when they see a feed truck are examples of operant conditioning. In the first example, the animal is negatively reinforced by the shock. In the second example, cattle are positively reinforced with feed from the feed truck when they arrive at the feedbunk.

**Trial and error** is trying different responses to a stimulus until the correct response is performed, at which time the animal receives a reward. For example, newborn mammals soon become hungry and want to nurse. They search for someplace to nurse on any part of the mother's body until they find the teat. This is trial and error until the teat is located; then, when the young mammals nurse, they receive milk as a reward. Soon they learn where the teat is located and find it without having to go through trial and error. Thus, the young become conditioned in nursing behavior through reinforcement.

**Reasoning** is the ability to respond correctly to a stimulus the first time a new situation is presented. **Intelligence** is the ability to learn to adjust successfully to certain situations. Both short-term and long-term memory are part of intelligence.

**Imprinting** covers those processes where the helpless young bond to their caretaker—usually their dam. The way imprinting occurs varies between species. Odors and the dam licking the fluids from the newborn lead to bonding and rapid recognition in cattle and sheep. Creating a nest aids in the bonding of a sow with her young pigs.

**SYSTEMS OF ANIMAL BEHAVIOR**

Farm animals exhibit several major systems or patterns of behavior: (1) sexual, (2) care-giving, (3) care-soliciting, (4) agonistic, (5) ingestive, (6) eliminative, (7) shelter-seeking, (8) investigative, and (9) allelomimetic. Some of these behavior systems are interrelated, though they are discussed separately in this chapter. It is not the intent here to describe in detail the different behavior patterns for all farm animals. The major focus is on identifying the behavioral activities that most significantly affect animal well-being, productivity, and profitability. By understanding animal behavior, producers can plan and implement more effective management systems for their animals.
SEXUAL BEHAVIOR

Observations on sexual behavior of female farm animals are useful in implementing breeding programs. Cows that are in heat, for example, allow themselves to be mounted by others. Producers observe this condition of “standing heat” or estrus to identify those cows to be hand-mated or bred artificially. Ewes in heat are not mounted by other ewes, but vasectomized rams can identify them.

Males and females of certain species produce pheromones, chemical substances that attract the opposite sex. Cows, ewes, and mares may have pheromones present in vaginal secretions and in their urine when they are in heat. Bulls, rams, and stallions will smell the vagina and the urine using a nasal organ that can detect pheromones. A common behavioral response in this process is called flehmen, during which the male animal lifts its head and curls its upper lip.

It appears that in a sexually active group of cows, the bull is attracted to a cow in heat most often by visual means (observing cow-to-cow mounting) rather than by olfactory clues. The bull follows a cow that is coming into heat, smells and licks her external genitalia, and puts his chin on her rump. When the cow is in standing heat, she stands still when the bull chins her rump. When she reaches full heat, she allows the bull or other females to mount (Fig. 22.1).

When females are sexually receptive, they usually seek out a male if mating has not previously occurred. Females are receptive for varying lengths of time; cows are usually in heat for approximately 12 hours, whereas mares show heat for 5–7 days, with ovulation occurring during the last 24 hours of estrus.

Vigorous bulls breed females several times a day. If more than one cow is in heat at the same time, bulls tend to mate with one cow once or a few times and then go to others. Other bulls may become attached to one female and ignore the others that are also in heat.

FIGURE 22.1 A cow or heifer in estrus will allow either bulls or females to mount.
The ram chases a ewe that is coming into heat. The ram champs and licks, puts his head on the side of the ewe, and strikes with his foot. When the ewe reaches standing heat, she stands when approached by the ram.

The buck goat snorts when he detects a doe in heat. The doe shows unrest and may be fought by other does. Mating in goats is similar to that in sheep.

The boar does not seem to detect a sow that is in heat by smelling or seeing. If introduced into a group of sows, a boar chases any sow in the group. The sow that is in heat seeks out the boar for mating, and when the boar is located she stands still and flicks her ears. Boars produce pheromones in the saliva and preputial pouch, which attracts sows and gilts in estrus to the boars. Ejaculation requires several minutes for boars, in contrast to the instantaneous ejaculation of rams and bulls.

