

Feeding Dairy for All Its Worth! A survey of feed management practices in Iowa

The dairy industry in Iowa relies on the collaboration between nutritionists and dairy producers to optimize feed and nutrition management. Effective feed and nutrition management is pivotal for herd performance and the sustainability of dairy operations. This paper presents the results of a survey that examines the attitudes of nutritionists and dairy producers separately, shedding light on their priorities and perspectives.

An electronic survey was distributed to dairy producers and nutritionists to understand on-farm dairy nutrition practices in Iowa. The ISU Extension Dairy Team's communication channels, including an electronic newsletter and social media pages, promoted the survey. The survey was split into three sections for nutritionists, including demographics of the herds they service, attitudes toward ration balancing, and attitudes toward alternative feeds and forages. There were six sections for dairy producers: herd characteristics, lactating cow rations, dry cow rations, heifer rations, feed management, and attitudes toward alternative feeds and forages. In addition, there was a section at the end of the survey to collect demographic information for nutritionists and producers. A section was included for robotic producers, but none of the respondents completed this.

Respondent information

The survey received 23 responses consenting to participate, identifying as nutritionists or dairy producers. However, certain responses were eliminated from the dataset. One dairy nutritionist's response was excluded as they didn't complete any other sections of the survey, and another dairy nutritionist's response was excluded because they only indicated involvement in feeding dairy herds and having heifer grower clients yet did not provide further details. Additionally, one dairy producer's response was removed due to their failure to complete any additional questions on the survey. In total, 16 responses are summarized in this paper.

Among the nutritionists surveyed, two exclusively worked with dairy herds, while the remaining two served both dairy and beef herds. Notably, the dairy-focused nutritionists also extended their services to dairy heifer growers. All four nutritionists reported having clients with Automatic Milking Systems (AMS). Regarding automatic robotic feeding systems, two nutritionists confirmed their usage, while the other two indicated that they did not. Regarding the scale of their operations in Iowa, three nutritionists shared specific figures, ranging from 2000 to 6500 dairy cattle, encompassing both heifers and adult cows.

Of the 16 responses, 12 were dairy producers, while four identified as nutritionists. Only one nutritionist provided their demographic information, which will not be disclosed to safeguard their privacy. Eight dairy producers shared their demographic details. Among this subgroup, six were male, and two were female. Regarding age distribution, three fell within the 35-44 age bracket, one was aged 45-54, and 4 were in the 55-64 age group. All were identified as White or Caucasian, with none indicating Spanish, Hispanic, or Latino origin. Regarding educational attainment, 2 held high school diplomas or GEDs, 3 had associate or technical degrees, and 3 possessed Bachelor's degrees.

Given the relatively low response rate, it's essential to exercise caution when interpreting the results. The limited number of responses precluded the application of statistical analysis, so all findings presented here are observational.

Ration balancing strategies: Nutritionist perspectives

Examining nutritionists' attitudes toward balancing rations for heifers, lactating cows, and dry cows reveals noteworthy trends. Performance and health are primary concerns, while nutrient management garners relatively less attention across all three ration types. However, it is important to note that this analysis is based on only three responses, emphasizing the need for cautious interpretation. Three nutritionists completed the questions ranking factors considered when balancing rations for different animal groups (Table 1). Two served only dairy clients, while one served dairy and beef.

Heifer rations. Two nutritionists prioritized “Heifer performance,” ranking it #1, while the remaining nutritionist placed it at #2. For “Decreased cost,” one nutritionist ranked it #3, one at #2, and one at #5. “Simplicity” was rated by two nutritionists at #4 and one at #3. As for “Nutrient management,” two nutritionists ranked it at #5, while one placed it at #3. Lastly, for “Heifer health,” one nutritionist ranked it #2, one at #4, and one at #1.

Lactating cow rations. When balancing lactating cow rations, all three nutritionists unanimously prioritized “Cow performance” by ranking it #1. For “Decreased cost,” two nutritionists ranked it at #3, while one placed it at #4. “Simplicity” was rated at #4 by two nutritionists and #5 by one. Regarding “Nutrient management,” two nutritionists ranked it at #5 and one at #3. “Cow health” also saw unanimous agreement, with all three nutritionists ranking it #2.

Dry cow rations. In the context of balancing dry cow rations, the responses varied. One nutritionist ranked “Cow body condition score” as the highest priority, placing it at #1. In contrast, another ranked it at #4 and the third at #2. For “Decreased cost,” one nutritionist ranked it #3, another at #2, and the remaining one at #4. “Simplicity” received mixed rankings, with one nutritionist at #4, another at #3, and the third at #5. Regarding “Nutrient management,” two nutritionists ranked it at #5, while one ranked it at #2. Lastly, regarding “Cow health,” two nutritionists assigned it the highest priority, ranking it #1, while the remaining nutritionist placed it at #2.

