DATA INTEGRITY FOR DAIRY REPRODUCTIVE MANAGEMENT

Overview

The dairy industry uses artificial insemination to impregnate cows. Current methods can determine pregnancy using vials of blood samples at 28-40 days after the insemination date. An improved method was developed by PPK Animal Healthcare to allow measurement at just 18-20 days with results delivered back to the farm within 36 hours after testing. The biggest challenge is to uphold data integrity in the form of ensuring each blood sample remains linked to its respective cow throughout the testing and report generation process due to the current method requiring manual data entry.

Objective

To enhance the integrity of data transfer between dairy farms and PPK laboratories by implementing scanning devices and automated tracking services to points in a complex flow of information regarding the pregnancy status of a cow post-artificial insemination.

Approach

- Completed multiple site visits to PSU Dairy Facility and a PPK laboratory to understand process
- Points in process were identified to enhance data integrity: farm to lab, lab to farm, lab to cloud
- Generated 2D datamatrix barcodes to eliminate human error and replace handwritten vial numbers
- Smartphone app enables vial barcodes to be quickly scanned and linked to respective cow
- Smartphone app is used to export data and immediately send to cloud-based platform
- Smartphone app tracks tray location of vial samples to replace handwritten grid of tray locations
- Position guiding apparatus ensures vials are placed in correct tray location before lab tests samples
- Excel dashboard stores farm data from cloud-based platform and syncs with lab results
- Implemented process at PSU Dairy Facility and PPK laboratory to understand feasibility
- Created a video to serve as a SOP for the new process

Outcomes

- Implemented a barcode scanning system to mitigate manual errors when recording blood samples from cows
- Developed a SOP for both farms and PPK Animal Healthcare to ensure an efficient process for pregnancy testing
- Expedited the transfer of information from farms to PPK laboratories
- Identified key technologies needed to successfully scale the service
- Introduced a cloud based system to be continuously improved
- Provided suggestions for future improvements, i.e., RFID reader