The sequence of events in estrus detection in horses appears to be similar to that in swine. The stallion approaches a mare from the front and a mare not in heat runs and kicks at the stallion. When the mare is in standing heat she stands, squats somewhat, and urinates as he approaches. Her vulva exhibits \textit{winking} (opens and closes) when she is in heat.

In chickens and turkeys, a courtship sequence between the male and female usually takes place. If either individual does not respond to the other’s previous signal, the courtship does not proceed further. After the courtship has developed properly, some females run from the rooster, which chases them until they stop and squat for mating. The male chicken or turkey stands on a squatting female and ejaculates semen as his rear descends toward the female’s cloaca. Semen is ejaculated at the cloaca and the female draws it into her reproductive tract while the male is mounting her.

Male chickens and turkeys show a preference for certain females and may even refuse to mate with other females. Likewise, female chickens and turkeys may refuse to mate with certain males. This is a serious problem when pen matings of 1 male and 10–15 females are practiced, as the eggs of some females may be infertile. This preferential mating is a greater problem in chickens, an AI is the common breeding practice in turkeys.

Little relationship appears to exist between sex drive and fertility in male farm animals. In fact, some males that show extreme sex drive have reduced fertility because of frequent ejaculations that result in semen with reduced sperm numbers.

Research studies show that many individual bulls have sufficient sex drive and mating ability to fertilize more females than are commonly allotted to them. An excessive number of males, however, are used in multiple-sire herds to offset the few that are poor breeders and to cover for the social dominance that exists among several bulls running with the same herd of cows. The bull may guard a female that he has determined is approaching estrus. His success in guarding the female or actually mating with her is dependent on his rank of dominance in a multiple-sire herd. If low fertility exists in the dominant bull or bulls, then calf crop percentages will be seriously affected even in multiple-sire herds.

Tests have been developed to measure differences in libido and mating ability in young bulls. While behavioral differences are evident between different bulls, these tests, based on pregnancy rates, have not proven accurate for use by the beef industry. Performance may be improved in young bulls by exposing them to a female in heat prior to being placed in the breeding pasture.
Bulls being raised with other bulls commonly mount one another, have a penile erection, and occasionally ejaculate. Individual bulls can be observed arching their backs, thrusting their penises toward their front legs, and ejaculating.

Bulls can be easily trained to mount objects that provide the stimulus for them to experience ejaculation. AI studs commonly use restrained steers for collection of semen. Bulls soon respond to the artificial vagina when mounting steers, which provides them with a sensual reward.

Mating behavior has an apparent genetic base, as there is evidence of more frequent mountings in hybrid or crossbred animals.

Some profound behavior patterns are associated with sex of the animal and changes resulting from castration. This verifies the importance of hormonal-directed expression of behavior. Intact males display more aggressive behavior, whereas castrates are more docile after losing their source of male hormone.

CARE-GIVING BEHAVIOR

Care-giving behavior can originate from the sire or dam; however, most care-giving is maternally oriented.

When the young of cattle, sheep, goats, and horses are born, the mothers clean the young by licking them. This stimulates blood circulation and encourages the young to stand and to nurse. Sows do not clean their newborns but encourage them to nurse by lying down and moving their feet as the young approach the udder region. They thus help the young to the teats.

Most animal mothers tend to fight intruders, especially if the young squeal or bawl. Often cows, sows, and mares become aggressive in protecting their young shortly after parturition. Serious injury can occur to producers who do not use caution with these animals.

Strong attachments exist between mother and newborn young; particularly between ewe and lamb and cow and calf. Beef cows diminish their output of milk about 100–120 days after birth of young, and ewes do the same after 60–75 days. This reduction in milk encourages the young to search for forage, the consumption of which stimulates rumen development. It is at this time that care-giving by the mother declines.

If young pigs have a high-energy feed available at all times, they nurse less frequently. Without a strong stimulus of nursing, sows reduce their output of milk. Some sows may wean their pigs early and show little concern for them a few days after they are weaned. Pigs are usually weaned by producers at 21–35 days of age.

There is evidence that more cows calve during periods of darkness than during daylight hours. The calving pattern, however, can be changed by when cows are fed. Cows that are fed during late evening have a higher percentage of their calves during daylight hours.