Attitudes towards alternative feeds: Nutritionist perspectives

Nutritionists’ perspectives on alternative feeds were examined, gauging their agreement or disagreement with specific statements. It’s crucial to note the limited dataset, comprising just two nutritionists. Nevertheless, these respondents appear to have a clear propensity to embrace alternative feed sources, encompassing novel forages in dairy rations, although caution is warranted in interpreting these findings due to the small sample size.

Two nutritionists, one exclusively involved with dairy herds and the other serving dairy and beef herds, agreed with various statements. Both nutritionists somewhat agreed that “Most dairy farms would benefit from feeding more than one ration to the lactating cows.” Additionally, they strongly concurred with the statements: “I am willing to incorporate new feeds into dairy rations,” “I am willing to experiment with alternative feeds for dairy cattle such as byproducts or cover crops even if there is limited research,” and “When feed costs are high, I am more willing to experiment with alternative feeds for dairy cattle to keep ration costs low.” Furthermore, they also exhibited agreement, either strongly or somewhat, with the assertions: “I would like to increase the amount of forage that I am feeding in my dairy rations in Iowa” and “I believe that my dairy clients in Iowa should be producing more homegrown forages.” These findings reflect the willingness of these nutritionists to explore diverse approaches to feed management, even in the absence of extensive research, suggesting an openness to adapt to fluctuating feed costs.

Herd characteristics of dairy producer respondents

Regarding herd size, the average number of lactating cows among respondents was 223, ranging from 22 to 420. For dry cows, the average stood at 36, with values ranging from 3 to 90. Meanwhile, replacement heifers averaged 189 in number, ranging from 16 to 450. Breed composition on these dairy farms predominantly consisted of Holsteins, with a single exception where the respondent indicated they milked predominantly crossbreds. Seven herds indicated they milked a second breed, with three housing Jerseys, two rearing Brown Swiss, and two maintaining crossbred populations. The average self-reported daily production per cow was 75 pounds for production metrics. Bulk tank measurements indicated an average fat percentage of 4.2% (3.9%-4.7%) and an average protein percentage of 3.2% (3.0%-3.9%). Additionally, the bulk tank somatic cell count (SCC) averaged 167,000, with results ranging from 100,000 to 260,000. Furthermore, 11 herds indicated they were not organic, while one did not reply.

Milking facilities varied among the producers, with four utilizing parallel parlors, one milking in tie stalls, and one in an AMS system. Six producers indicated “other” for milking facilities, of which five specified parabone parlors, while one did not reply. None of the respondents used an automatic feeding system such as the Lely Vector, and only one producer employed an automatic calf feeder.

Nine respondents housed their lactating cows in freestall barns, while one respondent utilized a pack, another relied on tie stalls, and one kept their cows on pasture. One respondent reported that their lactating cows had pasture access, but their nutritionist did not incorporate pasture intake into rations. Seven respondents granted dry cows pasture access, while the remaining five did not. Among those allowing pasture access, four had their nutritionists account for this in rations, while two did not, and one expressed uncertainty. Seven respondents provided pasture access for heifers, while one did not, and four did not answer the question. Of these seven, three specified that their nutritionists considered pasture access when balancing rations, while two did not, and two were unsure.

Ten respondents housed dry cows in the same location as lactating cows, while two kept them off-site. For heifers, four respondents accommodated them in the same location as lactating cows, and eight opted for a different location. Among the latter eight, three sent their heifers to a grower, with two doing so before weaning and one after six months. All three indicated that their heifers returned from the grower pre-calving within two months of expected calving.

Labor usage varied among the farms, with an average of three part-time and three full-time workers, respectively; however, part-time workers varied from 0-10, as did full-time workers. Five respondents indicated having an employee handbook, while the remaining seven did not. Three of those with handbooks ensured that employees were aware of their existence, while two did not. In response to training and development opportunities, ten respondents trained employees “as needed,” with five doing so exclusively when required, three during onboarding, one quarterly, and one on a yearly schedule.

In conclusion, the surveyed dairy producers primarily represent small to moderate-sized herds, with no responses from larger herds exceeding 500 cows. This data suggests that the study’s focus remained within a specific segment of the dairy industry. Additionally, the findings emphasize the potential for enhancing employee training within these operations.

