# Overview and Demonstration of the Aquatic Plant Information System (APIS™)

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# Acknowledgements


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  - Sherry Whitaker
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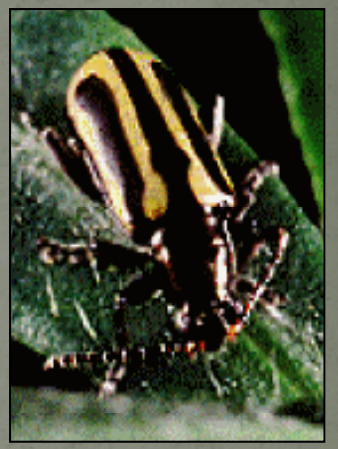
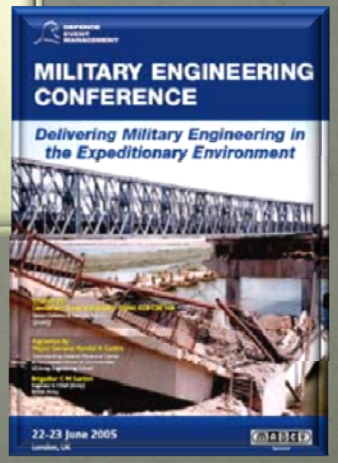
# Invasive Species Management

- Biology
- Ecology
- Distribution
- Problems
- Laws and regulations
- Management options
  - Biological
  - Chemical
  - Mechanical
- Sampling methodologies
- And on, and on and on.....



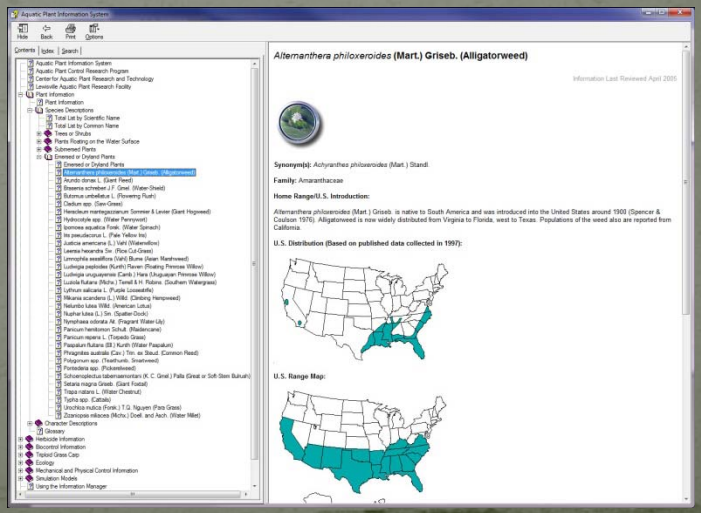
# Sources of Information

- Technical publications
- Journal articles
- Reports
- Orally
  - Meetings
  - Personal communications
- Posters
- Books
- Internet
- And on, and on.....



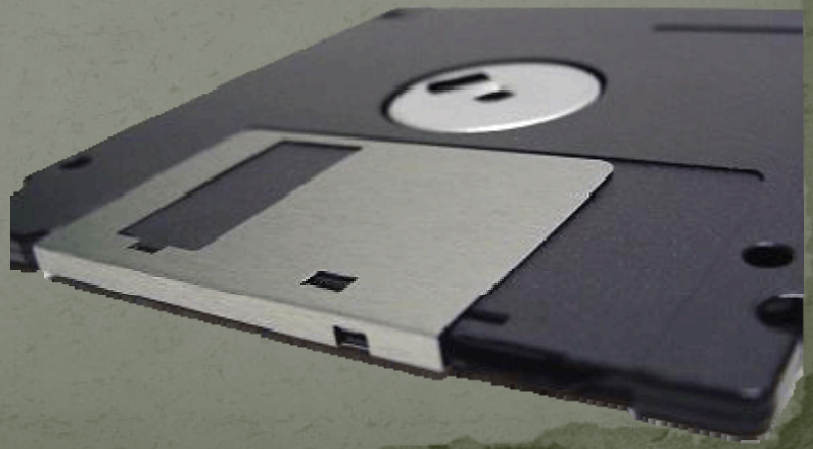
# What is an Information System?