CARE-SOLICITING BEHAVIOR

Young animals cry for help when disturbed, distressed, or hungry (Fig. 22.2). Lambs bleat, calves bawl, pigs squeal, and chicks chirp. Even adult animals
call for help when under stress. The female and her offspring may recognize each other's vocal sounds; however, it appears that the most effective way the dam recognizes her offspring is by smell. The offspring usually nurses with its rear end toward the female's head. This allows a dam to smell her offspring and decide to accept or reject it. The dam will bunt a rejected young animal with her head and kick it with her rear legs when it attempts to nurse. The young animals are less discriminating in their nursing behavior than are their dams.

**AGONISTIC BEHAVIOR**

Agonistic behavior includes behavior activities of fight and flight and those of aggressive and passive behavior when an animal is in contact (physically) with another animal or with livestock and poultry producers.
Interaction with Other Animals

Unless castrated when young, the males of all farm animals fight when they meet other unfamiliar males of the same species. This behavior has great practical implications for management of farm animals. Male farm animals are often run singly with a group of females in the breeding season, but it is often necessary to keep males together in a group at times other than the breeding season. The typical producer simply cannot afford to provide a separate lot for each male.

Bulls and other males may engage in prolonged physical activity when fighting, even to the point of exhaustion. Therefore, bulls and other potential fighting males should be put together either early in the morning or late in the evening when the environmental temperature is lower than at midday. Fighting to establish social dominance essentially moves through four stages: offense, defense, escape, and passivity. Mixing unfamiliar males often results in fighting behavior that is concluded once the “defeated” animal has escaped and assumed a passive posture. It is important, therefore, to assure that there is sufficient room to allow less dominant animals to escape from the more dominant individuals.

Cows, sows, and mares usually develop a pecking order, but fight less intensely than males. Sows that are strangers to each other sometimes fight. Ewes seldom, if ever, fight, so ewes that are strangers can be grouped together without harm.

Some cows withdraw from the group to find a secluded spot just before calving. Almost all animals withdraw from the group if they are sick.

Early and continuous association of calves is associated with greater social tolerance, delayed onset of aggressive behavior, and relatively slow formation of social hierarchies.

Status and social rank typically exist in a herd of cows, with certain individuals dominating the more submissive ones. The presence or absence of horns is important in determining social rank, especially when strange cows are mixed together. Also, horned cows usually outrank polled or dehorned cows where close contact is encountered, such as at feedbunks or on the feed ground.

Large differences in age, size, strength, genetic background, and previous experience have powerful effects in determining social rank. Once the rank is established in a herd, it tends to be consistent from one year to the next. There is evidence that genetic differences exist for social rank.

Animals fed together consume more feed than if they are fed individually. A competitive environment evidently is a stimulus for greater feed consumption. Dairy calves separated from their dams at birth appear to gain equally well whether fed milk in a group or kept separate. There is, however, evidence that they learn to eat grain earlier when group-fed compared with being individually fed. Cattle individually fed in metabolism stalls consume only 50–60% of the amount of feed they will eat if the animals are group-fed.

When fed in a group of older cows, 2-year-old heifers have difficulty getting their share of supplemental feed (Table 22.1). Two-year-old heifers and 3-year-old cows can be fed together without any significant age effect in competition for supplemental feed. These behavior differences no doubt explain some of the age-related differences in nutrition, weight gains, and postpartum intervals that exist when cows of all ages compete for the same supplemental feed.
Dominant cows raised in a confinement operation usually consume more feed and wean heavier calves. More submissive cows wean lighter calves (25%), and fewer of them are pregnant compared with more aggressive cows. Figure 22.3 shows a 1-hour feeding pattern for two cows of different social rankings.

