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JUDGING AND SELECTION IN SAHIWAL CATTLE



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Acknowledgment

Judging and examining cattle at shows has been a tremendous co-curricular activity for the last 10 years. It helped in understanding the beauty existing in indigenous genetic resources. Working with breeders and small farmers truly provided an opportunity of knowing animals and people raising them under unconducive environment. My involvement in beauty competitions of Sahiwal breed started with the shows organized by Research Centre for Conservation of Sahiwal cattle (RCCSC), Livestock and Dairy Development Department, Government of Punjab. Learning further improved with supervising a PhD study on Sahiwal cattle beauty. The Interaction with Sahiwal cattle, goat, sheep and buffalo farmers was intellectually fruitful. The interactive sessions with the age old caretakers of Sahiwal cattle at Wattoo farm at Jahangirabad during my frequent visits further improved my passion for this indigenous breed.

My effort of documenting beauty standards is basically a tribute to those who developed this breed de novo and to all those who care to raise this breed when other commercial choices are also very much there. I acknowledge and appreciate my students and colleagues who were of a great help in collecting data required for this guide. Simultaneously I am thankful to show management teams at University of Agriculture Faisalabad (UAF) and workers conducting and managing shows under RCCSC throughout Punjab. I feel highly indebted to UAF for its pivotal role in organizing livestock shows quite frequently.

I sincerely hope that in future Sahiwal breeders and their representative bodies will expand the work being published in this guide. Such efforts not only can help conserve Sahiwal and other such breeds, other indigenous genetic resources will also get attention and keepers and all others will be benefitted.

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1. Sahiwal Cattle Description

Judging cattle, like any other animal species require acquaintance with body parts of the animals. Sahiwal is an important dairy cattle breed of Pakistan. These animals should be judged keeping in view the dairy characters that help breeders produce more appealing and productive animals. To facilitate Sahiwal breeders, judging and selection parameters of Sahiwal cow are being described briefly.

1.1 Parts of a Cow

Basic knowledge of body parts (along with local names and variants) is important for understanding how different parts relate to each other, and how they help the cow function.

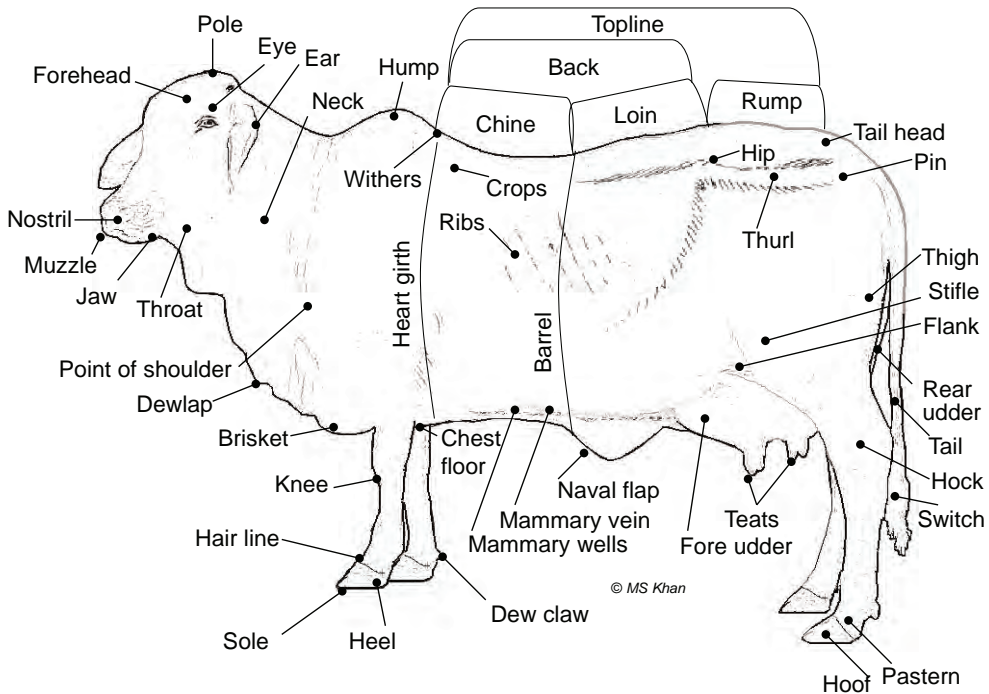


Fig. 1.1. Body parts of Sahiwal cow

1.1.1. Head and Neck

The part of the cow's head located between the horns is called poll (Fig. 1.1). Horns in Sahiwal cow are medium sized (not as big as those of Kankraj or Thari breeds). They grow out and then upward in semicircle (heart-shaped) but are not pointed forward (like those of Jerseys). Sometimes, these may be drooping (with loose attachments).

Scurs are found in some animals and naturally polled animals are also seen. Area between the eyes is the forehead. Part of the head that begins just below the eyes and continues to muzzle is bridge of the nose. Part of the head that looks like cow's nose is the muzzle. The nostrils are just behind the muzzle and the mouth just below the muzzle. The cow's jaw, throat and neck are easily recognized as these are similar to other animal species. The loose skin along the lower part of the neck is called the dewlap (jhalar). This should not be confused with the dewclaw, which is part of the lower legs. Brisket is part of the cow's chest, and is the area between the front legs and slightly forward to cranial region.

1.1.2. Topline

It begins at the point of withers and includes everything all the way back to the pin bones. The three major parts of the topline are the chine, loin and the rump. The two parts towards the tail (chine and loin) are called back. The rump begins at the cow's hips and ends at the pin bones. The cow's backbone or spine supports the topline. Back bone contains many small bones called vertebrae. Each of the three parts of the topline represents a different kind of vertebra.

The hips in cows are the large, bony structures that stick out on each side of the cow. Sometimes they are called hooks or hip bones. Pin bones are present at the rear of rump, also called the pins. The thurl joint is located at about half way between the hips and the pins. It attaches the rear leg to

the rump. Rump is a very important part of every cow as it encloses the reproductive system. It also forms the framework for the cow's udder. A long, wide, level rump is necessary to support a long, wide, level udder. The final part of the topline is the tail-head. It also acts as the starting point for the cow's tail. The long, bushy hair at the end of the tail forms the switch.

1.1.3. Feet and Legs

Like many other ruminants, cows have four legs with a hoof on each (with two toes) at the bottom. Ruminant animals have split toes. Apart from toes, each hoof has a heel (at the back) and a sole (at the bottom). Directly above the hoof is the pastern. Located between the dewclaws (also called ergots) and the top of the hoof, the pastern works like a shock absorber with every step the cow takes. Dewclaws (not to be confused with dewlap as mentioned above) are the two small, hoof-like points on back side of each leg just above each pastern.

The rear leg structure extends from the hoof and pastern upward to the thurl joint of the rump. The hock joint in the lower leg corresponds to human ankle and only bends forward. Half way between the hock and the thurl is the stifle. The stifle is the cow's knee joint and only bends backward. The area along the upper part of the back side and the rear legs is the thigh. A joint above the hoof and pastern of front leg is called cow's knee. The cow's knee is most similar to human wrist. The front leg joint located above the cow's knee is the point of elbow and corresponds

exactly to human elbow. Moving up the front leg comes shoulder. Cow's point of shoulder attaches to the shoulder blade which is a long, flat, triangular shaped bone. The shoulder blade extends upward on an angle from the point of shoulder to the withers. The crops is the area directly behind the top of the shoulder blade.

1.1.4. Body and Chest

The entire area below the cow's back (from withers to hips) forms the barrel. It contains main stomach of cow called the rumen. At the front of the barrel (towards head) is the heart girth, the distance around the front end. Seeing from the front, this area is called as the chest as the area between and directly behind the front legs becomes the chest floor. A dairy cow needs a large heart girth and chest because this area holds the heart and lungs.