- PC/Web-based
- CD version operates under Windows®
- Allows for efficient and rapid access
- Highly interactive
- Use a variety of different formats
  - Text
  - Photo's
  - Hyper-linked text
  - Identification programming
  - Video
- All in one location…

# The Beginning…

- Early 1990's
- Recognized need for better access
- DOS-based
- Distributed on floppy disks
- Huge technical difficulties
  - Displaying 256 colors
  - Photographs limited
  - Mainly line drawings
  - Limited interactivity



# The Past…

- Advances in computer capabilities
  - Graphics
  - Power
  - Speed
  - Increased memory/storage
  - Programming languages
    - Windows®
    - Visual basic
- Allowed for:
  - Full color images
  - More standardization across computer hardware
  - Identification algorithms
  - More efficient access
  - More interactive GUI
  - Increased information content

# The Past…

- APIS™
  - Version 3.2
  - CD-Rom
  - Windows Vista compatible
  - Hand-held version – Microsoft-based PDA's
  - Started with nine species
  - Today > 70 species
  - Added computer models
    - Amur Stocking rate
    - Harvesting



# The Past…

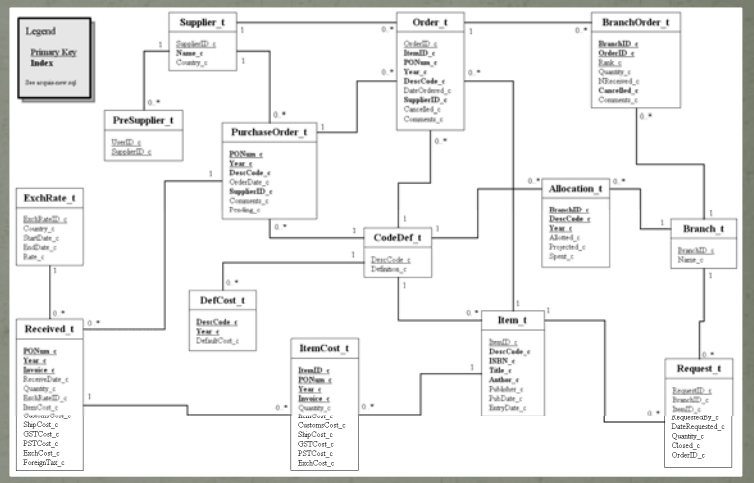
- Mainly increased content
  - Added more plant species
  - Updated mainly chemical info
  - General revisions
- Technological/programming updates
  - Revised with new operating systems
  - Hand-held application
- Favored information over technology

# Time for a change…

- Information was increasing
- Harder to keep up
- Organization a problem
- Difficult, at best, to effectively update systems
- More flexibility in accessing information

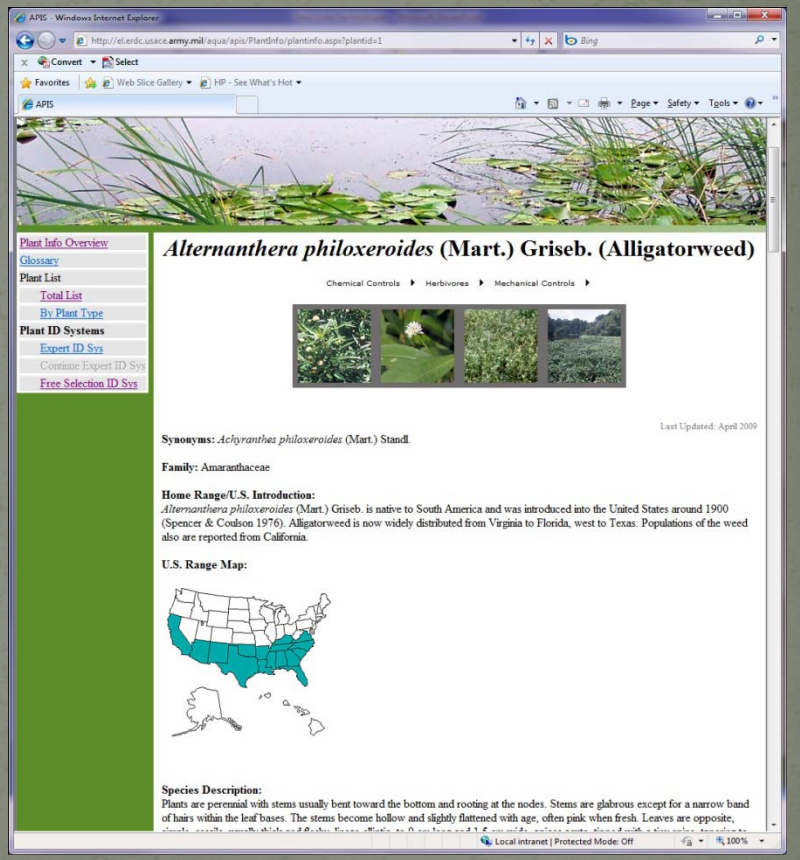
# Time for a change…

- Change core technology
- Programming
- Utilize a Relational database
  - Simply put:
    - Set of highly organized data
    - Related by common information
  - Contains series of tables
    - Contain records
    - Basically descriptions of types of data
    - Actual information content
  - By using a common identifier between tables
    - “Relate" one table to another



