# Factsheet 4: Overview of Individual Cow Characteristics and Farm Management Practices

## Background

In the previous factsheet, an overview of the household and farm characteristics of the farmers from IndoDairy Smallholder Household Survey (ISHS) was analysed across the four districts of Bandung, Bogor, Cianjur and Garut. This factsheet discusses dairy cow characteristics and farm management practices.

## Individual cow characteristics

Individual production characteristics were recorded for every milking cow at the time of the ISHS. In total, 1,626 milking cows were registered.

Table A1 in the Appendix shows details of individual animal information.

- **The primary method of breeding cows was artificial insemination according to 100% dairy farmers across the four districts.**

- The average age of cows was 60 months i.e. 5 years across the four districts.

- The average weight of a dairy cow was 437 Kg across the four districts, with the highest average weight recorded in Bogor district (465 Kg) and lowest in Bandung district (429 Kg).

- **Average age of dairy cow at the time of first calving was 27 months i.e. 2 years 3 months across the four districts.**

- Average calving interval across the four districts was 14 months i.e. 1 year 2 months.

## Herd management

Herd management practices for cows and calves are summarised in Table A2 and A3 in the Appendix respectively. The section below summaries the key characteristics of herd management across the four districts.

- **Majority of the dairy farmers continuously housed (96%) and tied (99%) the cattle on the farm.**

- Majority of the farmers used visual method (100%) of heat detection at the time of induction of oestrus.

- For the induction of oestrus in dairy cattle, 46% farmers used one shot of prostaglandin, 32% farmers did not use any method of induction of oestrus while 14% farmers used other methods.
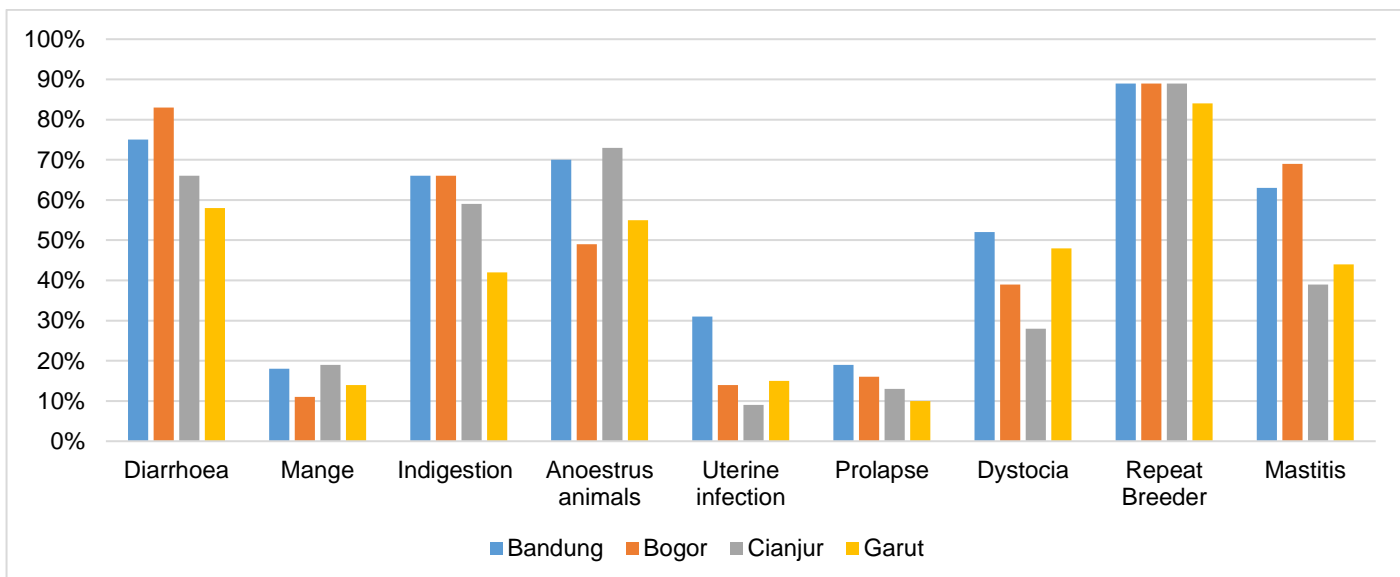
**Figure 1.** Occurrence of disease in cattle.