1.1.5. Udder

Milk is produced and stored in the udder. It has four quarters with a teat located at the base of each. During milking, milk is removed from the udder through these teats. The two front quarters make up the fore-udder and the two rear quarters are the rear-udder. The ligament separating the two quarters on the left side of the udder from the two on the right side is called udder cleft. The depth of the udder cleft indicates the strength of the central attachment of the udder. Another name for this attachment through the center of the udder is the median suspensory ligament. Upward attachment of udder at the rear side is

named as udder height. Udder depth is measured by comparing the floor/base of the udder to the hocks of the cow. Cows with udder above the hocks are expected to have fewer injuries to the udder and teats as compared to those with deeper udders. The fore-udder attachment is the line along the top of the fore-udder where the fore-udder attaches to the body wall. Strong cord-like tissue and skin create this attachment and prevent the fore-udder from breaking away from the body wall.

1.2. Body Parts of a Bull

Body parts of a bull are similar to those of cows, except size and shape (Fig. 1.2). They are more muscular and bigger in size. Sexual organs in bulls are different from cows and located differently. Major structures of a bull reproductive system are the penis, testicles, and the accessory organs and glands responsible for sperm maturation and transport (including epididymis, seminal vesicles, and prostate). The scrotum, testicles, epididymes, and penis are visible and can be located easily. The internal accessory glands, evaluated for breeding soundness examination via rectal palpation to check for inflammation and other concerns are not checked in beauty competitions.

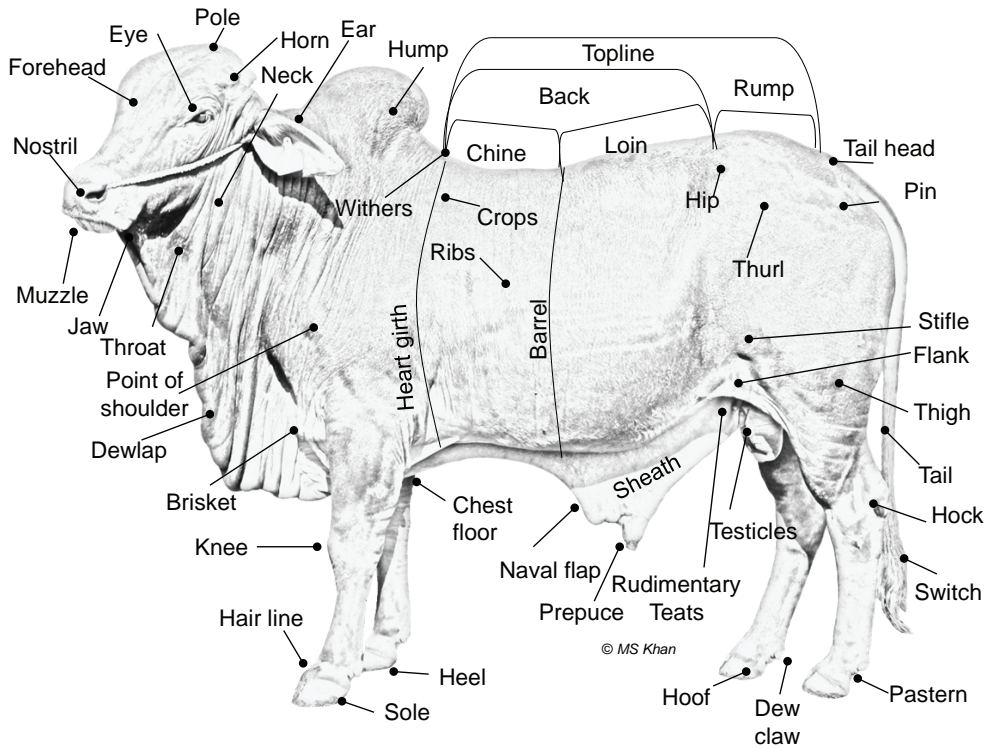


Fig. 1.2. Body parts of Sahiwal bull

1.2.1. Testicles

Bulls have a pair of testicles that have two main functions: production of sperm cells (spermatozoa) and synthesis of testosterone, the male hormone. These testicles are housed in the scrotum; a sac of skin containing sweat glands, muscles, and tissues to protect the testicles from impact and extreme temperatures (Fig. 1.3).

Sperm cells are constantly synthesized within the testicles by the seminiferous tubes, a collection of hundreds of winding tubules surrounded by testosterone-producing cells which fuse into few dozen larger tubules and culminate in the epididymis.

Presence of testicles outside the body of the animal is essential for normal sperm formation that occurs only at a temperature several degrees below normal body temperature. Very cold temperatures can also damage the testicle. Occasionally, one or both testicles fail to descend into the scrotum during embryological development, and are retained in the body cavity. Such male are referred to as cryptorchids. The scrotum, therefore, must help protect the testicle against both of these extremes of temperature. This is controlled by means of a temperature sensitive layer of muscle located in the walls of the scrotum. Relaxation increases the relative length of the scrotum thus moving the testicles away from body heat. In cold weather, the reverse happens and the scrotum shortens and the testicles are held close to the warm body.

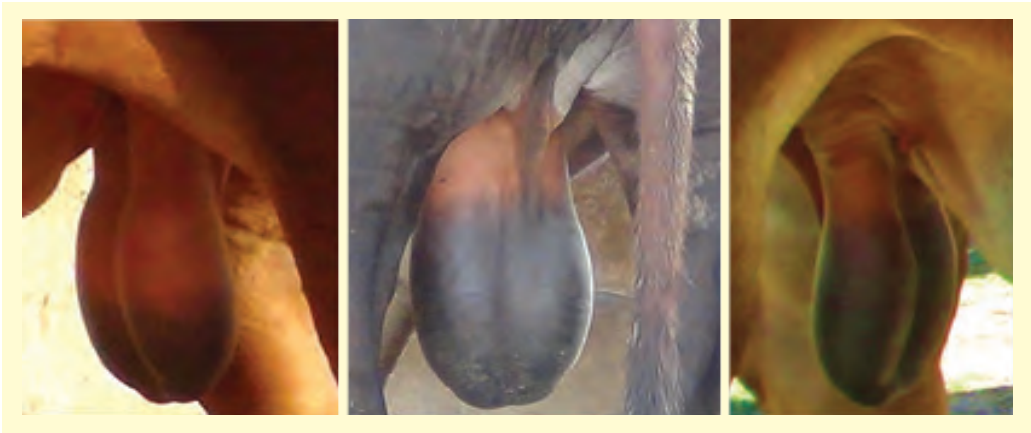


Fig. 1.3. Normal testicles in Sahiwal bulls

1.2.2. Penis

Organ used for copulation and deposition of semen into the cow's reproductive tract is the penis. During copulation, the musculature responsible for the sigmoid flexure (retractor muscles) relaxes and the penis extends and becomes exposed. The sigmoid flexure is an anatomical structure which provides the means by which the penis is held inside the body and sheath, except during time of service. Strong retractor muscles serve to hold the penis. Occasionally, these muscles are too weak to function properly and a portion of the penis and sheath lining protrude at all times. This exposes the male to the danger of mechanical injury. The end of the penis is the glans penis. It is richly supplied with nerves and is the source of the sensations associated with copulation.

2. Historic Description of Sahiwal Cattle

Sahiwal originated in Pakistan some 100 years ago. The task of starting a cattle farm was assigned to Sardar Jahangir Khan Wattoo of Kuaki Bahawal in Tehsil Depalpur (now District Okara) by the Britishers in 1915. The primary purpose of allotting 4190 acres of land to him was to develop the land for cultivation in (now) district Khanewal some 100 km from his hometown. So the foundation of a village after his name was laid and local dairy cattle were purchased from Sahiwal and other adjoining districts including Bahawalnagar, Bahawalpur and Faisalabad. District Sahiwal also had name changes from Sahiwal to Montgomery to Sahiwal in British era. Original pictures indicate that animals were spotted and horned (Wattoo, 2013). Most of the breed development work seem to have been done by Mr. Sardar Dost Muhammad Khan (1900-1959), son of Mr. Jahangir Khan, after his death in 1924.