# The Present…

- A simple example…
- Species profiles
  - Common/scientific name
  - Synonyms
  - Home range/introduction
  - Distribution
  - Description
  - Problems
- These are the records!



# The Present…

## Species information

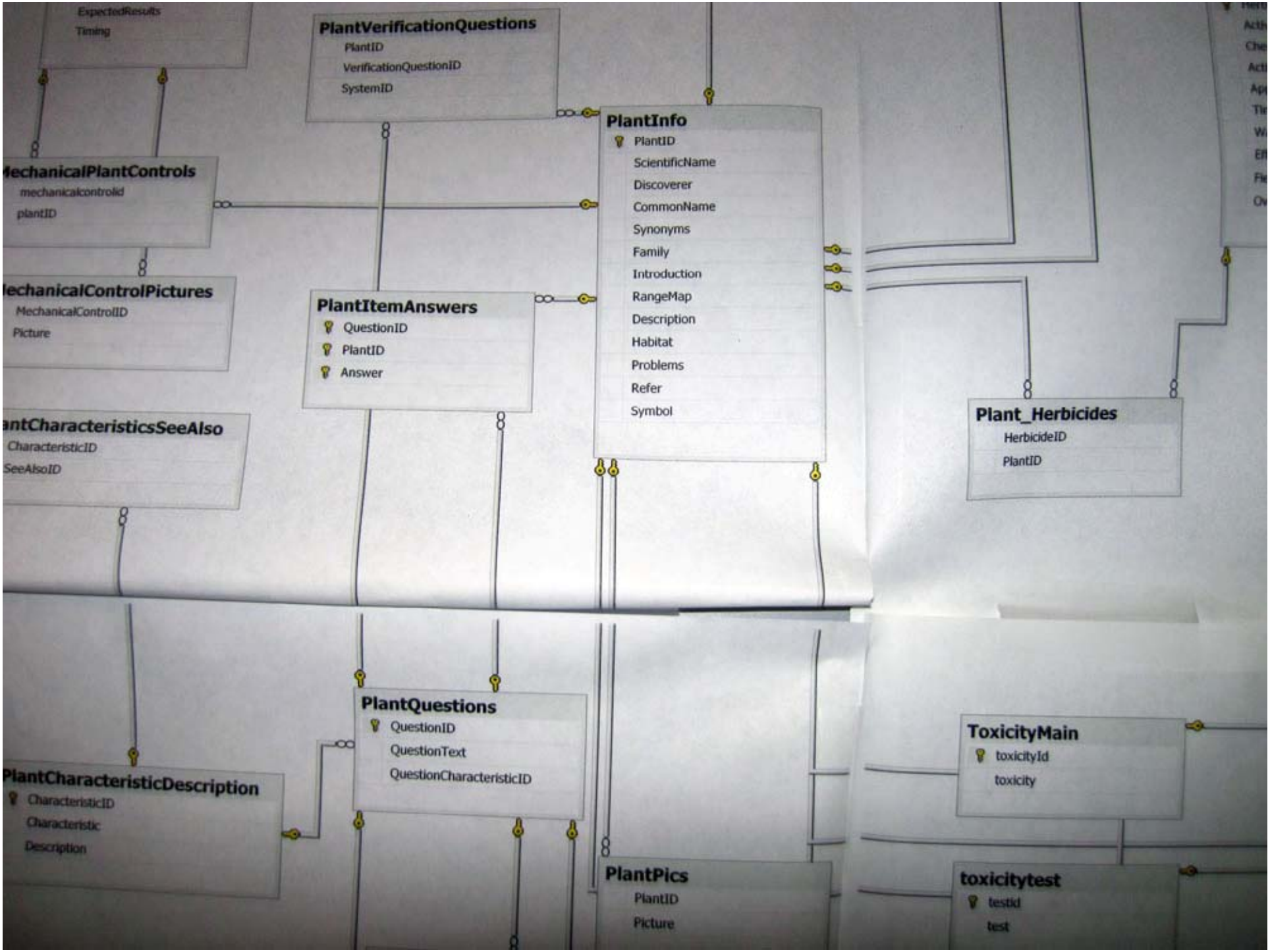
- Distribution
- Descriptions
- Problems
- Images