The respondents were asked about their colostrum feed practices for new born claves. Colostrum is a fluid produced by the pregnant cow prior to giving birth in preparation for the calf at first suckling. As calves are born with little to no immunity to protect them from infectious diseases, colostrum feed after birth provides them with essential antibodies to develop immunity.

- **59% farmers fed colostrum to their calves less than an hour after parturition, while 35% farmers fed colostrum within the first 3 hours after parturition.**

- The share of farmers who fed colostrum within one hour after parturition was higher in Bogor (78%) and Cianjur (79%) districts as compared to Bandung (46%) and Garut (64%) districts.

- Overall, 5% farmers fed colostrum within 4 to 6 hours after parturition and 2% farmers fed colostrum within 7 to 12 hours.

- **Majority of the farmers (84%) fed colostrum twice a day, while 16% fed three times a day.**

- Overall, 47% farmers provided 1 to 2 litres of colostrum per feed. This quantity of colostrum feed was lowest in Cianjur

district (9%), and highest in Bandung district (61%).

- Overall, 46% farmers provided 3 to 4 litres colostrum per feed, with a high number of farmers (81%) in Cianjur district following this practice.

- A small number of farmers (6%) provided more than 5 litres of colostrum per feed. This was observed highest in Bogor district (11%).

- Majority of the farmers (69%) dewormed their calves at the age of 3 to 4 months, while some farmers (20%) dewormed their calves at 5 to 6 months.

- With regards to sale of male calves, high number of farmers (47%) sold their male calves between the ages of 4 to 7 months.

- A significant percentage of farmers (22%) did not sell their male calves.

## Disease occurrence in cattle

The occurrence of cattle health issues, including calves and cows, is summarised in Figure 1 and Table A4 in the Appendix.

- There was a **high occurrence of occasional (53%) diarrhoea among the dairy cattle, with the highest percentage in Bogor district 58% and**

**lowest in Garut district with 46% occurrence.**

- There was a significant occurrence (51%) of occasional indigestion among the dairy cattle across the four districts.

- Similarly, there was a significant occurrence (52%) of occasional anoestrus animals among the dairy cattle across the four districts, with about 16% cattle being anoestrus in Garut district.

- Dystocia occasionally occurred among 41% of the cattle across the four districts, with a high occurrence of 46% in Bogor district.

- There was a small percentage of occasional occurrence of diseases like uterine infection (21%), prolapse (15%) and mange (15%) among the dairy cattle across the four districts.

- There was a high occurrence (51%) of often repeat breeder cows among the dairy cattle across the four districts. This was observed highest (59%) in Cianjur district and lowest (48%) in Bogor district.

- **Mastitis occasionally occurred (50%) in dairy cattle across the four districts, with the highest occasional occurrence in Bogor district (61%).**

## Summary

In this factsheet the key individual cow characteristics and herd management practices across the ISHS were analysed.

- **Artificial insemination was the primary breeding method across the four districts.**

- **Majority of the dairy farmers kept the dairy cattle continuously housed and tied on the farm.**

- **Majority of the farmers fed colostrum within one hour after parturition and did so twice a day.**

- **Diseases like diarrhoea, indigestion, anoestrus animals and Mastitis occasionally occurred among the dairy cattle across the four districts.**

The following factsheet, Factsheet 5, provides information on dairy farm inputs across the four districts.

3

## Appendix to Factsheet 4

The tables included in this Appendix provide summary statistics related to household and farm characteristics for the entire sample grouped by districts. Standard deviations (SD) are included where relevant.