The first important account on attributes of Sahiwal cattle is from Olver (1938). He stated that "Sahiwal animals are commonly of a reddish dun colour, usually with

some white, but many are pale red while dark brown and almost black colouring splashed with white is not uncommonly met with, and in certain strains there are large areas of white on the body. They are usually long, deep, rather fleshy cattle, short on the leg and comparatively lethargic and heavily built, but in the best milk strains the skin is fine. ... the somewhat broad head with short stumpy horns; the deep, heavy body with fine loose skin and, in the male, the massive hump placed in front of the wither; the voluminous dewlap and pendulous sheath; the long whip tail reaching nearly to the ground and the capacious udder, commonly somewhat pendulous in shape”.

Description of Joshi and Phillips (1953) heavily depend on Olver’s description. They reported that “The forehead is medium sized in the females but broad and massive in the males. Eyes are mild and placid. Ears are medium sized with black hair on the fringe. The average length of the ear range from 10 to 12 inches, while the width is from 4 to 5 inches. Horns are short, thick and usually not more than 4 inches in length. Horns that are loose at the base are common among females. The neck is short and lean, while the dewlap is large and heavy. The hump in the males is massive and frequently falls to one side. The abdomen is deep and large and the back is straight. The naval flap is loose and hanging, and the sheath in the males is also pendulous.”

Research Centre for Conservation of Sahiwal Cattle (RCCSC) of Livestock and Dairy Development Department (Government of Punjab) has recently published phenotypic attributes of Sahiwal breed. These have been expanded in the present document with pictorial arguments and preferences in the light of international norms.

3. Judging Sahiwal Cows

Judging Sahiwal cows may be similar to Holsteins and others cattle breeds for which beauty standards are available. Judging can be divided into four categories: udder (40%), dairy strength (25%), feet and legs (20%) and frame (15%).

3.1. Udder

The most important udder traits are udder depth, fore and rear udders and teat placement. Large and deep udders may hold more milk, but are vulnerable to injuries. Cows with moderately deep udder carried above the hock (Fig. 3.1) stay longer in the herd. A square teat placement makes cows easy to milk and helps them milk out quickly and completely. Each teat should therefore be squarely placed beneath each quarter (Fig. 3.2). Rear udder although, not as high and wide in Sahiwals as in Nili-Ravi buffaloes, should have adequate room for milk. The rear udder should be wide and extend well up on the thighs to create as much capacity as possible.



Fig. 3.1. Udder depth in Sahiwals (left: deep, centre: adequate, right: shallow)



Fig. 3.2. Teat placement in Sahiwals (left:narrow, middle:medium, right:wide, preferred)

A deep cleft or groove through the center of the udder indicates a strong median suspensory ligament (Fig. 3.3). It also helps keep each teat squarely placed beneath the quarter. Strong udder support also keeps the udder from becoming too deep. Udder should be balanced with soft and pliable texture. A correct fore-udder is firmly attached to the body wall and moderate in length (Fig. 3.4). Slight bulginess in the fore-udder attachment allows room for more milk. Ideal teat length for Holsteins is about 2.25 inches. Unusual size or shape of the teats results in milking problems. Because hand milking is common in Sahiwals, teat size is generally longer than a palm length, the ideal teat length (Fig. 3.5). Today's Sahiwals are not machine milked but very wide teats can be a problem in future. Sahiwals have excellent fore udders but rear udders are not as full and high as in some of the developed breeds such as Holsteins or Jerseys. Teat shape also varies in Sahiwals and neither pencil shaped nor bulbous shaped teats are preferred (Fig. 3.6).

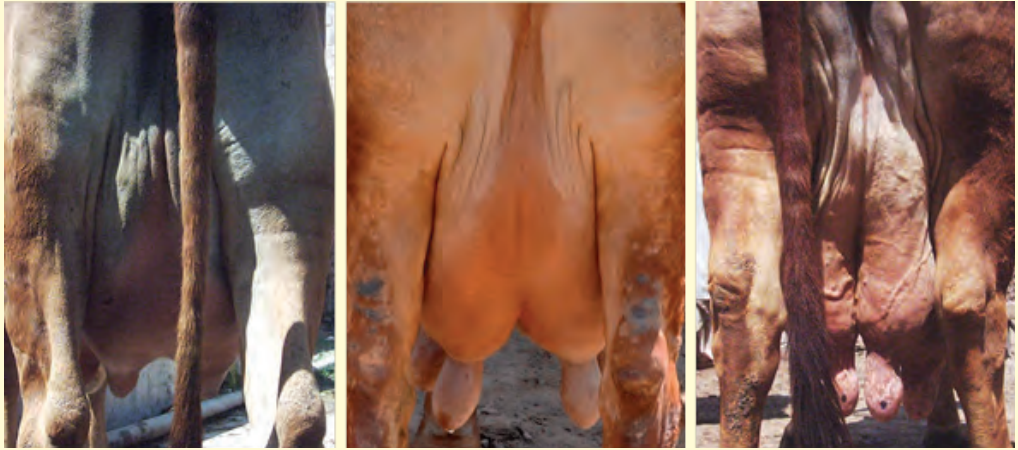


Fig. 3.3. Udder cleft in Sahiwal cows (left: weak, middle:medium, right:strong)



Fig. 3.4. Fore udder attachment in Sahiwal cows (right, preferred)



Fig. 3.5. Teat size variation in Sahiwal cows (left:small, middle:medium, right:long)



Fig. 3.6. Teat shape variation in Sahiwal cows (middle preferred)

3.2. Dairy Strength

A combination of dairyness and strength that supports sustained production and longevity is desired in Sahiwals. Major consideration is given to general openness and angularity, maintaining strength, width of chest, sprung of fore rib, and substance of bone without coarseness. Body condition should be appropriate for stage of lactation. Listed in priority order, the descriptions of the traits to be considered are as follows: A dairy cow needs to look like she produces a lot of milk. The desirable characteristics of a beef cattle are undesirable in dairy cattle. Dairy cattle should be thin and angular. A long, lean neck and a long, open body structure with wide-spaced ribs is a desirable dairy character. The point of withers should be sharp. The topline and rump should be free from fat deposits with the hip bones and pin bones sharply defined. In cows with sloping rumps, the udder is likely to tilt forward at an angle similar to that of the slope of the rump (Fig. 3.12). In cows of this type the rear quarters of the udder frequently become overdeveloped, causing the front attachment to break away from the body and the udder becomes pendulous. Ideal thighs should be thin and incurving showing no indication of excess fat. A thin, loose and pliable skin indicates dairy character of a cow. They should have long, lean neck; no heaviness in the throat (no "double chins"). Cows should have long body structure with each individual rib visible (no extra fat). Prominent withers and chine appear "sharply chiseled". Every individual vertebra along the top line should be visible (no extra fat). Hip bones and pin bones should be clearly seen (no extra fat) and thighs should curve inward with thin, loose skin (opposite of a thick, beefy thigh).

To judge capacity, one should look for a long body with a deep rib from side view of cow. Observe the cow from the front and the rear to determine the width of chest and the "spring" of ribs (or width of barrel). Since capacity is not closely

related to how much a cow can eat, it receives fewest points of any of the score card breakdowns. Cows with a deep chest and deep rear rib, however, have more strength and constitution. A wide chest often goes with a strong, powerful cow that is vigorous and healthy. Rear view can also easily differentiate body size (Fig. 3.7).