**TABLE 22.1**  Weight Changes of 2-Year-Old Heifers Fed Separately as a Group or Together with Older Cows

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Weight Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pastured and fed with older cows</td>
<td>25-lb loss</td>
</tr>
<tr>
<td>Pastured and fed separately</td>
<td>46-lb gain</td>
</tr>
</tbody>
</table>

*Source: Wagnon, 1965*

**FIGURE 22.3** One-hour feeding pattern for two cows of different social rankings. Adapted from Schake and Riggs, 1972.
Interactions with Humans

Producers rank the disposition or temperament of animals from docile to wild or "high-strung." Evaluating animal posture can help handlers understand the mood and intent of an animal (Table 22.2). This evaluation is usually made when the animals are being handled through various types of corrals, pens, chutes, and other working facilities. The typical behavior exhibited by animals with poor dispositions is one of fear or of aggressive fighting or kicking.

There is evidence that farm animals develop good or poor dispositions from the way they have been treated or handled, though there is also evidence that disposition has an inherited basis as well. A few heritability estimates for disposition are in the medium-to-high category, indicating that the trait would respond to selection. Some producers cull or eliminate animals with poor dispositions from their herds and flocks because of the potential for personal injury and economic loss (broken fences and facilities), as well as to reduce the excitability of other animals. In fact, at least one purebred cattle breed organization records temperament score as part of its national cattle evaluation program.

**TABLE 22.2  Interpretation of Equine Mood via Assessment of Posture**

<table>
<thead>
<tr>
<th>Mood</th>
<th>Head-Neck</th>
<th>Ears</th>
<th>Eyes</th>
<th>Nostrils-Muzzle</th>
<th>Feet-Legs</th>
<th>Tail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anger</td>
<td>Neck outstretched</td>
<td>Pinned back</td>
<td>Narrowed</td>
<td>Lips pursed, nostrils flared</td>
<td>Stomping, striking</td>
<td>Swishing</td>
</tr>
<tr>
<td>Challenge</td>
<td>Head and neck</td>
<td>Active</td>
<td>Clearly</td>
<td>Nostrils flared</td>
<td>Active pacing</td>
<td>Held high</td>
</tr>
<tr>
<td></td>
<td>stretched upward and</td>
<td>movement</td>
<td>focused</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>outward</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Curiosity</td>
<td>Head and neck</td>
<td>Pricked</td>
<td>Focused on</td>
<td>Sniffing</td>
<td>Firmly planted</td>
<td>Held up</td>
</tr>
<tr>
<td></td>
<td>extended forward</td>
<td>forward</td>
<td>subject</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fear</td>
<td>Neck pulled in with</td>
<td>Fixed on</td>
<td>Wide open</td>
<td>Nostrils flared</td>
<td>Rigid or fleeing</td>
<td>Clamped down</td>
</tr>
<tr>
<td></td>
<td>head turned toward</td>
<td>source</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>subject source</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relaxation</td>
<td>Head down</td>
<td>Drooped</td>
<td>Nearly closed</td>
<td>Lips drooped</td>
<td>Inactive</td>
<td>Low and relaxed</td>
</tr>
<tr>
<td>Sexual</td>
<td>Arched and flexed</td>
<td>Forward and</td>
<td>Dilated</td>
<td>Active</td>
<td>Pawing</td>
<td>Held high</td>
</tr>
<tr>
<td>arousal</td>
<td></td>
<td>flicking</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Submission</td>
<td>Head low and</td>
<td>Held low</td>
<td>Averted</td>
<td>Low, lip</td>
<td></td>
<td>Low and</td>
</tr>
<tr>
<td></td>
<td>averted</td>
<td></td>
<td></td>
<td>smacking in</td>
<td></td>
<td>relaxed</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>young</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Adapted from multiple sources.
Recent research has shown that cattle with a nervous, excitable temperament (e.g., being highly agitated when restrained) experience lower weight gains in the feedlot.

**Behavior During Handling and Restraint**

Most animals are handled and restrained several times during their lifetimes. Ease of handling depends largely on the animal’s temperament, size, and previous handling experience, and on the design of the handling facilities. Animals remember positive and negative experiences. Livestock with previous experience of calm, quiet handling will be less stressed and easier to handle in the future than animals that have had previous experiences with rough handling.

Understanding animal behavior can assist in preventing injury, undue stress, and physical exertion for both animals and producers. An example is knowing how to approach animals so they will respond to how the producer prefers the animals to move (Fig. 22.4). Most animals have a flight zone. When a person is outside this zone, the animal usually exhibits an inquisitive behavior. When a person moves inside the flight zone, the animal usually moves away. The size of the flight zone depends on the tameness or wildness of the animal.