Statistical significance between districts were determined using ANOVA (for binary and continuous variables) and Pearson's Chi-squared test (for categorical variables). For categorical variables with small observations (n < 5), Fisher's exact test was used to confirm the Chi-squared test. ANOVA and Chi-squared tests results are shown in the right-hand column, under the Total. Pairwise comparisons were performed for continuous and binary variables using Tukey tests when the ANOVA test was trending towards significant (p < 0.10). Districts with the same letter are not significantly different at the 5% level (p > 0.05).

**Table A1.** Dairy cow information.

| Variable | Bandung Value[1] | SD[2] | Sig[3] | Bogor Value[1] | SD[2] | Sig[3] | Cianjur Value[1] | SD[2] | Sig[3] | Garut Value[1] | SD[2] | Sig[3] | Total Value[1] | SD[2] | Sig[3] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Method of Breeding (n=1626) | | | | | | | | | | | | | | | |
| *Artificial Insemination (AI)* | 100% | | | 100% | | | 100% | | | 100% | | | 100% | | |
| Cow age (months) (n=1578) | 61.4 | 25.2 | a | 60.2 | 23.7 | a | 57.2 | 22.3 | a | 59.0 | 22.1 | a | 60.2 | 24.1 | * |
| Cow weight (Kg) (n=1571)[4] | 428.9 | 68.2 | a | 465.0 | 82.4 | | 437.4 | 72.3 | a | 434.7 | 61.7 | a | 436.8 | 71.4 | *** |
| Parity (n=1616) | 3.2 | 2.1 | b | 3.0 | 1.7 | ab | 2.7 | 1.6 | a | 2.8 | 1.8 | a | 3.0 | 1.9 | *** |
| Age at first calving (months) (n=1545) | 27.1 | 7.8 | | 27.4 | 4.4 | | 27.1 | 3.3 | | 27.1 | 4.0 | | 27.1 | 6.3 | |
| Calving interval (months) (n=1224) | 13.4 | 2.9 | a | 13.4 | 2.1 | a | 13.7 | 2.8 | ab | 14.3 | 3.0 | b | 13.6 | 2.8 | *** |
| Average milk production (L/cow/day) (n=1626) | 15.2 | 4.6 | b | 14.8 | 4.7 | ab | 14.1 | 5.0 | a | 15.0 | 3.9 | ab | 14.9 | 4.6 | ** |

[1]Value is either percentage or mean; [2]SD = Standard Deviation; [3]Sig = Significance; [4]Cow weight is based on farmers' estimation; * $p < 0.10$, ** $p < 0.05$ and *** $p < 0.01$ indicate significance at the 10%, 5% and 1% levels, respectively; Pairwise comparisons were performed for continuous and binary variables using Tukey tests when the ANOVA test was trending towards significant ($p < 0.10$). Districts with the same letter in the significance column are not significantly different at the 5% level ($p > 0.05$).

**Table A2.** Dairy management practices.

| Variable | Bandung Value[1] | Sig[2] | Bogor Value[1] | Sig[2] | Cianjur Value[1] | Sig[2] | Garut Value[1] | Sig[2] | Total Value[1] | Sig[2] |
|---|---|---|---|---|---|---|---|---|---|---|
| Cattle housing | | | | | | | | | | |
| *Offered shade for part of the day* | 0.7% | | 1.3% | | 0.0% | | 0.0% | | 0.5% | * |
| *Offered shade all day* | 5.3% | | 0.0% | | 0.0% | | 5.7% | | 4.0% | * |
| *Continuously housed* | 94.0% | | 98.8% | | 100.0% | | 94.3% | | 95.5% | * |
| Cattle restraints | | | | | | | | | | |
| *Continuously tied* | 99.3% | | 97.5% | | 98.8% | | 99.3% | | 99.0% | |
| *Tied for part of the day* | 0.7% | | 0.0% | | 0.0% | | 0.0% | | 0.3% | |
| *Not tied* | 0.0% | | 2.5% | | 1.3% | | 0.7% | | 0.7% | |
| Heat detection | | | | | | | | | | |
| *Visual* | 99.7% | | 100.0% | | 100.0% | | 100.0% | | 99.8% | |
| *None* | 0.3% | | 0.0% | | 0.0% | | 0.0% | | 0.2% | |
| Induction of Oestrus | | | | | | | | | | |
| *One shot of prostaglandin* | 54.7% | | 27.5% | | 42.5% | | 41.4% | | 46.3% | *** |
| *Two shots of prostaglandin* | 12.3% | | 0.0% | | 0.0% | | 6.4% | | 7.7% | *** |
| *None* | 27.7% | | 42.5% | | 33.8% | | 33.6% | | 31.8% | *** |
| *Other* | 5.3% | | 30.0% | | 23.8% | | 18.6% | | 14.2% | *** |