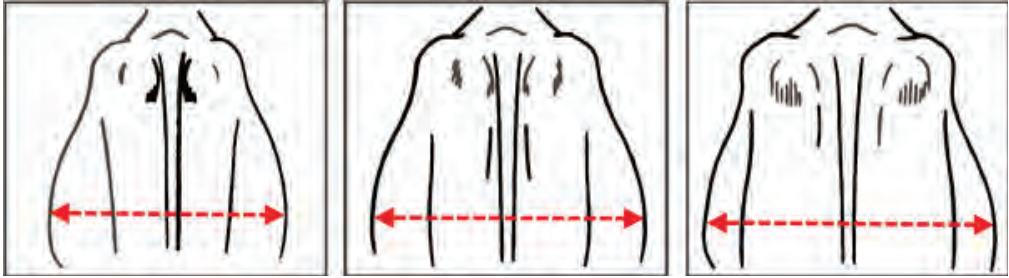


Fig. 3.7. Body size (left:small, middle:medium, right:large)

3.3. Rear Feet and Legs

Leg structure and foot shape are probably the most difficult parts of the score card to evaluate. Foot trimming and differences in housing make evaluation of feet and legs extremely challenging. The ideal foot has a short toe and a deep heel with a short, strong pastern. When the foot has the correct shape, it will not need frequent trimming or an unusual extra care. Worn out /misshapen feet should be identified earlier in the life to cull such animals (Fig. 3.8). The perfect rear leg walks straight ahead when viewed from the rear (Fig. 3.9). From the side view the rear leg should have a moderate angle or set. It should not be too straight or too curved (Fig. 3.10). The ideal hock joint is neatly formed with no coarseness or swelling (especially in front of the hock). Flexibility in the hock joint as the cow walks, is desirable. The best

way to evaluate a cow's leg structure is to watch her walk. Every step should appear comfortable for the cow. She should move gracefully and easily on her feet and legs. Foot angle is also used to judge the depth of heel as it affects animal's walk (Fig. 3.11).



Fig. 3.8. Misshapen and worn out feet

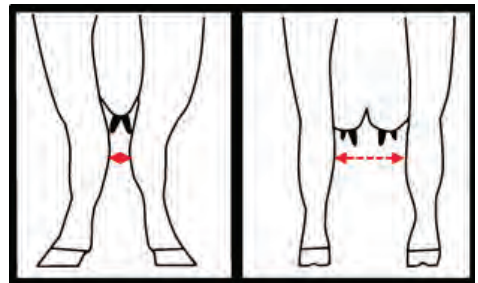


Fig. 3.9. Rear leg rear view (left: hocked-in and right:normal leg set)

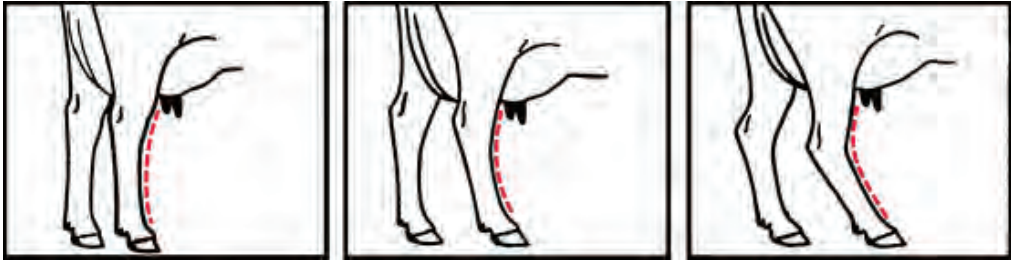


Fig. 3.10. Rear leg side view (Left: too straight, centre: normal, right: too curved)

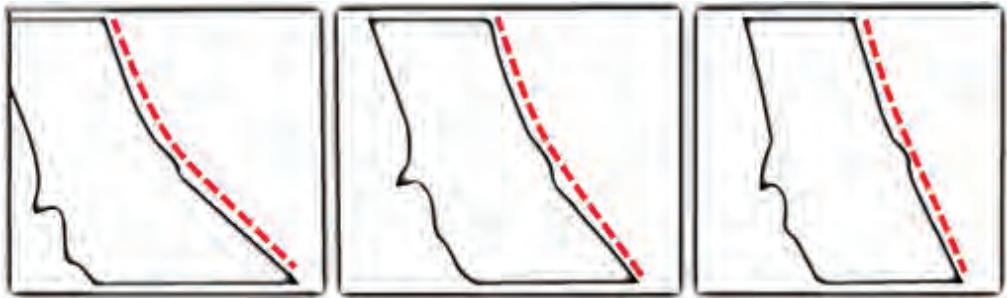


Fig. 3.11. Foot angle (preference is for middle figure)



Fig. 3.12. Rump with normal slope (centre) and two extremes

3.4. Frame

The frame represents all the skeletal parts of the cow. This is like an outline of the cow. The most important parts of frame are rump and stature. Since the rump forms the framework for the udder, it should be ideally long, wide and nearly level. This allows the udder to have plenty of capacity because of width and length, and it helps make the floor of the udder nearly level. A wide rump structure with wide thurls also helps make calving easier. Because the thurl joint is also part of the rump, the rear

leg structure and function also rely on the way the rump is constructed. Wide thurls allow the legs to be set wide enough to leave plenty of room for a wide udder. Thurls set too far back toward the pins usually result in legs that are too straight. Cows with thurls back of the center also tend to stand with their rear legs too far behind them. When the thurl joint is too far forward, the leg may have too much set or angle. A leg with too much set is called “sickled”. Tall cows usually carry their udders higher above the ground making them less vulnerable to injuries. Taller cows also tend to be larger cows that can eat more and produce more milk. Larger cows weigh more and have a greater salvage value when they leave the milking herd.

The front end of the cow contains the heart and lungs and therefore a wide, strong front end helps in vigor and good health of the animal. Ideal shoulders blend smoothly from the neck into the fore rib. Loose shoulders or winged shoulders may cause problems in the mobility of the front legs. Smoothly blended shoulders give a cow the appearance of harmony, style and balance.

Among the breed characters, the overall “style and balance” is important. Sahiwal cows should have all the parts fit together smoothly and correctly. It should move gracefully. The head should be characteristic of the breed and so is the color (pale red to reddish brown). The dewlap (Fig. 3.13) and naval flap (Fig. 3.14) and the hump are the obvious characters to look for judging Sahiwal.



Fig. 3.13. Dewlap in Sahiwal cows (left:small, middle:medium, right:large)



Fig. 3.14. Naval flap variation in Sahiwal cows

Table 3.1 Summary of beauty attributes in Sahiwal cows

| Body attribute | Score | Detailed description |
|------------------------------|-----------|--|
| Udder | 40 | Most important of the four categories, consideration be given to lactation number and age |
| 1. Udder Depth | 07 | Moderate depth relative to hocks with adequate capacity and clearance |
| 2. Rear Udder | 07 | Wide and high, firmly attached with uniform width from top to bottom and slightly rounded to udder floor |
| 3. Fore Udder | 07 | Firmly attached with moderate length and ample capacity |
| 4. Udder Balance and Texture | 05 | Udder floor level as viewed from the side: quarters evenly balanced; soft, pliable, and well collapsed after milking |
| 5. Udder Cleft | 05 | Evidence of a strong suspensory ligament with clear right and left halving |
| 6. Teat Placement | 05 | Squarely placed under each quarter, plumb and properly spaced |
| 7. Teat shape and size | 04 | Cylindrical shape; uniform size with medium length and diameter |
| Dairy Strength | 25 | A combination of dairyness and strength to support sustained production and longevity. Major consideration is given to general openness and angularity while maintaining strength, width of chest, spring of fore rib, and substance of bone without coarseness. Body condition should be appropriate for stage of lactation |
| 1. Ribs | 05 | Wide apart: Rib bones wide, flat, deep, and slanted towards the rear. Well sprung, expressing fullness and extending outside the point of elbows |
| 2. Chest | 05 | Deep and wide floor showing capacity for vital organs, with well-sprung fore ribs |
| 3. Neck | 04 | Long, lean, and blending smoothly into shoulders; voluminous dewlap |
| 4. Barrel | 04 | Long, with adequate depth and width, increasing toward the rear with a deep flank |
| 5. Thighs | 04 | Lean, incurving to flat and wide apart from the rear |
| 6. Withers | 02 | Sharp with chine prominent |
| 7. Skin | 01 | Thin, loose, and pliable with small hair coat |
| Rear Feet and Legs | 20 | Evidence of mobility is given major consideration. |

