



## Assessment of body conformation traits and their relationship with production performance of Sahiwal cows

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Supplementary Table 1. Frequency of different body, feet and legs type traits of Sahiwal cattle

| Type trait             | Score groups (1-9 score points) |             |                                 |              |                             |             |
|------------------------|---------------------------------|-------------|---------------------------------|--------------|-----------------------------|-------------|
|                        | 1-3                             | Frequency   | 4-6                             | Frequency    | 7-9                         | Frequency   |
| Stature (cm)           | Short<br>(109.80-118.61)        | 5 (3.3 %)   | Intermediate<br>(118.62-127.43) | 97 (64.6%)   | Tall<br>(127.44 -136.25)    | 48 (32.0 %) |
| Chest width (cm)       | Narrow<br>(20.10-24.41)         | 33 (22.0 %) | Intermediate<br>(24.42-28.73)   | 101 (67.3%)  | Wide<br>(28.74 -33.05)      | 16 (10.6 %) |
| Body depth (cm)        | Shallow<br>(53.75-60.25)        | 18 (12.0 %) | Intermediate<br>(60.26-66.76)   | 106 (70.6 %) | Deep<br>(66.77-73.27)       | 26 (17.3 %) |
| Rump width (cm)        | Narrow<br>(11.20 – 14.64)       | 9 (6.0 %)   | Intermediate<br>(14.65-18.09)   | 113 (75.3 %) | Wide<br>(18.10-21.54)       | 28 (18.6 %) |
| Rump angle (cm)        | Less slope<br>(0.00-8.18)       | 0.0 (0%)    | Intermediate<br>(8.19-16.37)    | 112 (74.6 %) | More slope<br>(16.38-24.04) | 38 (25.3 %) |
| Rear legs set (degree) | Straight<br>(176-165.33)        | 43 (28.6 %) | Intermediate<br>(165.32-154.65) | 81 (54.0%)   | Sickle<br>(154.64-143.97)   | 26 (17.3 %) |
| Foot angle (degree)    | Low<br>(30-39.35)               | 21 (14.0%)  | Intermediate<br>(39.36-48.69)   | 107 (71.3%)  | Steep<br>(48.70-58.05)      | 22 (14.6%)  |

Supplementary Table 2. Frequency of different udder type traits of Sahiwal cattle

| Type trait                     | Score groups (1-9 score points) |             |                                   |              |                                      |             |
|--------------------------------|---------------------------------|-------------|-----------------------------------|--------------|--------------------------------------|-------------|
|                                | 1-3                             | Frequency   | 4-6                               | Frequency    | 7-9                                  | Frequency   |
| Fore udder attachment (degree) | Loose<br>(76-108.66)            | 36 (24.0 %) | Intermediate<br>(108.67-141.33)   | 85 (56.6 %)  | Strong<br>(141.34-174.00)            | 29 (19.3%)  |
| Rear udder height (cm)         | Low<br>(30-22.66)               | 20 (13.3 %) | Intermediate<br>(22.65-15.31)     | 81 (54.0 %)  | High<br>(15.30-7.96)                 | 49 (32.6 %) |
| Udder depth (cm)               | Below hock<br>(-11.50)-(-0.17)  | 14 (9.3 %)  | Intermediate<br>(-0.16) – (11.17) | 119 (79.3 %) | Shallow<br>(11.18-22.51)             | 17 (11.3 %) |
| Rear udder width (cm)          | Narrow<br>(3.20-7.30)           | 42 (28.0 %) | Intermediate<br>(7.31-11.41)      | 99 (66.0 %)  | Wide<br>(11.42-15.52)                | 9 (6.0 %)   |
| Central ligament (cm)          | Short<br>(0.5-2.83)             | 53 (35.3 %) | Intermediate<br>(2.84-5.17)       | 89 (59.3%)   | Long<br>(5.18 -7.51)                 | 8 (5.3 %)   |
| Udder balance (cm)             | Deep front udder<br>(6.50-2.34) | 19 (12.6 %) | Intermediate<br>(2.33) - (-1.83)  | 89 (59.3 %)  | Deep rear udder<br>(-1.84) - (-6.00) | 42 (28.0 %) |

Supplementary Table 3. Frequency of different teat type traits under of Sahiwal cattle

| Type trait              | Score groups (1-9 score points) |             |                           |             |                      |             |
|-------------------------|---------------------------------|-------------|---------------------------|-------------|----------------------|-------------|
|                         | 1-3                             | Frequency   | 4-6                       | Frequency   | 7-9                  | Frequency   |
| Teat circumference (cm) | Small (6.02-9.28)               | 63 (42.0 %) | Intermediate (9.29-12.55) | 70 (46.6 %) | Large (12.56 -15.82) | 17 (11.3 %) |
| Fore teat length (cm)   | Short (3.50-7.06)               | 79 (52.6 %) | Intermediate (7.07-10.63) | 62 (41.3 %) | Long (10.64 -14.20)  | 9 (6.0 %)   |
| Rear teat length (cm)   | Short (2.20-5.97)               | 61 (40.6 %) | Intermediate (5.98 -9.75) | 78 (52.0 %) | Long (9.76 -13.53)   | 11 (7.3 %)  |
| Teat diameter (cm)      | Thin(1.92-2.96)                 | 63 (42.0 %) | Intermediate (2.97-4.01)  | 70 (46.6 %) | Thick (4.02-5.06)    | 17 (11.3 %) |

Supplementary Table 4. Frequency and percentage of different linear type traits (visual) of Sahiwal cattle

| Type trait           | Frequency(1-9 score points)    |                           |                          |
|----------------------|--------------------------------|---------------------------|--------------------------|
|                      | 1-3                            | 4-6                       | 7-9                      |
| Angularity           | Lack of angularity 22 (14.66%) | Intermediate 109 (72.66%) | Very angular 19 (12.66%) |
| Body condition score | Poor 11(7.33%)                 | Intermediate 45 (30.0%)   | Grossly fat 94 (62.66%)  |
| Rear leg rear view   | Toe out 8(5.33%)               | Intermediate 132 (88.0%)  | Bow legged 10 (6.66%)    |
| Locomotion           | Severe abduction 8(5.33%)      | Intermediate 133 (88.66%) | No abduction 9 (6.0%)    |
| Fore teat placement  | Wide 13(8.66%)                 | Intermediate 130 (86.66%) | Close 7 (4.66%)          |
| Rear teat placement  | Wide 3 (2.0%)                  | Intermediate 75 (50.0%)   | Close 73 (48.66%)        |