[1]Value is percentage; [2]Sig = Significance;* $p < 0.10$, ** $p < 0.05$ and *** $p < 0.01$ indicate significance at the 10%, 5% and 1% levels, respectively; Pairwise comparisons were performed for continuous and binary variables using Tukey tests when the ANOVA test was trending towards significant ($p < 0.10$). Districts with the same letter in the significance column are not significantly different at the 5% level ($p > 0.05$).

**Table A3.** Calves management.

| Variable | Bandung | Bogor | Cianjur | Garut | Total | Sig[1] |
|---|---|---|---|---|---|---|
| Timing of first colostrum feed (n=599) | | | | | | |
| *0 - 1 hour* | 45.5% | 77.5% | 78.8% | 64.3% | 58.6% | *** |
| *1 - 3 hours* | 44.5% | 21.3% | 18.8% | 32.9% | 35.2% | *** |
| *4 - 6 hours* | 7.7% | 1.3% | 1.3% | 1.4% | 4.5% | *** |
| *7 - 12 hours* | 2.3% | 0.0% | 1.3% | 1.4% | 1.7% | *** |
| Times colostrum is fed per day (n=599) | | | | | | |
| *Twice a day* | | 97.5% | 97.5% | 73.6% | 83.6% | *** |
| *Three times a day* | 19.1% | 2.5% | 2.5% | 26.4% | 16.4% | *** |
| Amount of colostrum provided per feed (n=599) | | | | | | |
| *1-2 litres* | 61.2% | 41.3% | 8.8% | 42.9% | 47.3% | *** |
| *3-4 litres* | 34.1% | 47.5% | 81.3% | 52.1% | 46.4% | *** |
| *More than 5 litres* | 4.7% | 11.3% | 10.0% | 5.0% | 6.3% | *** |
| Calf deworming (n=600) | 68.0% | 95.0% | 93.8% | 84.3% | 78.8% | *** |
| Age of deworming (N=473) | | | | | | |
| *1 - 2 months* | 14.2% | 1.3% | 10.7% | 7.6% | 9.9% | ** |
| *3 - 4 months* | 63.7% | 73.7% | 76.0% | 71.2% | 69.1% | ** |
| *5 - 6 months* | 20.1% | 25.0% | 13.3% | 18.6% | 19.5% | ** |
| *Other* | 2.0% | 0.0% | 0.0% | 2.5% | 1.5% | ** |
| Calf dehorning (n=600) | 1.3% | 0.0% | 0.0% | 5.7% | 2.0% | *** |
| Age male calves sold (n=600) | | | | | | |
| *0 - 3 months* | 12.7% | 2.5% | 8.8% | 15.7% | 11.5% | *** |
| *4 - 7 months* | 37.7% | 57.5% | 66.3% | 50.7% | 47.2% | *** |
| *8 - 11 months* | 6.0% | 6.3% | 2.5% | 5.0% | 5.3% | *** |
| *12 - 17 months* | 9.3% | 11.3% | 7.5% | 3.6% | 8.0% | *** |
| *More than 18 months* | 7.3% | 10.0% | 2.5% | 4.3% | 6.3% | *** |
| *Not sold* | 27.0% | 12.5% | 12.5% | 20.7% | 21.7% | *** |

[1]Sig = Significance;* $p < 0.10$, ** $p < 0.05$ and *** $p < 0.01$ indicate significance at the 10%, 5% and 1% levels, respectively; Pairwise comparisons were performed for continuous and binary variables using Tukey tests when the ANOVA test was trending towards significant ($p < 0.10$). Districts with the same letter in the significance column are not significantly different at the 5% level ($p > 0.05$).