| Body attribute | Score | Detailed description |
|--------------------------|-----------|---|
| 1. Movement | 04 | The use of feet and rear legs, including length and direction of step. When walking naturally, the stride should be long and fluid with the rear feet nearly replacing the front feet |
| 2. Legs-Side View | 03 | Moderate set (angle) to the hock |
| 3. Rear Legs-Rear View | 03 | Straight, wide apart with feet squarely placed |
| 4. Feet | 03 | Steep angle and deep heel with short, well-rounded closed toes |
| 5. Hocks | 02 | Adequate flexibility with freedom from swelling |
| 6. Thurl Position | 02 | Near central placement between the hip and pin bones |
| 7. Pasterns | 02 | Short and strong with some flexibility, having a moderate, upright angle. |
| 8. Bone | 01 | Flat and clean with adequate substance |
| Frame | 15 | The skeletal parts of the cow are considered (except rear feet and legs). |
| 1. Breed Characteristics | 05 | Exhibiting overall style and balance. Head should be feminine, broad muzzle, large open nostrils and strong jaw, voluminous dewlap, very visible naval flap and hump, attractive reddish dun color and black switch of tail |
| 2. Stature | 03 | Height including length in the leg bones with a medium bone pattern throughout the body structure. Height at withers and hips should be relatively proportionate. Generally around 120cm with a range of 110 to 135 cm at withers. |
| 3. Rump | 03 | Long and wide with pin bones slightly lower than hip bones with adequate width between pins. Thurls should be wide apart. Vulva should be nearly vertical. Tail head should set slightly above and neatly between pin bones with freedom from coarseness. |
| 4. Front End | 03 | Front legs should be straight, wide apart, and squarely placed. Shoulder blades and elbows set firmly against the chest wall. The crops should have adequate fullness blending into the shoulders. |
| 5. Back/Loin | 01 | Back should be straight and strong with little bent towards hump. Loin should be broad, strong, and nearly level. |

3.5. Faults and Defects

It is important to learn faults and defects in breed characteristics of Sahiwals. Genetic or inherited characteristics are important to consider and should not be allowed to pass to the generation. Other faults limit the productivity of animal. Some faults are more serious than others. Some of the defects are extremely rare. One may never see a cow with some of the faults listed. However, these should be known before judging a dairy cow.

3.5.1. No Discrimination

No effect on the final placing; none of these defects have an impact on milk production, reproduction or genetics.

- Cows with or without horns
- Shorter ears
- Cows or heifers with docked tails
- Slight color markings on the underline
- Color markings on the udder
- Small extra teat (when it does not seem to interfere with milking)
- Pale red or Chocolate color
- Light colored testicles

3.5.2. Slight Discrimination

A little effect on final placing unless the class is extremely close and the animals are of nearly equal merit; it is possible that a slight discrimination would not change the final placing at all, especially if the placing of the class is very clear in the judge's mind.

- Blindness of one eye
- Temporary lameness
- Toe out (front feet)
- Slightly leaking teats

- Temporary or minor injury
- A small patch or two of white hair (not spots)
- Extra teats
- Slightly unbalanced udder
- Twisted testicles in males
- Light colored muzzle, eye lashes or tail switch

3.5.3. Slight to Serious Discrimination

Effect on final placing depends upon the degree to which the problem is present; the judge must make the decision and place the animal according to his/her best judgment.

- Indication of blindness
- Twisted muzzle or nose (wry face)
- Parrot jaw (short lower jaw)
- Winged shoulders
- Wry tail (tail head off to side)
- Weak pastern
- Lack of udder crease
- Loose fore or rear udder attachment
- Lack of size (stature too small)
- Over conditioned (too fat)
- Spread toes/ in-compact hooves (especially in males)
- Abnormal milk from teats (bloody, clotted, watery)
- Obstruction in teat ("spider" teats)
- Clean throat (dewlap almost missing)

3.5.4. Serious Discrimination

Significant effect on final placing; usually in the lower half of the class; a good guideline is to place the animal third in the class allowing adjustment up or down depending on the quality

of the other animals in the class.

- Crampy (arthritic) hind legs
- Broken fore udder attachment
- Broken udder support
- Broken rear udder attachment
- Big white color patch on the body

3.5.5. Disqualification

Animals with these faults are unlikely to be included in a judging class.

- Total blindness
- Permanent lameness
- Sharp practice (tampering to conceal faults)
- Freemartin heifer (an infertile heifer born twin to a bull)
- White switch of tail
- Absence of hump
- Absence of naval flap

4. Judging Heifers and Calves

Heifers are judged on similar parameters as those of adult cow except that udder and relevant attributes are less prominent in these animals. As tall well grown heifers can be bred earlier, size becomes very important for judging heifers. Standing back and fitting every candidate into an ideal frame is the best approach. This helps judge the heifers' form, the most important component of score cards in heifers. For younger female calves, breed characteristics and animals form is quite important and calves raised on direct suckling have better growth and other characters. Hair luster is also better and as these calves are not weak, rear leg sets are also better looking as compared to weaker calves.

So while judging heifers and young female calves, one should look for an animal that is tall and well-grown, stylish having well-balanced body parts that is eye catching from a distance. Loin should be strong to support rump and should be long and wide (for more udder space). The thurls should be centrally placed to provide a basis for a correctly set rear leg. A wide chest with a smooth shoulder means a strong, vigorous constitution. Rear legs should be set squarely beneath the rump; neither too straight nor too set. Feet should have a deep heel and short toes while pasterns should be short and strong to serve as a cushion for the leg and foot. Dairy characteristics include a long, lean neck; sharpness and angularity throughout. There should be no extra fat or condition over the hips, pins and tailhead. A wide chest makes room for the heart and lungs to give the heifers vigor and a strong constitution while deep barrel provide capacity for better forage intake which helps them grow better.

4.1. Dairy Form

Attractive individuality and harmonious blending of parts (other than feet and legs) is evaluated to judge for dairy form. A stylish heifer should have harmonious blending of parts; proportionate height, length and depth. Rump should be long and wide throughout with pin bones slightly lower than hip bones. Thurls should be wide apart and centrally placed between hip bones and pin bones. Tailhead set

should be slightly above and neatly placed between pin bones and tail should be free from coarseness. The vulva should be nearly vertical, similar to adult animals. Back should be straight and strong; loin should be broad, strong and nearly level. Front end should be squarely placed with front legs straight and wide apart. Shoulder blades and elbows should be set firmly against the chest wall. The crops should have adequate fullness. Hump should be visible. There should be clean head, broad muzzle with large, open nostrils, and strong jaw. Eyes should be alert yet dim and not bulging.

4.2. Dairy Characters

Evidence of potential milking ability is evaluated. Major consideration is given to general openness and angularity without weakness, flatness of bone, and freedom from coarseness. Ribs should be wide apart and slanted toward the rear. Thighs should be lean, incurving to flat and wide apart from the rear. Withers should be sharp with prominent chine. Neck should be long, lean and blending smoothly into shoulders; dewlap should be folding and voluminous while body skin should be thin, loose and pliable. Heifers should have udders with much pliability of skin, having teats of good size, placed well apart and on the same level. In pregnant heifer, udder development should also be considered with no udder or teat faults. Udders that hang tight to the belly, with teats close together, and the front pair elevated materially above the rear two, promise a restricted or unshapely development. In judging heifer calves, the mammary development should therefore be critically examined.