Grouping & management strategies: Producer perspectives

There was diversity in grouping strategies used for lactating cattle. A single respondent chooses to house their lactating cattle within a single group, while six opt for a division into two groups. One respondent uses a three-group system, and four respondents report distributing their cattle into four or more groups. Age, days in milk, reproductive status, and health are pivotal factors for determining groups. Six respondents base their decisions on days in milk, eight consider age, four account for reproductive status, three take health into account, and one identifies “size” as another determinant. Moreover, feeding practices vary, with eight respondents feeding a single ration to their lactating cattle and four offering two separate rations. Among these four, two tailor rations based on days in milk, while the other two differentiate based on age or stage of lactation. Topdressing feed is not a widespread practice, as nine respondents did not report topdressing, two engaged in topdressing, and one did not respond. Both of the two who employ topdressing direct this practice exclusively towards post-fresh cows.

Regarding dry cows and pre-fresh heifers, five respondents chose to house these animals in a single group, while seven respondents divided these groups into two. Most respondents, all but one, feed dry cows and pre-fresh heifers in the same group. Regarding the dry period length, the average target duration stands at 56 days, ranging from 50 to 60 days among respondents. Furthermore, the time cows spend in the pre-fresh pen differs, with six respondents opting for approximately 21 days and two choosing 10 days.

While two respondents group-house pre-weaned calves, eight individually house them, with two respondents not responding. These calves are typically weaned at an average age of 70 days, though weaning periods range from 50 to 180 days. Notably, eight respondents employed step-down liquid feeding before weaning, while two did not, and two did not reply. In managing heifers from weaning to first calving, two respondents use two rations, two employ three rations, and four opt for four or more rations, with four respondents not completing this section. Among the factors influencing changes between heifer rations, age is the primary criterion, cited by eight respondents, including two who specified age alone. Reproductive status (6 responses), size (5 responses), health (2 responses), and body condition score (2 responses) are also considered, with one respondent citing “practicality/logistics” for ration changes. Eleven

respondents rely on age in determining heifer eligibility for breeding, five of whom use age exclusively, while six consider weight and three assess height. One respondent breeds heifers at 13 months, another at 15 months, and one between 15 and 18 months. Among weight-based criteria, five use visual estimation, while one employs a weigh tape. On average, the target age at first calving is 23.8 months (22-27 months), with an actual average of 24.4 months (22-28 months).

There are some noteworthy observations from these responses. First, the limited use of pre-fresh pens for just 10 days suggests the potential for extending this period to better prepare cows for the transition to lactation. Furthermore, the survey underscores the opportunity to enhance heifer breeding practices by combining size and age criteria, given that several producers rely on visual estimations rather than precise weight measurements. Additionally, there is an opportunity to address an optimum age at first calving with producers, since some are targeting up to 27 months at first calving. This data reflects the scope for refining practices in calf and heifer management to ensure the health and productivity of dairy herds.

Ration ingredients: Producer perspectives

Producers were asked to select from a list of feedstuffs to indicate the feeds used in their lactating cow, dry cow, and heifer rations. Their responses are presented in Table 2.

Notable feedstuffs for lactating rations include corn grain, soybean meal, corn silage (BMR and conventional), hay (grass, legume, mixed), high moisture corn, and straw. Self-reported crude protein content in these rations averaged 18%, ranging from 17% to 20%. The dry cow rations among respondents featured diverse feed components, encompassing elements like corn silage (both BMR and conventional), corn grain, soybean meal, grass hay, legume hay, mixed hay, and straw. Heifer rations from weaning to first calving comprised feeds such as corn grain, soybean meal, grass hay, legume hay, mixed hay, and molasses. Unique feed types like rylage and oatlage were also mentioned.

In response to the risk of milk fever, several commonly adopted strategies like DCAD (8 respondents), although producers also reported using low calcium diets (3 respondents) and calcium binders (1 respondent). Notably, although eight respondents indicated that they fed a negative DCAD diet to control for milk fever, only four indicated that they or their nutritionists measured urine pH.

The management of feed for pre-weaned calves varied, with respondents feeding milk replacer (2 respondents), pasteurized whole milk or waste milk (3 respondents), or unpasteurized whole milk or waste milk (3 respondents). Furthermore, starter feed introduction for pre-weaned calves commenced at an average of seven days, extending from two to 14 days.

Feed & forage management: Producer perspectives

The respondents used a combination of strategies to determine the optimal timing for corn silage harvest. For most, plant maturity and dry matter content are the key factors, with seven respondents citing each of these criteria. Two producers mentioned “other” methods, but one respondent indicated that the question did not apply to their operation, while the other relied on a custom harvester’s expertise. Furthermore, nine respondents utilized a silage inoculant, while one respondent did not, and two did not provide a response. Additionally, assessing the dry matter content of wet feeds is a common practice among the respondents, with nine indicating they perform such testing. Among these, eight adjust as-fed feed weights based on the results, while one respondent indicated doing so only occasionally.