**Figure 22.4** Handler positions for moving cattle. Positions A and B are the best places for the handler to stand. The flight zone is penetrated to cause the animal to move forward. Retreating outside the flight zone causes the animal to stop moving. Handlers should avoid standing directly behind the animal because they will be in the animal’s blind spot. If the handler gets in front of the line extending from the animal’s shoulder, the animal will back up. This is the point of balance. The solid curved lines indicate the location of the curved, single-file chute. Source: Temple Grandin.
Blood odor appears to be offensive to some animals; therefore, the reduction or elimination of such odors may encourage animals to move through handling facilities with greater ease. Animals are easily disturbed by loud or unusual noises such as motors, pumps, and compressed air.

With their 310–360° vision, cattle are sensitive to shadows and unusual movements observed at the end of a chute or outside a chute (Fig. 22.5). For these reasons, cattle will move with more ease through curved chutes with solid sides (Fig. 22.6).

Round pens, having an absence of square corners, handle cattle that are more excitable with lower rates of injury.

Some breeders claim that AI facilities should permit beef cows to be handled quietly and carefully, and that using facilities where cows have previously felt pain should be avoided. They also state that pregnancy rates will thereby increase. This may sound logical, but research has not substantiated these claims.

FIGURE 22.5 Shadows that fall across a chute can disrupt the flow of animals through the facilities. The lead animal often balks and refuses to cross the shadows. Courtesy of Temple Grandin.
INGESTIVE BEHAVIOR

Ingestive behavior is exhibited by farm animals when they eat and drink. Rather than initially chewing their feed thoroughly, ruminants swallow it as soon as it is well lubricated with saliva. After the animals have consumed a certain amount, they rumininate (regurgitate the feed for chewing). Cattle graze for 4–9 hours/day and sheep and goats graze for 9–11 hours/day. Grazing is usually done in periods, followed by rest and rumination. Sheep rest and ruminate more frequently when grazing than do cattle—cattle ruminate 4–9 hours/day; sheep 7–10 hours/day. Cows may regurgitate and chew between 300 and 400 boluses of feed per day, sheep between 400 and 600 boluses per day.

Under range conditions, cattle usually do not go more than 3 miles away from water, whereas sheep may travel as much as 8 miles a day. When cattle and sheep are on a large range, they tend to overgraze near the water area and to avoid grazing in areas far removed from water. Development of water areas, fencing, placing of salt away from water, and herding the animals are management practices intended to assure a more uniform utilization of the range forage.

Cattle, horses, and sheep have palatability preferences for certain plants and many have difficulty changing from one type of plant to other types. Most animals prefer to graze lower areas, especially if they are near water. These grazing behaviors tend to cause overgrazing in certain areas of the pasture and to reduce weight gains.

Age of cows and weather affect the typical behavior of cows grazing native range during the winter (Table 22.3). At the Range Research Station in Miles City, Montana, cows grazed less as temperatures dropped below 20°F, and at -30°F, 3-year-olds grazed approximately 2 hours less than 6-year-olds. Also,
TABLE 22.3 Activities of Cows Grazing on Winter Range

<table>
<thead>
<tr>
<th>Activity</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grazing</td>
<td>9.45</td>
</tr>
<tr>
<td>Ruminating</td>
<td></td>
</tr>
<tr>
<td>Standing</td>
<td>0.63</td>
</tr>
<tr>
<td>Lying</td>
<td>8.30</td>
</tr>
<tr>
<td>Idle</td>
<td></td>
</tr>
<tr>
<td>Standing</td>
<td>1.11</td>
</tr>
<tr>
<td>Lying</td>
<td>3.93</td>
</tr>
<tr>
<td>Traveling</td>
<td>0.58</td>
</tr>
<tr>
<td>Total</td>
<td>24.00</td>
</tr>
</tbody>
</table>

with colder temperatures, cows waited longer before starting to graze in the morning. At 30°F, cows started grazing between 6:30 and 7:00 A.M., but at −30°F, they waited until about 10 A.M. to begin grazing.

