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Activity Ball Monitoring Activity and Climate Impact in Market Hogs

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Activity Ball Monitoring Activity and Climate Impact in Market Hogs

Prairie Systems, Spencer, IA



Problem Statement

Design and fabricate a container to collect market hog activity data through the use of an existing sensor package. The container must maximize stability of the system while testing in the field and minimize amount of interference when collecting data. The system will automatically report the data as an IoT device.

Scope

- Design a device to collect animal activity data that automatically reports data to a centralized database.
- Build a prototype of the device to be used for initial testing.
- Analyze test results for accuracy in data collection.

Objectives

Design and fabricate product to:

- House an existing sensor package with minimum interference.
- Withstand harsh swine production environment.
- Minimize interference with animal behavior.

Constraints

- Minimize interference with data collection.
- Maintain a low cost for manufacturability.
- Operate within a swine facility environment.
- Communicate with limited low cost infrastructure to the outside world.



- Cellular
- GPS
- Temperature
- Accelerometer
- IP67 enclosure



Methods

- Use of AutoDesk Inventor CAD software.
- Use of NimbeLink Asset Tracking software.
- Use of data analysis software to compare solutions with control data set.

Proposed Solutions

- Ball enclosure for NimbeLink Asset Tracker.
- Chain mount for NimbeLink Asset Tracker.
- Enclosure for passive infrared sensing package.

Major Outcomes

- CAD design of container/product to be produced.
- Fabricate a prototype of proposed solution.
- Collect data and analyze results from prototype.
- Draft manufacturing specifications for container.

Benefit to Client

Data from Activity Balls can be utilized:

- As variable in feed consumption predictions and analysis.
- To alert producers of unusual behaviors.
- To analyze the animal environment.

The Activity Ball will be used in moving forward with conversations and research surrounding feed consumption, conversation, and enrichment as producers look to maximize efficiencies.

Proposed Ball Enclosure

