

Cottonformatics Research Consolidation Solution

DEPARTMENT OF ENTOMOLOGY LEVERAGES NEW TECHNOLOGY TO IMPROVE RESEARCH EFFORTS

The Client



Located in the heart of California's central valley, University of California, Davis is one of the nation's top public research universities. Faced with research challenges such as West Nile virus, cleaner fuel technologies and finding ways improve our agricultural economy, UC Davis is at the forefront of solving some of our nation's most difficult problems.

Department: Entomology

Project Lead: Jay Rosenheim,
Professor of Entomology

Research Project: Bioinformatics for Integrated Pest Management (IPM)

of Staff: 8

Legacy Solution: Microsoft Excel

Data Sampling Size: 10 years of data covering 18 farms and over 500 cotton fields

Technical Specifications

- Microsoft SQL Server 2005
- VB.Net
- Microsoft Windows for Macintosh

During the last ten years researchers and farming consultants have been collecting information regarding the insect population densities (specifically Lygus) known to adversely affect cotton production. Historically, university researchers have focused the majority of their effort on specific cotton fields using data collected by university students and staff. As a result, data samples have been uniform and manageable in size allowing data management using basic tools such as Microsoft Excel.

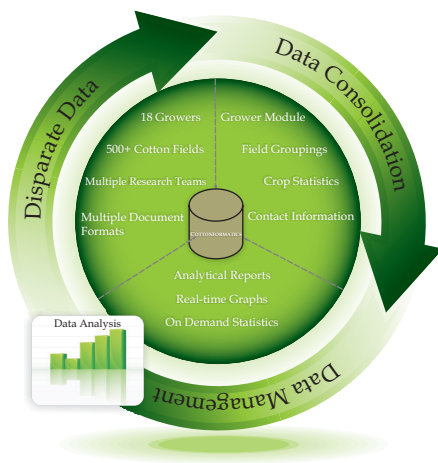
A recent study initiated by the university on behalf of Cotton Incorporated and the US Department of Agriculture requires a much larger statistical population of Lygus related information. The university has enlisted the assistance of four agricultural consultant companies and the farmers for which they work in gaining access to over ten years of insect, crop, plant health, cotton yield, and pesticide use data. The information provided by each agricultural consultant is essentially the same in content; however, the form of the data varies greatly from one provider to the next. Additionally, the volume of data that has been collected exceeds the capabilities of basic data management solutions.

In order to accomplish the goals of the current and future initiatives, the university required a technology solution that allows consolidation, standardization and statistical analysis of the data it collects and receives.

THE SOLUTION

Working collaboratively with the university, Ten2Eleven created an application called Cottonformatics to allow the standardization of field research information. The application integrates data from disparate sources, compiles the information into a usable state and provides immediate access to refined analytical metrics. Parameterized reports built into Cottonformatics allow users to cut data over different time periods and easily export to standard file formats for external distribution. Additionally, customizable screen layouts allow user specific data grouping, filtering and sorting.

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Project Challenges

- Disparate Data Formats
- Multiple Data Sources
- Large Scale Data Files
- Multiple Operating Systems

The Deliverables

- Technical Specification Document
- Comprehensive User Manual
- Software Installation Disk

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THE PROCESS

Phase I - Needs Analysis. During the early stages of the project, the Ten2Eleven development team worked closely with university staff to see that their specific needs were met. Through several requirement gathering sessions, the Ten2Eleven team was able to identify and document exactly what the university was looking for in a solution. The biggest challenge identified in this phase was the idea that the new solution must be flexible enough to handle a wide range of data formats and consolidate them into a single repository to meet the needs of the university's research efforts.

With the needs analysis complete, Ten2Eleven presented a detailed proposal to university staff which highlighted all aspects of the project.

Phase II - Product Development. Cottonformatics runs on a large database designed to accommodate the complexity of the data gathered and analyzed by the university. In addition, the environment was built with the idea that in time the dynamics of the research efforts may evolve requiring a change to how and what data is collected, stored and analyzed. Incorporating these assumptions into the initial design and build of the application, will make updates simple and allow functionality to remain in line with the scope of the university's work.

Phase III - Product Implementation. Once the application had been built and thoroughly tested, the Ten2Eleven implementation team moved their efforts on site at the university. A key requirement of the project was building Cottonformatics in a manner that provided remote access to users at other research facilities around the country. Ten2Eleven worked with Systems Engineering staff at the university to implement an internet based access point for approved sites nation wide. Additionally, a detailed user guide was integrated into the application allowing new users to quickly step in to Cottonformatics and gain immediate access to its research consolidation benefits.

THE BOTTOM LINE

Ten2Eleven's Cottonformatics research consolidation solution has allowed university staff to reduce project overhead and streamline processes giving them the ability to focus their energy on analyzing the data. Weeks after implementation, the university was able to identify areas where small changes to pest management and crop rotation practices would likely provide significant benefits to local farmers. Further identification of similar trends will ultimately reduce agricultural costs and improve crop performance.