**ELIMINATIVE BEHAVIOR**

Cattle, sheep, goats, and chickens void their feces and urine indiscriminately. Hogs, by contrast, defecate in definite areas of the pasture or pen. Ease of cleaning swine pens can be planned by knowing defecation patterns of the pigs. Horses tend to void their feces on scent piles of other horses and genders.

Cattle, sheep, goats, and swine usually defecate while standing or walking. All these animals urinate while standing, but not usually when walking. Cattle defecate 12–18 times a day; horses, 5–12 times. Cattle and horses urinate 7–11 times per day. Animals on lush pasture drink less water than when they consume dry feeds; therefore, the amount of urine voided may not differ greatly under these two types of feed conditions.

All farm animals urinate and defecate more frequently and void more excreta than normal when stressed or excited. They often lose a minimum of 3% of their liveweight when transported to and from marketing points. Much of the shrink in transit occurs in the first hour, so considerable weight loss occurs even when animals are transported only short distances. Weight loss can be reduced by handling animals carefully and quietly, and by avoiding any excessive stress or excitement of the animals.

**SHELTER-SEEKING BEHAVIOR**

Animal species vary greatly in the degree to which they seek shelter. Cattle and sheep seek a shady area for rest and rumination if the weather is hot, and pigs try to find a wet area. When the weather is cold, pigs crowd against one another when they are lying down to keep each other warm. In snow and cold winds, animals often crowd together. In extreme situations, they pile up to the extent that some of them smother. Unless the weather is cold and windy, cattle and horses often seek the shelter of trees when it is raining. This may be hazardous
where strong electrical storms occur because animals under a tree are more likely to be killed by lightning than those in the open.

**INVESTIGATIVE BEHAVIOR**

Pigs, horses, and dairy goats are highly curious, investigating any nonthreatening strange object. They usually approach carefully and slowly, sniffing and looking as they approach. Cattle also do a certain amount of investigating (Fig. 22.7). Sheep are less curious and more timid than some other farm animals. They may notice a strange object, become excited, and run away from it. An object such as a paper cup on the ground can be either threatening or attractive to the animals. A novel object may attract the animals when they are on pasture. However, this same object may cause bolting and balking if the handler attempts to force the animals to walk over it. In one situation, the object triggers a fear reaction and in the other situation an investigative response.

**ALLELOMIMETIC BEHAVIOR**

Animals of a species tend to do the same thing at the same time. Cattle and sheep tend to graze at the same time and rest and ruminate at the same time. Range cattle gather at the watering place at about the same time each day because one follows another. This behavior is of practical importance because the producer can observe the herd or flock with little difficulty, notice anything that is wrong with a particular animal, and have that animal brought in for treatment. When artificially inseminating beef cattle, the best time to locate range cows in heat is when they gather at the watering place. This type of behavior is useful in driving groups of animals from one place to another.

![Cattle expressing investigative behavior](image)
OTHER BEHAVIORS

Communication and maladaptive behavior are two other behaviors that are common to the nine behavior systems previously presented. Some highlights of these two behaviors are given in the following text.

Communication

Communication exists when some type of information is exchanged between individual animals. This may occur with the transfer of information through any of the senses.

Females more easily adopt the young of others through transfer of the odor of one young animal to another. Cows may foster several calves if their own calves are removed at birth and the foster calves are smeared with amniotic fluid previously collected from the second “water bag.” This is an example of imprinting.

Many farm animals learn to respond to the vocal calls or whistles of the producer who wants the animals to come to feed. The animals soon learn that the stimulus of the sound is related to being fed. This is an example of operant conditioning.

The bull vocally communicates his aggressive behavior to other bulls and intruders into his area through a deep bellow. This bellow and aggressive behavior is under the control of the male hormone (testosterone), as the castrated male seldom exhibits similar behavior. This communication behavior is part of the agonistic behavior system.

The bull also issues calls to cows and heifers, especially when he is separated from but still within sight of them. This type of communication could be included in the system of sexual behavior.

