Supplementary Table S1. Ingredient composition and nutrient of the total mixed rations.

| Ingredient, % DM | DDS² | VDS³ |
|------------------|------|------|
| Alfalfa hay      | 16.1 | 6.0  |
| Oat hay          | 7.55 | 6.09 |
| Corn silage      | 18.8 | 9.80 |
| Brewer grains    | 3.47 | 0    |
| Beet pulp        | 4.67 | 3.54 |
| Cottonseed mean, whole | 5.49 | 3.96 |
| Steam-flaked corn| 5.57 | 11.0 |
| Total mixed fermentation ration | 0 | 28.0 |
| Ground corn grain| 17.0 | 13.9 |
| Soybean meal     | 9.62 | 7.92 |
| Expanded soybean | 2.74 | 2.31 |
| Fat meal         | 1.09 | 1.01 |
| Distillers dried grains with soluble | 4.62 | 3.80 |
| CaHPO₄           | 0.11 | 0.10 |
| NaCl             | 0.21 | 0.17 |
| Limestone        | 0.36 | 0.29 |
| NaHCO₃           | 0.34 | 0.27 |
| MgO              | 0.13 | 0.11 |
| Premix¹          | 2.12 | 1.74 |

Nutrient levels

|                   | DDS² | VDS³ |
|-------------------|------|------|
| Dry matter        | 51.8 | 50.4 |
| Crude protein     | 16.0 | 15.9 |
| Neutral detergent fiber | 32.9 | 34.7 |
| Acid detergent fiber | 19.0 | 21.1 |
| Organic matter    | 95.5 | 96.2 |
| NEL, Mcal/kg DM   | 1.70 | 1.70 |

¹ Premix, formulated to provide (per kg of DM): vitamin A ≥ 600 kIU, vitamin D3 ≥ 150 kIU, vitamin E ≥ 2,000 IU, nicotinic acid ≥ 500 mg, Cu ≥ 1,500 mg, Fe ≥ 1,500 mg, Mn ≥ 1,500 mg, Zn ≥ 7,000 mg, I ≥ 90 mg, Se ≥ 50 mg, Co ≥ 20 mg.
² DDS = development dataset
³ VDS = validation dataset
Supplementary Figure S1. The ichnography of feed bunk and barn.
Supplementary Figure S2. The feed bunk (automatic weighing trough), width is 80 cm.