## Identification

- Descriptions
- Characteristics
- Images

## Control options

- Chemical
- Biological
- Mechanical

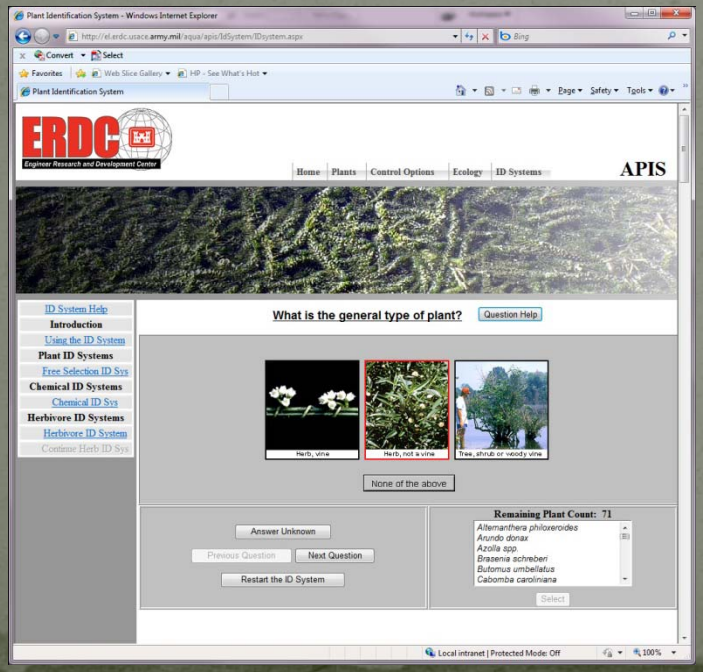

ExpectedResults
Timing
PlantVerificationQuestions
PlantID
VerificationQuestionID
SystemID
PlantInfo
PlantID
ScientificName
Discoverer
CommonName
Synonyms
Family
Introduction
RangeMap
Description
Habitat
Problems
Refer
Symbol
echanicalPlantControls
mechanicalcontrolid
plantID
echanicalControlPictures
MechanicalControlID
Picture
PlantItemAnswers
QuestionID
PlantID
Answer
antCharacteristicsSeeAlso
CharacteristicID
SeeAlsoID
Plant_Herbicides
HerbicideID
PlantID
PlantQuestions
QuestionID
QuestionText
QuestionCharacteristicID
PlantCharacteristicDescription
CharacteristicID
Characteristic
Description
ToxicityMain
toxicityId
toxicity
PlantPics
PlantID
Picture
toxicitytest
testid
test

