

AMS heifer training

Survey key findings

These were developed as part of a farmer workshop discussion at the 2019 AMS Farmer Gathering (NSW South Coast, Australia), and a subsequent survey commissioned by Milking Edge in 2020, specifically looking into training strategies related to heifers in AMS.

The information in this report is the presentation of results from that survey and highlight the activities that participating AMS farmers do. As such, the information presented should not be seen as best practice recommendations. Please consider if the information is relevant to your farm business before adopting any of the following suggestions.

General information

- The survey was distributed online during the months of February-June 2020 and had 48 questions
- There were 62 responses received, with representation from 10 countries, 19 of which (31%) were Australian
- A total of 36 respondents (58%) were pasture-based AMS (>9 months at pasture), 23 (37%) were indoor AMS, and 3 (5%) used a 50/50 mixed system of pasture-based and indoor management
- Approx. 84% of respondents had 2+ years of experience operating AMS at the time of the survey
- The majority (78%) of respondents had a peak herd size of 300 or fewer cows (range <150 through to >700 cows)
- The calving pattern for the whole herd was predominantly year-round (55%), followed by split/batch (27%) and seasonal (18%). In the majority of cases, heifer calving pattern very closely followed the pattern of the rest of the herd (i.e. there was no special calving time for heifers)
- **Infrastructure** used on-farm aside from the robotic unit (noting only 5% of respondents used no additional infrastructure and that the infrastructure mentioned are often essential to manage voluntary cow traffic and not specifically to aid in heifer training):
 - One-way gates: 51 respondents (82%) total; used by 97% of pasture-based AMS
 - Smart gates: 45 respondents (73%) total; used by 92% of pasture-based AMS
 - Pre-milking waiting area: 44 respondents (71%) total; used by 89% of pasture-based AMS
 - Should be noted that every respondent with a herd size larger than 300 cows used a pre-milking waiting area
- **Developmental factors** being targeted in heifers
 - 92% of respondents had at least one target factor for heifers at calving (i.e. 8% of respondents had no targets)
 - Age and weight were the most commonly target factors at calving (66% and 61%, respectively)
 - Important to note that general guidelines/best practice for animal health and welfare promotes targeting certain physical milestones for heifers at calving, regardless of the way cows are milked. The results here are likely due to general best practice/animal welfare rather than specifically looking to improve heifer adjustment.
- **Training** was offered by almost 75% of respondents, and can be broken down as follows:
 - Pre-calving training – 11 respondents (18%)
 - Post-calving training – 24 respondents (39%)
 - Both pre and post-calving training – 11 respondents (18%)

Key findings

• Pre-calving training

- The most common sources of information regarding training heifers were “self-taught” (trial and error; 86%), learning from “other farmers” (45%) and “AMS equipment providers” (32%)
 - Most farmers also indicated they had created their own training protocols based on multiple recommendations (for example coming up with a protocol based on what the AMS equipment provider had told them together with what other farmers shared with them, that was feasible and relevant for their farm)
- Training of heifers commonly involved:
 - Fairly short duration, with 71% of respondents reporting that training took 4 or fewer weeks in total
 - Training close to calving – majority of respondents (58%) trained their heifers within 4 weeks of calving
 - If heifers were trained at a different time (e.g. 3 months before calving), the length of training was still typically 4 or fewer weeks (i.e. they trained, then were removed from the AMS, until closer to calving/at calving)
 - Training in groups (this was the case for 73% of respondents). While group size might vary, it typically reflected the milking herd size (i.e. smaller milking herds trained heifers in smaller groups, and larger milking herds trained heifers in larger groups)
 - The majority of respondents (59%) kept their heifers with the main milking herd during training (i.e. running heifers through the system as if they were milking cows) – familiarising them with the traffic patterns of the system, but obviously not attaching cups. It is believed that by doing this, heifers learn from more mature or experienced cows
- Training in most cases involved:
 - Feeding heifers in the robot (91%)
 - Exposing heifers to smart gates (86%)
 - Exposing heifers to one-way gates (82%)
 - Holding heifers in the robot (closing gates) (77%)
 - Other things mentioned included
 - Exposing heifers to the robot arm movement (obviously not milking/attaching cups)
 - Teat spraying
 - Use of automatic feeding stations outside the robot
 - Familiarisation to time on concrete
 - Familiarisation to the noises and activity within the dairy
- A priority area/lane for heifers leading to the robot(s) was used by 27% of respondents, all of whom were pasture-based systems
 - A priority area/lane is typically a small yard or lane which can be used only for select cows (in this case heifers) to bypass the main waiting area and have quick access to the robot without competing in a queue with older more experienced herd mates
- It is important to note that some respondents said they did not train heifers pre-calving, however they made comments throughout the survey which indicated that they did give heifers time to ‘familiarise themselves’ with the system (therefore likely did train pre-calving, but didn’t view it as training per se)
- Of those who didn’t offer pre-calving training, 40% indicated they didn’t think it was necessary while 30% were not doing it now but were considering doing it in the future
 - Reasons for not training varied, but included:

- Not having the time or resources (people or infrastructure to allow for drafting of heifers)
- Seeing no benefit, with one comment being “*tried it and thought it hindered the milking process when heifers were used to feed only*”
- Being new to AMS and still finding standard routines
- Not having heifers on the AMS farm until they calved
- Several respondents who weren’t training but were considering it in the future had just started milking with AMS
- **Post-calving training**
 - Training commonly involved
 - Manually encouraging cows (usually into the robot) (49%)
 - Keeping heifers separate to milkers for a period of time (43%)
 - Manually attaching cups (31%)
 - Over half (54%) of the respondents nominated 2 or more training strategies, and the variety of strategies appeared more varied for post-calving training than for pre-calving training
 - Around 24% of respondents who trained post-calving used a priority area/laneway for heifers:
 - The priority area/laneway was used for a short time (3 or fewer weeks post-calving)
- **Post-calving heifer management**
 - 73% of respondents monitor heifer performance
 - KPI’s monitored were typically milk production factors
 - 16 respondents (36%) directly mentioned milking frequency or mentioned they would check that heifers visited the dairy daily, and 5 respondents (11%) mentioned that they monitored attachments (likely meaning they were checking to ensure heifers were being completely milked and not experiencing “incomplete” milkings)
 - There were 4 respondents (9%) who said they did monitor heifer performance, but gave no indication as to what they monitored
 - Cull rates due to heifers not adjusting to the system were low, with 76% of respondents indicating they had culled a total of 5 or fewer heifers due to not adjusting to the system, and 57% culling 2 or fewer heifers

Heifer training suggestions

Note: information presented should not be seen as best practice recommendations. Please consider if the information is relevant to your farm business before adopting any of the following suggestions.

- Well grown and developed heifers are the key starting point for good performance
 - This is true for all dairy systems, and AMS would not be the exception as it relies on cows moving voluntarily around the farm
 - Creating a target for heifers at first calving (e.g. weight and age) may assist in supporting well-adjusted heifers
 - Consider breeding – bulls with good temperament and udder conformation
- Train heifers to the whole farm system, not just the robot
 - While focus on entering the robot is important, don’t forget about the rest of the system (e.g. smart gates, one-way gates, laneways, how to access feed and water)
 - This can be done by running heifers alongside the milking herd (i.e. exposure to the entire system, except physically being milked if done pre-calving)
 - Potentially adjust the settings/permissions to support heifer movement – e.g. give heifers access to fresh allocations shortly before the main herd so they hopefully learn that movement leads to fresh food (better traffic and confidence)

- Familiarising heifers with infrastructure as calves/before calving may support good heifer adjustment to AMS, and could include auto-calf feeders, home-made one-way gates in crush/raceways used during regular husbandry processes, and familiarisation to confined spaces such as a crush
 - The survey can't conclude whether auto-calf feeders aid in the successful adjustment of heifers to AMS. It did find that auto-calf feeders were not overly common pieces of infrastructure, with only 18 of 62 respondents (29%) using auto-calf feeders
- Persist with training (e.g. running heifers through robots and gates) until they are calm and confident, but always remain patient when around them
 - Be flexible, some may take longer than others
 - Give animals time to explore and familiarise with new spaces
 - Staff should remain calm avoiding yelling, banging or rapid movements
 - Training doesn't have to be short and intense, but could comprise of a range of familiarisation and exposure activities occurring over a long period of time leading up to calving into the AMS
- Understand that training can be flexible, and results could vary based on your herd temperament, breed, prior experience, staff confidence, time availability etc.
 - E.g. Farmer A batch milks heifers in quiet times when main herd is away from the dairy, while Farmer B runs heifers with the main herd as older cows can show heifers how to use the system. Both strategies might work for each farmer, but are very different
 - Change the training if it is not working for either you or the animals – don't be locked into a rigid method
 - If time or labour unit poor, consider alternatives to help facilitate training
 - E.g. One respondent, who is seasonal calving, specifically calves heifers into the system several weeks earlier than the main herd to give time for training
- The idea of an express/priority lane or area for heifers is frequently mentioned, but wasn't commonly used in the survey
 - Plan infrastructure in the dairy to be flexible
 - Allow yourself the ability to create a priority area without it being permanently in place (swing gates, temporary panels)
 - Set up a report within the AMS software which allows easy access to data on heifer KPI's (e.g. milking frequency, visits to the robot/milking interval, incomplete milkings/failed attachments and milk yield)
- It was suggested that training be recorded (when, how much, what), as well as heifer performance, so that you can see how much training was given/what was involved along with the performance of the heifer. Then you are better positioned to make decisions on breeding from families who adapt quickly and perform well