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Intelligence

# Decision support systems aid commercial shrimp farmers in data collection, analysis

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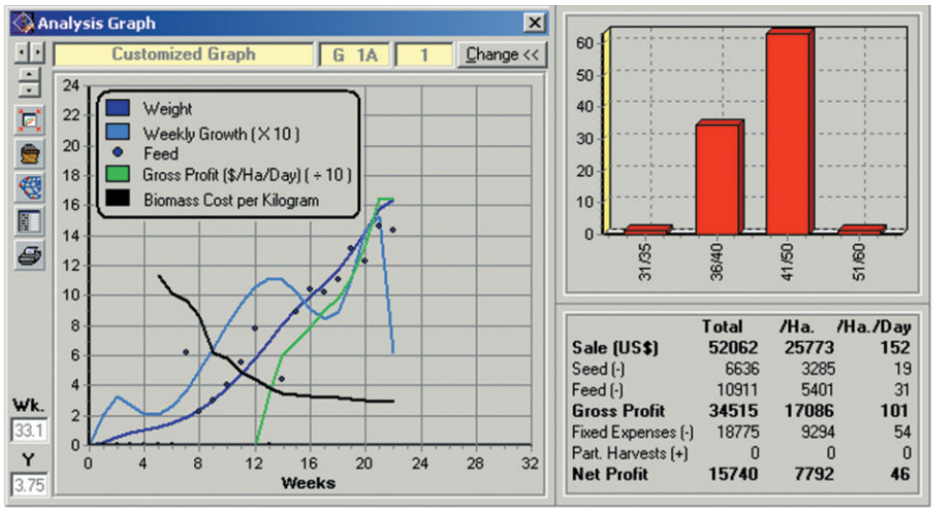
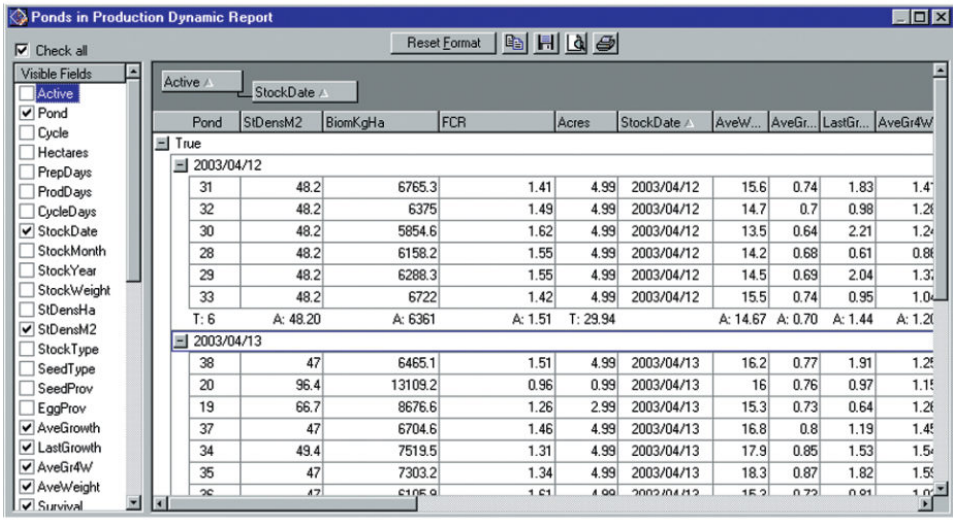
## Interactive software can help decision makers compile and process raw data




As shown in these computer screen captures, decision support system software can effectively manage varied production information and conveniently present it to aid in management decisions.

Before the widespread introduction of computers into the operations and management departments of shrimp farms, the use of information technology in the industry was mostly dismissed by producers. But as the shrimp-farming industry continued to evolve and mature, it experienced several radical changes in production conditions.

These included, but were not limited to, significant decreases in shrimp market prices, the appearance of new shrimp diseases, and constant changes in production methods and technology. All these factors encourage the adoption of “decision support systems” to become more cost-efficient.

# Decision support systems

Decision support systems are computerized information arrangements that support production and organizational decision-making activities. Design support systems are typically interactive, software-based systems intended to help decision makers continuously compile useful information from raw data that includes feedback from routine pond management procedures like formulated feed applications and monitoring of water quality parameters. They also incorporate users’ personal knowledge, technical literature and other sources, and other models to identify and solve problems, and make timely decisions.

# Commercial programs

Several commercial decision support system programs are available from sources around the world. Lansol S.A. of Islamorada, Florida, USA, distributes the AP/1 system. CSIRO Marine Research, based in Cleveland, Queensland, Australia, sells Pondman 2. From Bangkok, Thailand, Applied Information Systems Co., Ltd. offers a system called Samakia.

These decision support systems present benefits that can be summarized into three main categories: minimizing costs, maximizing profits, and avoiding negative environmental impacts. Table 1 presents some of the target functions available from the major software programs on the market.

**Table 1. Typical functions of commercial decision support systems.**

| Control Point | Control Point Aid Functions | Expected Benefit |
|---|---|---|
| Feed and Nutrition | Tools to obtain comparisons between animal weight and feed consumption, manage feed tables and trays. Assist in proper animal nutrition essential to growth, reduced stress, and increased animal health. Appropriate feed supply reduces waste and environmental impacts. | Minimize costs Maximize profits Reduce wastes |
| Stocking | Means to trace animal origin/quality for breeding programs, tools to estimate future PL demand. Plan ahead to eliminate dead time. | Minimize costs Maximize profits |
| Harvesting | Calculators to estimate and forecast harvest outcome statistically estimate and classify pond populations into commercial sizes. Costs are obtained using estimated cost indexes and stored production samples. Production variables are freely changed to estimate possible economical scenarios. | Maximize profits |
| Water Quality | Means to record, visualize, and compare water quality history with preliminary and/or conclusive production results. These tools help find what conditions help or harm production or the environment. | Maximize profits Reduce environmental impacts |
| Treatment Conditions | Reports that help producers determine if a treatment, feed trial, or other condition helps or harms the crop. | Minimize costs Maximize profits |
| Production History | Many reports available to monitor individual pond history throughout production cycles, compare history of selected ponds in production at the same time or with similar production conditions. | Minimize costs Maximize profits Reduce impacts |
| Production Equipment | Tools to retrieve information from data loggers and set up proper aeration in ponds. | Minimize costs Maximize profits |
| Inventory Control | Tools to control raw materials are very helpful when planning purchases and prevent shortages. | Minimize costs Maximize profits |

There obviously are similarities and a common purpose among the programs above, but each provides some unique features. The AP/1 system emphasizes economic aspects and feed control. Pondman is particularly extensive in water quality and equipment used for production, while Samakia's friendly user interface emphasizes the administrative aspects of shrimp farming.

All these programs were developed based on ideas provided by many producers and manufacturers. Due to the constant changes in the shrimp industry, this development task continuously evolves. There is always room for improvement and new developments.

# Conclusion

By evaluating weight samples, feed samples, survival estimates, and overall shrimp-farming experience, powerful management tools like decision support system software can help shrimp producers improve their data collection and analysis, and effectively use the data in their management decision processes to maximize cost efficiency.

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