4.3. Feet and Legs

Evidence of mobility should be given major consideration. Feet should possess steep angle and deep heel with short, well rounded, closed toes. Rear legs should be judged for rear and side views. From rear view, these should appear straight, wide apart, squarely placed. From side view these should be moderate set (angle) to the hock. Hocks should be cleanly molded, free from coarseness and puffiness with adequate flexibility. Pasterns should be short, strong with some flexibility.

4.4. Frame

Growth, vigor and good health are evaluated. Major consideration should be given to height at the point of wither. Height including length in the leg bones with a medium sized bone pattern throughout the body structure is important. Height at withers and hips should be relatively proportionate. Barrel should be long, deep and wide; depth and spring of rib increasing toward the rear with a deep flank. Chest should be deep and wide floor with well sprung fore ribs blending into the shoulders. Dewlap should be voluminous and naval flap quite visible. Switch of tail should be black with no white patch on the body. White spots on the underline may be acceptable. Color may vary from light to dark (reddish) brown (Fig. 4.1)



Fig. 4.1. Color variation in Sahiwal heifers

4.5. Judging Sucklers

Judging sucklers is even more difficult than judging heifers and calves. Well suckled young animals all look beautiful (Fig. 4.2). There are many ways of judging to this category of Sahiwals. One being practiced in goats is described. Employ non-owners (or young kids) who have come to see the show as judges. Lineup all the competing calves with owners/workers holding them. Give each judge a necklace 'har' or buckeyes or even just a small branch of a plant to give to lined up owners for calf of their choice. Choose if clear winners otherwise repeat for a specific rank or position starting with the 1st position. This can create a show in itself. Otherwise, look for breed characters and growth attributes and apply all the standards discussed above.



Fig. 4.2. A winning suckler

5. Judging Bulls

Although most of the qualities (except female characters) discussed for selecting Sahiwal cows also apply to bulls but major difference is in masculinity. Bulls have bigger size and thus some of their body parts will be bigger in size. They are taller and lengthier than cows. Basically a bull should look like a bull. They should have masculine, powerful in appearance and should appear heavier in muscle and bone than cows. Sex should be distinguishable when looking at the head of an animal, even in a calf. Color in adult bulls may be more intense especially around hump and neck and around hind quarters. Instead of repeating all the four major categories of type discussed for cows only salient features to be emphasized for bulls are being discussed here. It is realized that judging of bulls at shows will gradually fade away when artificial insemination will be adopted by all the breeders.

Important general attributes of Sahiwal bulls are their body length, depth and angularity. Looking from side, they should appear comparatively long of outline, especially in neck and body, with appreciable depth of ribs. From front, the withers and chine or top of front ribs appear narrow. From the rear, the hips should not appear too wide apart, though with a fair degree of prominence, while the hindquarter should be lean and muscular, with very little twist, and the thighs divided nearly in the escutcheon region. Fleishy rump and thighs are not desirable. Angularity of form, or freedom from a tendency to lay on flesh is very important. As Sahiwal type judging is less formal so far, breeders have likeness for size and fleishiness (to the extent of beefiness) and judges should be careful so that slowly and gradually preferences are directed to basically, angularity.

5.1. Breed Characters

Breed characters such as dewlap and hump are important but there is wide variation in the size and structure of these two breed characters. If skin is too thick, it is less likely to fold so even if dewlap is voluminous, presence of folds makes it more or less attractive and desirable (Fig. 5.1). Similarly, large humps are typical of Sahiwals but these should be erect (Fig. 5.2). Too big hump (especially in younger animals) is likely to tilt (or even fall to one side) when they get older and therefore is not preferred. Another breed character is naval flap. Bigger (and symmetrical) naval flap is preferred in Sahiwals but should not be too big (or odd shape) to obstruct proper mating to even slightest extent. The wide variation in color is also acceptable. From pale yellow to very dark red (almost chocolate color) is the range (Fig. 5.3). Horns do not carry any score but preference is for small and stumpy horns (Fig.5.4)



Fig. 5.1. Dewlap in Sahiwal bulls (centre, preferred)



Fig. 5.2. Hump in Sahiwal bulls (centre: erect hump, preferred)



Fig. 5.3. Color variation in Sahiwal bulls



Fig. 5.4. Horn shape in Sahiwal bulls (preference for shape in the centre)

5.2. Rear Legs

Sound hind legs are vital to the breeding capacity of bulls. Rear feet and legs are extremely important as these are important in walking/grazing but more importantly, bear weight of bull when it mounts for natural mating or on dummy for semen donation. Moreover, a bull with hind leg defects may suffer pain on moving or mounting and this may interfere with his desire to mate. As bulls with faulty conformation grow older, defects become more apparent and tend to interfere to a greater extent with serving ability. Post legs or straight hind legs predisposes the bull to swollen hocks and to arthritis in the hip and stifle joints (Fig. 5.5). Swollen hocks can also result from faulty feeding and physical injury from fighting. In each case the swelling may be associated with pain and reduced mating performance. Sickie hock bulls tend to be clumsy, particularly at service and when dismounting. Each condition can adversely affect the bull's serving capacity in the longer term causing the bull libido to 'break down' earlier in life.



Fig. 5.5. Rear leg side view (preference for picture in the centre)

5.3. Testicles

Among the reproductive organs, testicles are the most important organs; their size and shape should be given more importance. Size of the testicles is directly proportional to semen volume, however, it should match with the size of the animal. In unusual cases, testicles should be palpated to rule out any swelling or hernia. Testicular consistency refers to the firmness and resilience, or springiness, of the testicles, and is a good indicator of testicle function and semen quality. Firmness is judged by the extent to which the tissue can be depressed when squeezed. Resilience is judged by the pressure felt when squeezing, that is, the natural tendency of the tissue to return to its normal shape. Soft testicles with low resilience are associated with a high percentage of abnormal sperm, and a low conception rate. Normal testicle function and good semen quality are indicated by firm testicles with high resilience. Testicular development should be assessed especially in bull calves (or even in younger bulls). Bulls with above average testicular development for their age produce sons that also have larger testicles when compared with the average bulls. Conversely, bulls with small testicles are likely to pass on this fault to their sons. This may affect the age at puberty of their daughters as well. So, at a similar age, younger bulls with better testicular development should get preference. A cut off of a minimum of 30 cm scrotal circumference is used for dairy bulls and adult Sahiwal bulls should meet this criteria yet, visual appraisal will need experience to judge for adequate size.

5.4. Scrotal shape

Scrotal shape is also very important. Scrotum supports and encloses the testes. Its main function is to regulate testicular temperature. It does so through perspiration and by muscular contraction that raises the testicles in cold weather and relaxation that lowers them during warm weather. Sahiwal bulls generally have 'U' shaped testicles (Fig. 5.6) rather than pear-shaped generally found in beef cattle breeds. Frightened bulls will pull testicles upward as a protective measure and therefore, be allowed to relax for testicular inspection. Some bulls might have 'V' shaped testicles and these are not preferred due to their association with lowered fertility. A slight backward tilt of scrotum has preference with some breeders (Fig. 5.6). A minor twist in the scrotum resulting in a slightly sideways suspension of the testicles may not affect reproductive performance but is abnormal in conformation and visually displeasing (Fig. 5.7). A major twist may indicate structural defect and reduced fertility. Old dairy science literature indicates that daughters of bulls with twisted testicles are expected to have sloppy udders. The misshapen testicles or any other type of scrotal or testicle deformity will always result in low sperm production and quality as well as lower testosterone which effects fertility and performance.