Horses have at least four vocal and three nonvocal sounds: (1) squeals (made during threats and encounters between individuals—high pitched); (2) nickers (made by the stallion during mating and between the mare and foal prior to feeding—low pitched); (3) whinnies (begin as a squeal and end in a nicker—occur between horses that are distressed or seek social contact); (4) groans (occur during discomfort or anguish); (5) blows (nonvocal sounds as air passes through the nostrils during prefeeding or when in alarm); (6) snorts (produced during nasal irritation, conflict, or relief); and (7) snores (produced by inhaling air—this has little part in communication).

Cattle are especially perceptive in their sight, as they have 310–360° vision. This affects their behavior in many ways—for example, when they are approached from different angles and when they are handled through various types of facilities.

Maladaptive or Abnormal Behavior

Animals that cannot adapt to their environment may exhibit inappropriate or unusual behavior. Some animals under extensive management systems, such as poultry and swine, are often kept in continuous housing to reduce costs of land and facilities. Frequently, both chickens and swine resort to cannibalism, which may lead to death if preventive measures are not taken. Some swine producers remove the tails of baby pigs to prevent tail chewing. Tail chewing can
cause bleeding, and whenever bleeding occurs, the pigs are likely to become cannibalistic.

Some male uncastrated animals raised with other males masturbate and demonstrate homosexuality. In the latter situation, males mount other males, attempting to breed them. Some of the more submissive males may have to be physically separated from the more aggressive males to prevent injury or death.

The buller-steer syndrome is exhibited in steers that have been castrated before puberty. This demonstrates a masculine behavior of other than testosterone origin. Certain steers (bullers) are more sexually attractive for other steers to mount. As one steer mounts a buller, other steers are attracted to do the same. Thus, the activity associated with the buller-steer syndrome can cause physical injury, a reduction in feedlot gains, and additional labor and equipment expense as bullers are usually sorted into separate feedlot pens. On some feedlots 1–3% of the steers are bullers.

Growth implants and reduced pen space have been cited as reasons for an increased incidence of buller-steers. Some behaviorists cite evidence of similar homosexual behavior of males in free-ranging natural environments.

CHAPTER SUMMARY

- Animal behavior is a response to instincts and various stimuli to which the animals are exposed. It is a complex process involving the interaction of inherited abilities and learned experiences.
- Behavioral changes enable animals to adjust to changing conditions, improve their chance of survival, and serve humans by adapting to various management systems.
- Farm animals exhibit several major systems or patterns of behavior: (1) sexual, (2) care-giving, (3) care-soliciting, (4) agonistic, (5) ingestive, (6) eliminative, (7) shelter-seeking, (8) investigative, and (9) allelomimetic.

REVIEW QUESTIONS

1. ____________ is the scientific study of an animal’s behavior in response to its natural environment.
2. ____________, or reflexes and responses, is inherently present at birth, whereas ____________ is a lack of response to a repeated stimuli.
3. What are the two types of conditioning?
4. What is imprinting?
5. What are the nine major systems or patterns of behavior exhibited by farm animals?
6. An example of sexual behavior displayed by female farm animals in which they allow a male, or sometimes other females, to mount them and which permits producers to detect their estrus is ____________.
7. A mare in estrus will display standing heat and ____________ of the vulva when a stallion approaches.
8. True or False: Care-giving behavior can originate from either the sire or the dam, but is most often maternally oriented.

9. Behavioral activities of fight and flight are examples of what type of behavior?

10. Interactions with other animals and interactions with humans are types of ________ behavior.

11. Producers can take advantage of the knowledge of agonistic animal behavior to handle animals in a low-stress manner by moving in and out of an animal’s ________ zone.

12. What are reasons for culling animals with poor dispositions from the herd or flock?

13. Rumination or chewing the cud in ruminants is an example of what type of behavior?

14. Imitative behavior, when animals of the same species do the same thing—such as grazing or herding—at the same time, is an example of what type of behavior?

15. What are two behaviors that are common to the nine systems of behavior?

16. Bellowing and aggressive behavior of bulls is under control of what hormone?

17. Animals under intensive management systems that cannot adapt to their environment and that exhibit inappropriate or unusual behavior are displaying what type of behavior?

18. What is an example of maladaptive behavior exhibited by chickens and swine under confinement housing?

SELECTED REFERENCES