**Table A4**. Disease occurrence in cattle (n = 600).

| Variable | Bandung | Bogor | Cianjur | Garut | Total | Sig[1] |
|---|---|---|---|---|---|---|
| Diarrhoea | | | | | | |
| *Never* | 24.7% | 17.5% | 33.8% | 42.1% | 29.0% | *** |
| *Occasionally* | 55.0% | 57.5% | 51.3% | 45.7% | 52.7% | *** |
| *Often* | 20.3% | 25.0% | 15.0% | 12.1% | 18.3% | *** |
| Mange | | | | | | |
| *Never* | 82.3% | 88.8% | 81.3% | 85.7% | 83.8% | |
| *Occasionally* | 17.0% | 11.3% | 17.5% | 11.4% | 15.0% | |
| *Often* | 0.7% | 0.0% | 1.3% | 2.9% | 1.2% | |
| Indigestion | | | | | | |
| *Never* | 34.0% | 33.8% | 41.3% | 57.9% | 40.5% | *** |
| *Occasionally* | 55.3% | 58.8% | 48.8% | 37.1% | 50.7% | *** |
| *Often* | 10.7% | 7.5% | 10.0% | 5.0% | 8.8% | *** |
| Anoestrus animals | | | | | | |
| *Never* | 30.3% | 51.3% | 27.5% | 45.0% | 36.2% | *** |
| *Occasionally* | 57.0% | 40.0% | 65.0% | 39.3% | 51.7% | *** |
| *Often* | 12.7% | 8.8% | 7.5% | 15.7% | 12.2% | *** |
| Uterine infection | | | | | | |
| *Never* | 69.3% | 86.3% | 91.3% | 85.0% | 78.2% | *** |
| *Occasionally* | 29.7% | 12.5% | 8.8% | 12.9% | 20.7% | *** |
| *Often* | 1.0% | 1.3% | 0.0% | 2.1% | 1.2% | *** |
| Prolapse | | | | | | |
| *Never* | 81.3% | 83.8% | 87.5% | 90.0% | 84.5% | |
| *Occasionally* | 18.0% | 16.3% | 12.5% | 10.0% | 15.2% | |
| *Often* | 0.7% | 0.0% | 0.0% | 0.0% | 0.3% | |
| Dystocia | | | | | | |
| *Never* | 48.0% | 61.3% | 72.5% | 52.1% | 54.0% | *** |
| *Occasionally* | 45.7% | 36.3% | 25.0% | 44.3% | 41.3% | *** |
| *Often* | 6.3% | 2.5% | 2.5% | 3.6% | 4.7% | *** |
| Repeat breeder | | | | | | |
| *Never* | 11.0% | 11.3% | 11.3% | 16.4% | 12.3% | |
| *Occasionally* | 38.3% | 41.3% | 30.0% | 33.6% | 36.5% | |
| *Often* | 50.7% | 47.5% | 58.8% | 50.0% | 51.2% | |
| Mastitis | | | | | | |
| *Never* | 36.7% | 31.3% | 61.3% | 55.7% | 43.7% | *** |
| *Occasionally* | 56.7% | 61.3% | 30.0% | 39.3% | 49.7% | *** |
| *Often* | 6.7% | 7.5% | 8.8% | 5.0% | 6.7% | *** |

[1]Sig = Significance; * p < 0.10, ** p < 0.05 and *** p < 0.01 indicate significance at the 10%, 5% and 1% levels, respectively; Pairwise comparisons were performed for continuous and binary variables using Tukey tests when the ANOVA test was trending towards significant (p < 0.10). Districts with the same letter in the significance column are not significantly different at the 5% level (p > 0.05).