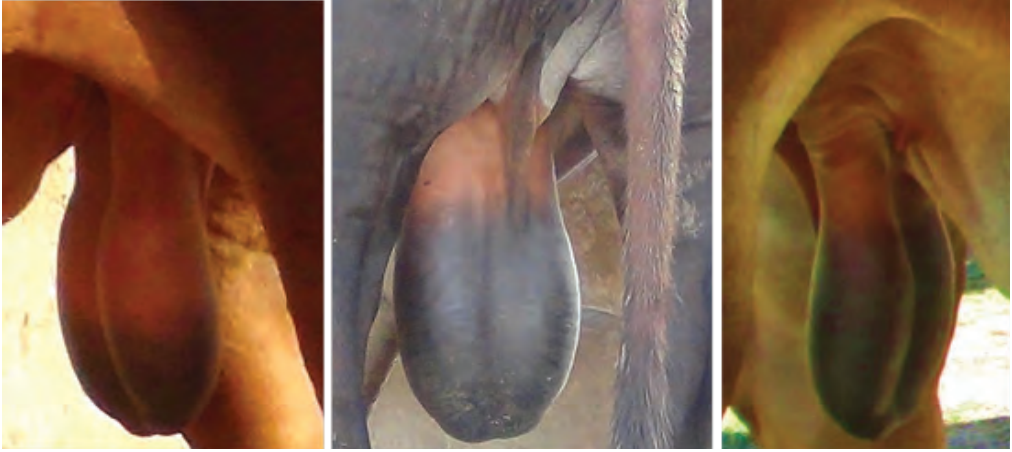


Fig. 5.6. Correct testicle shape in Sahiwal bulls

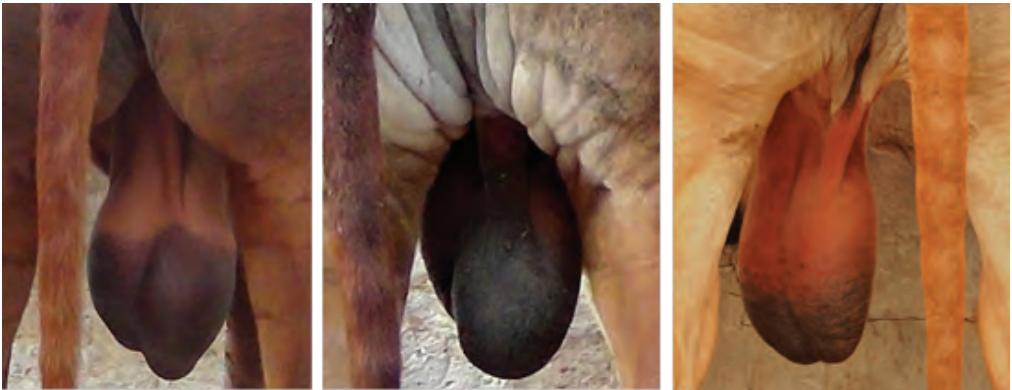


Fig. 5.7. Twisted (middle and right) and asymmetrical (left) testicles

Several scrotal abnormalities found in Sahiwal bulls, similar to other *Bos indicus* breeds, should be discriminated against. Generally such bulls are rarely presented on the shows. Testes held close to the body should not be given preference. Same is true for testicles with extremely long scrotal neck, where the testicles are down at about hock level making them prone to injuries to and should not be preferred. One smaller testicle (unilateral hypoplasia) or two small testicles (bilateral hypoplasia) if found should be discriminated against. Scrotal hernias are easily recognized (Fig. 5.8). Partial or complete cryptorchids may be found occasionally and bulls with these abnormalities should be rejected.

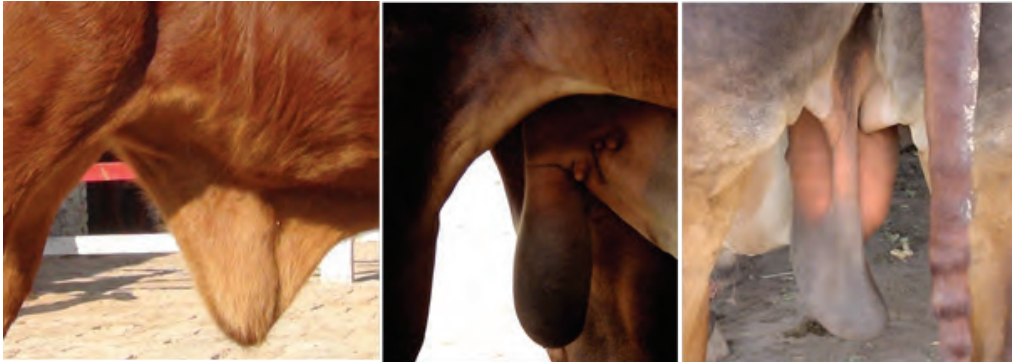


Fig. 5.8. Umbilical hernia (left), testicular hypoplasia (centre) and scrotal hernia (right)

5.5. Rudimentary Teats

The rudimentary teats, located, two on a side, just in front of the scrotum should not be ignored. These teats vary in length and position (Fig. 5.9). They may be an inch long, or merely more than fleshy scars. Information on their association with daughters udders is not available in Sahiwals but old dairy literature on other breeds indicates that the location of the rudimentaries indicates the transmission of placing of teats on the daughters. Bulls vary greatly in the placing of these rudimentary teats, some being attached on the same level and widely separated, while with others they are close together, with the fore teat high above the rear one. So while rudimentaries may not be of overwhelming importance if differences in bulls are too close. Bulls with widely separated rudimentaries should get some advantage. Similarly, the veins of the bull are also evidences of sex character. These are small, are usually two in number, and extend along on the belly, covering much the same relative location as on the cow, and disappear through openings in the belly wall. These veins and wells on the bull are also judged in bulls.

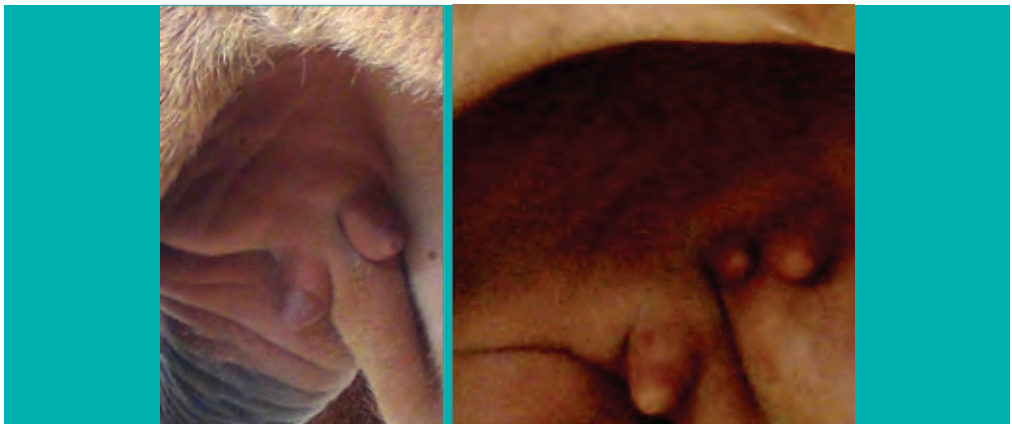


Fig. 5.9. Rudimentary teats (left:two, desirable, right:three, undesirable)

5.6. Sheath and Prepuce

Sheath character is an important trait to in Sahiwal bulls. Bulls have loose, pendulous sheaths which may vary from small to extremely large size (Fig. 5.10). A extremely loose, pendulous sheaths are more prone to injury than less pendulous sheaths. Preference should be for bulls with lesser loose sheaths as such bulls are at a lesser risk for sheath and penis injuries during travel and mating. It should however, not imply that judges should look for bulls with sheaths as small as those in Dhanni or Dajal breeds (if sheath is very small bulls are not Sahiwal). Prolapse of the prepuce is a problem in Sahiwal bulls (Fig. 5.11) and bulls differ a lot and it gets worse with the age of animal. Bulls with extreme prolapse should be discouraged to reduce chance of injury to very sensitive area of the bull.