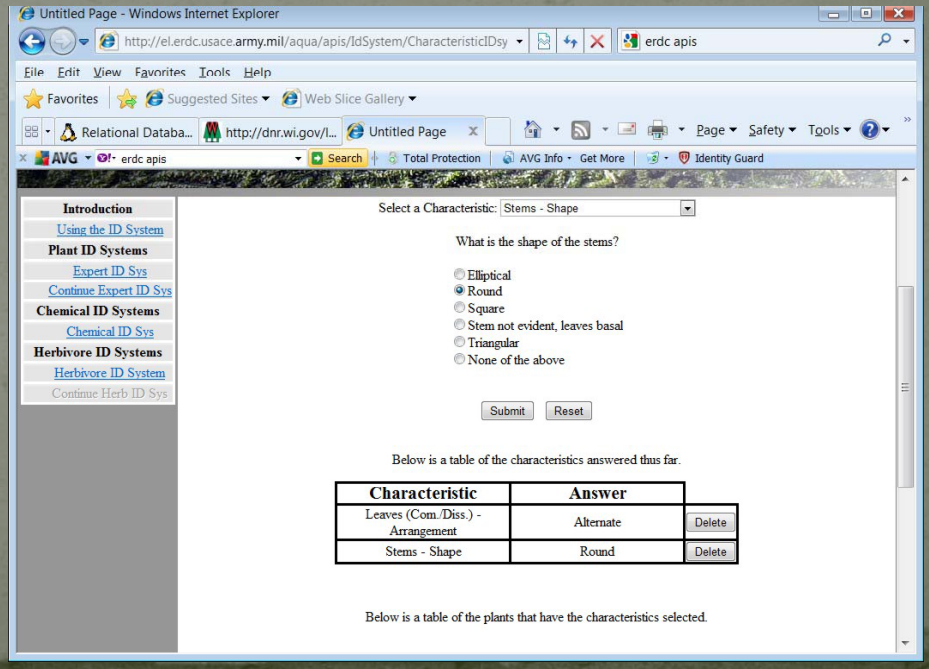
# The Present…

- So with a relational database structure…
- Better organization of information
  - Know where every information piece is located
  - It's relationship to other pieces
- Limited use of static web pages
- Add new specific info
  - Modify a single table
  - Instead of the whole static page
- Easier, faster, and more economical to update
- Overall more flexibility in displaying info

# The Present…

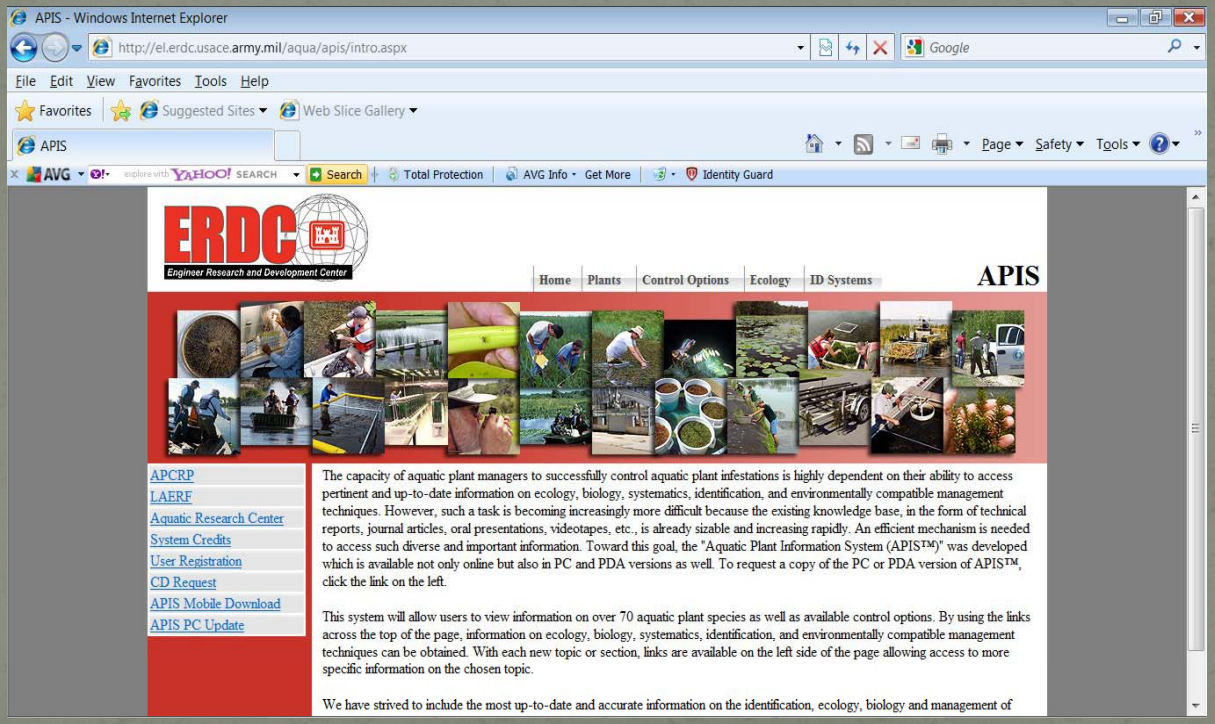
- More importantly…
- Allows web-based identification programming
  - Classical form
  - New free selection



# APIS™ Online

- http://el.erdc.usace.army.mil/aqua/apis/intro.aspx



# The Future…

- Currently information display static
  - Based on programming
- But with dynamic queries…
- User can specify
  - Type of information
  - Format of information
- Management plan
  - Species name
  - Description
    - Only those with yellow flowers
  - Distribution
    - Only in southeast
  - Chemicals
    - Only contact
  - Biologicals
    - Only operational
    - Only weevils
  - Mechanicals
    - Only harvesters
- Customized
- Filtered Information

# The Future…

- More mobile versions
- PDA version
  - APIS ™
  - Microsoft Mobile-based PDA's
- Limited use
- Variety of different operating systems
  - Blackberry
  - I-Phone
  - Others
- 'Mobile internet version'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