Lactating cows, dry cows, and heifers are subject to varied feeding schedules and feed pushing practices. Among respondents, four indicated feeding lactating cows once per day, seven reported feeding twice daily, and one did not respond. Feed pushing for lactating cows is distributed as follows: 4 respondents push up feed 5-8 times per day, five respond with 2-4 times per day, and two push up feed less than twice daily. In the context of dry cows, ten respondents opted for once-a-day feeding, one fed less frequently than once a day, and one did not respond. Feed pushing practices for dry cows include five respondents who perform this task 2-4 times daily and five who push feed less than twice daily. As for heifers, one respondent feeds them twice daily, while four opt for once a day, and three feed heifers less

frequently than once a day. Regarding feed pushing for heifers, three respondents perform this task 2-4 times daily, and five do it less than twice daily, with four respondents not completing this question. None of the respondents used an automatic feed pusher for these animal groups.

The survey uncovers noteworthy insights into the feeding practices of the respondents. Notably, most participants incorporate an inoculant into their feed management, demonstrating a commitment to ensuring silage quality. Furthermore, a significant number engage in responsible practices regarding the testing of dry matter content in their wet feeds and the subsequent adjustment of as-fed feed weights based on these tests. However, it's important to acknowledge that the low response rates may not fully represent broader industry practices. Nevertheless, there appears to be an opportunity for improvement in feed pushing frequency, particularly for dry cows and heifers, where more frequent feed pushes could enhance feed intake and reduce behaviors such as sorting.

Ration balancing strategies: Producer perspectives

The surveyed dairy producers' perspectives on factors influencing balancing heifer rations demonstrate varying priorities. Producers completed questions ranking factors considered when balancing rations for different animal groups (Table 3). Performance emerged as a critical factor, particularly concerning lactating cows, underlining the primary focus on optimizing productivity within dairy operations. Conversely, nutrient management was not prominently ranked among the priorities, especially in the context of heifers and dry cows. It is essential to approach these findings with caution, considering the low response rate, which may only partially represent the breadth of perspectives within the industry.

Heifer rations. Heifer performance is a significant criterion, with four producers ranking it #1, two as #2, two as #3, and one as #4. In contrast, one respondent ranked decreased cost #1, two as #2, one as #3, four as #4, and one as #5. Simplicity was ranked #1 by one respondent ranking, #2 by another respondent, #3 by three respondents, and #5 by three respondents. Nutrient management ranks relatively low, as two respondents place it #2, two as #4, and five as #5. Heifer health had three respondents ranking it #1, two as #2, three as #3, and one as #4. Nine respondents completed this section, while three did not respond to the question.

Lactating cow rations. When evaluating the factors in balancing lactating cow rations, seven respondents provided their insights, while five did not respond to this question. Cow performance is paramount, as five producers ranked it #1, and two as #2. For decreased cost, one respondent ranked it #2, two as #3, three as #4, and one as #5. Five producers assigned simplicity #3 and two as #4. Nutrient management is again relatively low, as three respondents rank it #2 and four as #4. Two producers placed cow health at #1, one as #2, two as #4, and one as #5.

Dry cow rations. Three producers ranked cow body condition score as #1 and six as #2. Decreased cost carries significance, as one producer ranked it #1, one as #2, three as #3, four as #4, and five as #5. Simplicity was ranked #1 by one producer, #3 by three, and #4 by five. Nutrient management ranks relatively low for dry cows, similar to other animal groups, with one producer ranking it #3, one as #4, and seven as #5. Finally, four producers ranked cow health #4, two as #2, two as #3, and one as #4. Nine respondents completed this section, while three did not respond to the question.

Attitudes towards alternative feeds: Producer perspectives

Producers' perspectives on alternative feeds were examined, gauging their agreement or disagreement with specific statements (Table 4). It is worth noting that a greater number of producers participated in this section compared to nutritionists, potentially influencing the interpretation of the results. Notably, there is more pronounced variability in responses from producers, reflecting potential differences in their perspectives compared to nutritionists. This divergence could stem from skepticism among producers, suggesting the importance of robust research to establish the safety and efficacy of alternative feeds within dairy rations. Furthermore, it becomes apparent that producers may be less willing than nutritionists to explore different feed options for cost reduction. Additionally, a notable subset of

producers strongly disagree about incorporating alternative forages into their rations, hinting at the complexities surrounding feed and forage management within dairy operations.