Fig. 5.10. Variation in sheath size (left;small, middle:medium, right:large)

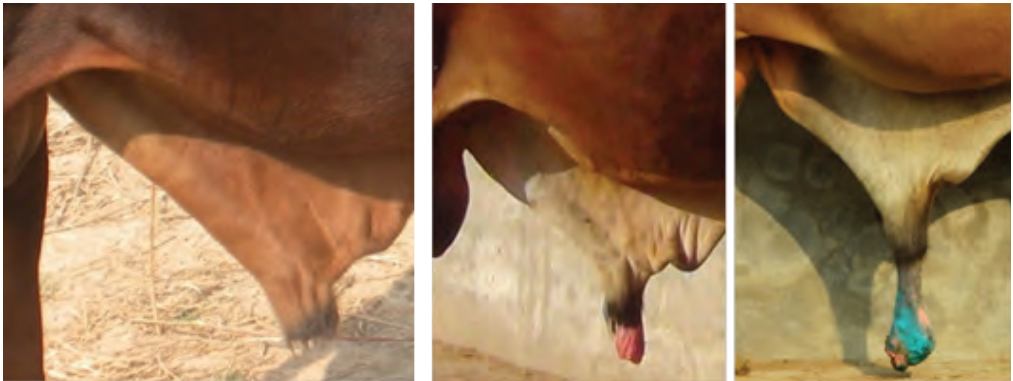


Fig. 5.11. Prepuce in bulls (left:no prolapse, middle:prolapsed, right:injured prolapse)

5.7. Judging Young Bulls

Young bulls, however, vary much in the development of sex character, as shown in head and neck (Fig. 5.12). The head should possess the desirable qualities of conformation and expression. Crest and thickness of neck come with maturity. The scrotum of the male should be perfectly developed, showing two glands of uniform size. Until further definite information becomes available, the character of the rudimentaries on the calf should not seriously influence the judge in his placings, though one might favor having them placed well apart and in front of the scrotum.



Fig. 5.12. Young Sahiwal bulls



Fig. 5.13. A-Sahiwal bull at Seman Production Unit Qadirabad, Sahiwal (Bull ID: QS621, Sire: S456, Dam:WJ-32/6, Age: 4.5 years, Body weight: 450Kg, Wither height: 130cm, Hip height: 135cm, Body length: 160cm, Heart girth: 190cm, Paunch girth: 230cm)

Table 5.1. Summary of beauty attributes in Sahiwal Bull

| Body attribute | Score | Detailed description |
|-----------------------------|-----------|--|
| Male characters | 35 | Masculine, slow moving but attentive with moderation in male characters and typical Bos indicus attributes. Young bulls comparatively quite agile and may even be vicious. |
| 1.Scrotal shape | 07 | Generally 'U' shaped with some variation. Slight backward tilt acceptable but twisting on right or left side not encouraged. In summer, 'U' may be more wider at the lower half |
| 2. Scrotal circumference | 07 | More than 30cm in most adult bulls and may be > 40cm in few cases. In young bulls proportionate to body size. Small testicles get low score. |
| 3.Testicular depth | 07 | Moderate with testicles located away from body (and extended downward in hot weather and tucked up in in winter) |
| 4.Sheath | 05 | Moderate with glans penis protruding without any hindrance when bull mounts |
| 5.Rudimentary teats | 05 | Two and wide apart in front of scrotum on each side. |
| 6.Prepuce | 04 | Free of blemishes with minimal prolapse |
| Rear Feet and Legs | 25 | Sound feet and strong legs |
| 1.Movement | 05 | Ease in carrying body weight |
| 3. Rear Rear Legs-Rear View | 05 | Should be straight with hocks spaced apart |
| 2.Legs-Side View | 04 | Neither bent in nor posty |
| 4.Feet | 04 | Sound with minimum distance between two hooves. |
| 5.Hocks | 02 | Clean with no indication of any swelling |
| 6.Thurl Position | 02 | Long and wide, almost central between hips and pin bone |
| 7.Pasterns | 02 | Moderate in size but not as long as in Dajal breed |
| 8.Bone | 01 | Flat and clean with adequate substance |
| Dairy Strength | 20 | Openness and angularity important. Leanness (similar to Dajal) and beefiness (similar to Angus) to be avoided |
| 1.Chest | 04 | Deep and wide |
| 2.Thighs | 04 | Incurving to flat but not too fleshy or beefy |
| 3.Neck | 04 | Long and muscular blending into shoulders. Dewlap having folds |
| 4.Ribs | 03 | Adequately sprung and slanted towards the rear |
| 5.Barrel | 02 | Adequate depth and width with no pot belly |
| 6.Withers | 02 | Sharp blending into crest. Hump should be upright and proportionate to the body size |
| 7.Skin | 01 | Loose and pliable |
| Frame | 20 | Breed characteristics and skeletal parts are considered |
| 1.Breed Characteristics | 08 | Pale yellow to dark red color that may deepen in hump and neck area and hind quarters. Voluminous dewlap (preference for folds) and visible naval flap with large erected hump. Moderate size sheath and stumpy horns. |
| 2.Stature | 04 | Generally 135 cm at withers with a range of 120-150cm. |
| 3.Rump | 03 | Long and wide with thurls to be wide apart |
| 4.Front End | 02 | Squarely placed straight front legs with adequate blending of various arts |
| 5.Back/Loin | 02 | Back should be almost straight with nearly level loin. |
| 6.Style | 01 | Active, requiring a nose ring to handle. Bigger steps with waving dewlap |

6. Judging Tips

Ensure that there is enough space for animals to walk and display themselves and the judge is able to see all together (both for side and rear views) from a distance. Places where beauty shows are conducted for the first time, audience are too eager to see everything. Arena should be controlled with the help of local organizers so that animals could be judged fairly. If there are too many animals to be judged (beyond the limits of the show ring), judge them in batches so that three animals from each batch are selected for final judging. People trying to picture every move should be dealt carefully and should not be allowed within the ring. Generally Sahiwal shows are in the mild and hot weather, tentage and canopies should be enough to protect from sun. Workers should also be available all the time to keep the ring clean. Plan for an exit strategy from the ring in case some animal becomes too vicious to control. Animals should preferably be tagged and all the ornaments should be politely taken off before entry into the ring (Fig. 6.1).



Fig. 6.1. Judging at a Sahiwal show

After ensuring that atmosphere for judging is conducive, all animals (of a batch) are in the ring, ask presenters to move with animals in the circle. Vicious animals and animals with obvious faults (look at points of discrimination) should be asked to leave first (elimination strategy). Animal with some minor temporary injuries should not be discriminated against. Developing an overall feeling of the class (as compared to another class or for the same class from a previous contest etc) is important. Animals are judged by what they are on the day of judging and not by what they could be in future.

After the initial screening, try one to two rounds of preliminary selection and then a final round (depending on the space on the ring and number of animals). Look for ideal udders, body height, depth and length and study rear legs while standing at a distance. Animals with long neck and open ribs should be retained. Voluminous dewlap and naval flaps may be preferred and so may be black switch of tail but after everything else. After declaring the winners, if possible, appreciate those that were not selected in the final ranking for the good qualities and faults their animals possessed. People wish to go back with a trophy. Understand that people try to compare their animal with animal of similar age (and type) while judges have limited options, they have to judge all the animals (assuming for example that their ages are the same) in the ring. In non-lactating animals younger animals should get advantage to have competitive attributes of older animals but for lactating animals, udder and other physical attributes of more mature cows generally have better developed attributes as compared to, for example, first calvers.

Number of classes should be as many as possible so that animals in the same class are of similar age. Have some margin for 4th or 5th or even lower places in any class so that more farmers can be declared winner. Give people hope.

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