Automate Feed and Pond Inventory Management with In-Situ® Aquaculture Software
Reduce feed costs by accurately tracking feed distribution and pond biomass
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Introduction
Feed costs account for a significant portion of a farmer’s expenses. Farmers face a tough balancing act when attempting to use feed wisely, improve feed conversion ratios (FCRs), and increase profitability. To improve FCRs, farmers may feed a high-quality diet, use floating feed, avoid overfeeding, and minimize fish stress. But how can the farmer effectively track feed usage and pond biomass?

Manual methods are inefficient and error prone. The feed operator manually calculates and enters feed delivered to each pond. By automating feed and pond inventory management, farmers can:

- Reduce feed costs by carefully tracking feed distribution.
- Save time and reduce errors by eliminating hand-written recordkeeping.
- Improve pond health by minimizing opportunities to overfeed. Overfeeding can diminish water quality, which can impact fish health and feed consumption.

Monitor Feed Usage
In-Situ® Aquaculture Production Management software automates feed management and tracks pond inventory. The software operates on the same system as the In-Situ® aerator control system. The software:

- Measures the amount of feed distributed to each pond.
- Tracks pond biomass.
- Determines the optimum feed rate for each pond.

A feed truck is equipped with a tablet PC, GPS receiving unit, and radio modem. The truck is equipped with a scale for measuring the amount of feed distributed to a pond. The scale is electronically connected to a tablet PC placed in the truck. An accurate layout of farm ponds (longitude/latitude) is stored in the tablet PC. As the feed truck drives through the farm, the pond layout is displayed on the feed truck’s tablet PC and on the host computer (Figure 1).

Figure 1. The display shows the feed truck’s position and the route taken by the driver. The yellow square numbered 10 represents the position of feed truck 10. The green dots represent the truck’s path and the direction in which the truck is moving. The orange square represents feed bin B10.
When the truck operator is ready to feed, he selects the pond on the tablet PC. A screen appears that shows the pond number, the amount of feed pending, and alerts that might alter the feeding. As the feed is blown into the pond, the feed weight is shown in the Feed text box on the tablet PC (Figure 2). When feeding is finished, the operator pushes the Print button on the scale, and data is transmitted to the host computer. The feed and pond inventory system automates the entire process.

A similar process is used to record the amount of feed moved from a feed bin to a feed truck. The operator selects an icon on the screen representing the bin. The scale records the weight and wirelessly transmits the data to the host computer. Pond icons and graphical layouts simplify data collection and minimize errors — truck operators no longer need to manually input data.

Radio transmission is accomplished by routing all truck transmissions through a central repeater station mounted on a tower at the main office. The same repeater station can be used for transmissions to and from the In-Situ® wireless oxygen monitoring buoy and aerator control system for all the ponds.

**Determine Pond Biomass and Feed Rates**

Two databases are used to compute pond biomass.

- **Feed database** records the amount of feed distributed and date of each feeding. When the feed truck transmits the amount fed to a pond, the database is updated. The farmer can view the pond feed rate (Figure 3).

- **Stocking database** records the number and size of fish added to the pond as stockers. This database also records the number of fish removed at harvest time. The farmer can get detailed information about the pond inventory (Figure 4).
An optimum feed rate, based on the biomass and size of the fish, is computed and relayed to the truck for guidance at the next feeding. Alert messages can be sent to the feed truck operator, for example, conditions that might require the operator to delay feeding.

Farmers can quickly generate inventory reports for any time period. Reports can be used to:

- Reconcile amounts of feed removed from feed bins.
- Track feed distributed to ponds for a given time period.
- Calculate pond inventory.

All data from the databases can be loaded into Excel® spreadsheets. These spreadsheets can be merged with feed purchases from other systems to produce a complete summarization of feed purchases, feed distributed to each pond, feed consumed, and feed in stock.

**Summary**

By automating feed and inventory management, farmers can:

- Obtain real-time information about their feed supplies and fish stocks.
- Alert feed operators to changes in the feeding schedule and/or feed amount.
- Eliminate manual calculations and data entry.
- Automate recordkeeping.
- Accurately track feed supplies.

**Resources**


Figure 4. The software can calculate the number of fish per pond or the pounds of fish per pond.

Photo (left): Harvest time at a hybrid striped bass farm. Accurate inventory management keeps you on track for a profitable year.

Photo (right): Feed management software ensures that fish are fed exactly what they need, when they need it.

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