Nine dairy producers participated in this section, offering valuable insights into their willingness to explore alternative feeds. Most expressed a degree of openness to incorporating new feeds into their rations, with five strongly agreeing and three somewhat agreeing. Moreover, when experimenting with alternative feeds, even in cases where limited research exists, two strongly agreed and five somewhat agreed, with two neither agreeing nor disagreeing. In times of elevated feed costs, some producers demonstrated a readiness to explore cost-saving strategies, although responses varied, with two strongly agreeing that they would be willing to experiment with alternative feeds to keep feed costs low, three somewhat agreeing, one neither agreeing nor disagreeing and three somewhat disagreeing. The interest in incorporating alternative forages to corn silage and alfalfa varied substantially, with one strongly agreeing, three somewhat agreeing, two neither agreeing nor disagreeing and three strongly disagreeing. Similarly, the desire to increase the proportion of forage in their rations found mixed responses, with one strongly agreeing, four somewhat agreeing, three neither agreeing nor disagreeing, and one strongly disagreeing. Additionally, the inclination to produce a greater amount of forage for on-farm use exhibited variability, with two strongly agreeing, four somewhat agreeing, one neither agreeing nor disagreeing, one somewhat disagreeing and one strongly disagreeing, revealing the multifaceted attitudes of dairy producers towards alternative feed sources and forage management.

Conclusion

This survey on nutrition provides valuable insights into dairy producers' and nutritionists' practices and attitudes. It reveals that nutritionists prioritize cow performance and health, making nutrient management less important. Meanwhile, dairy producers exhibit varying attitudes toward alternative feeds and forage management, showing diverse perspectives. Caution is warranted when interpreting these results due to the low response rate. Overall, these findings contribute to a better understanding of the dynamic landscape of dairy nutrition in the agricultural industry.

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Tables

Table 1. Average value rank of priorities for ration balancing strategies by nutritionists*

	Heifers	Lactating cows	Dry cows
Heifer/cow performance	1.3	1.0	-
Decreased cost	3.3	3.3	3.0
Simplicity	3.7	4.3	4.0
Nutrient management	4.3	4.3	4.0
Heifer/cow health	2.3	2.0	1.3
Cow body condition score	-	-	2.7

*Ranked 1-5 by respondents. Lower average indicates a higher value rank.

Table 2. Frequency of feedstuffs in dairy rations reported by dairy producers*

	Heifers	Lactating cows	Dry cows
Barley	0	0	0
Beet pulp	0	0	0
Brewer's grains	0	0	0
Bypass fats	1	5	0
Canola meal	1	1	1
Corn distiller's grains	2	5	3
Corn gluten meal	1	2	0
Corn grain (cracked or ground)	5	9	4
Corn silage, BMR	1	4	2
Corn silage, conventional	5	7	7
Corn stalks	1	0	1
Cottonseed	0	3	0
Hay, grass	4	2	6
Hay, legume	3	7	2
Hay, mixed	2	1	0
Haylage, grass	0	1	1
Haylage, legume	2	6	0
Haylage, mixed	0	1	0
High moisture corn	0	3	1
Molasses	1	3	1
Roasted soybeans	0	0	0
Soybean meal	4	9	9
Soy hulls	1	3	3
Straw	0	4	4
Wheat	0	0	0
Wheat distiller's grains	0	0	0
Other	2	4	2

*7 respondents completed the question for heifer rations, 12 respondents completed the question for lactating rations, and 11 respondents completed the question for dry cow rations.

Table 3. Average value rank of priorities for ration balancing strategies by producers*

	Heifers	Lactating cows	Dry cows
Heifer/cow performance	2.0	1.3	-
Decreased cost	3.2	3.6	3.3
Simplicity	3.4	3.3	3.3
Nutrient management	4.1	3.7	4.7
Heifer/cow health	2.2	3.1	2.0
Cow body condition score	-	-	1.7

*Ranked 1-5 by respondents. Lower average indicates a higher value rank.

Table 4. Frequency of responses to questions regarding use of alternative feeds by dairy producers*

	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree
I am willing to incorporate new feeds into rations.	5	3	1	0	0
I am willing to experiment with alternative feeds such as byproducts or cover crops even if there is limited research.	2	5	2	0	0
When feed costs are high, I am more willing to experiment with alternative feeds to keep ration costs low.	2	3	1	3	0
I am interested in feeding alternative forages to corn silage and alfalfa.	1	3	2	0	3
I am interested in increasing the amount of forage in my rations.	1	4	3	0	1
I am interested in increasing the amount of forage that I produce for my own feed.	2	4	1	1	1

*Producers indicated the degree to which they agreed or disagreed with the statements above. Value indicates that number of producers who selected that option for each statement. 9 producers completed this section.