

# AGROBASE **generation II**™

## **Introductory to Advanced Training Course Five Day Course Information and Agenda** *Revised March 31, 2010*

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**Who Should Attend?** This course is designed for those who have never or only occasionally used this software – but have at least viewed the online tutorials – yet want to increase their basic proficiency, or those who have an intermediate knowledge, or the more advanced users who wish to learn more of the software's features in-depth. The more experienced users might not need to take the first two days, those wanting the advanced topics would take the last two days. If you are not into plant breeding *per se*, but variety testing, or are not interested in the plant breeding topics, you would focus on the first three days if you are new to the software, or the second and third day.

**Requirements** In all cases, this course assumes a basic competence in the use of computer software and operating systems as well as basic terminology in agronomy and plant breeding. All trainees must have their own laptop computer with a demo or registered version of the software installed before the course. You are also expected to either bring a copy of your own relational database in Generation II ("research group") or data files (Excel®, dBASE®, text) with your own experiments and data to develop your own research group during the course.

### **Day 1- Research Groups, Experiments, Data Import and Export, Trials**

*This day of instruction is mandatory for all new users, or for those who need to ensure the most basic competency in using this software. More advanced users, or those who have taken this part of the course previously, could begin on the following day. The topics from this day will be assumed and not covered in the following days of instruction. There will be a few differences noted between Version 18 and the SQL Version. Please note: The topics in bold will be covered more quickly since all participants should have viewed the online tutorial for that topic.*

#### **8:30 -10:00 am**

- Welcome and introductions
- Verify installation of software in all trainee laptops – the software should have been previously installed, especially in the case of the SQL Server version
- Understanding research groups and relational database software
- Creating, accessing, joining, duplicating, and managing a research group
- Data security, backups, and LAN issues
- Navigating a research group – menus, interface, Help system
- **Using the data explorer to access treatments, experiments, nurseries, trials, locations, years**
- **Addition and definition of an initial set of data traits for your practice research group**
- Managing traits: grouping, exporting, importing
- **Class Exercise:** Creation and initial development of your "practice" research group for this course

#### **10:00-10:15 am**

- Refreshment break

#### **10:15 to 12:00 pm**

- **Addition and definition of locations and location groups**
- Treatments (varieties, hybrids, fertilizer levels, herbicides, etc.): their creation, grouping, and use
- **Importing treatments from entry lists and other files**
- Drag and drop capabilities
- Finding treatments in the research group

• **Class exercise:** importing sample treatment lists - trainees are encouraged to bring dBase®, Excel®, or other file types to the course to help develop their own practice research group

**12:00 to 1:00 pm**

- Lunch break, possibly as a group depending upon venue
- Interaction with the course instructor as possible with the group

**1:00 to 3:00 pm**

- **Designing experiments – RCBD and split plots**, other designs depending upon group interest
- Exporting experiments to Excel or dBase
- **Importing experiments from the DEMO research group**
- **Viewing data in your experiments – display options, locking traits, sorting**, setting trait orders
- System settings, split screens, data entry and validation, etc.
- “Static” traits – their use in experiments, relevance
- **Class exercise:** importing your own experiment and data into your practice research group – trainees are encouraged to bring sample files of their current experiments in progress or past experiments

**3:00 to 3:15 pm**

- Refreshment break

**3:15 to 4:30 pm**

- Perennial experiments – depending upon interest
- Sub-sampling – depending upon interest
- Modifying and deleting experiments
- Fillers in experiments
- Correcting for planting errors
- Grouping experiments
- Grouping and managing multi-location experiments (trials)

**4:30 to 5:00 pm**

- Review from the day – questions from the day’s topics
- Trainee’s own time to work on the day’s topics
- Interact with instructor on specific questions

**Day 2 – Field Planting Plans, Reports, Labels, Data Entry**

*This day focuses on the practical aspects of laying out experiments, trials and nurseries, and then bringing in your data. The trainee will use the experiments created in Day 1 in their practice research group. Please note: The topics in bold will be covered more quickly since all participants should have viewed the online tutorial for that topic – that will be mandatory in order to allow for more class exercise time and specific questions and user adaptation of the software.*

**8:30 to 10:00 am**

- Exporting trials
- **Importing a trial from the DEMO research group**
- Optimizing your use of your research group through grouping experiments, trials, and treatments
- **Class exercise:** importing a trial from your research data – trainees are encouraged to bring a sample file with their own data to further develop their own practice research group

**10:00 to 10:15 am** • Refreshment break

**10:15 to 12:00 pm**

- **Visual design of planting plans**
- **Creating fields maps and sowing order lists**
- **Planting and harvest order numbers**
- Saving and exporting planting plans to Excel and other file formats
- Management of sites and plans
- **Class exercise:** make your own planting plan(s) using experiments from your practice research group
- Generating reports via the Visual FoxPro report generator

**12:00 to 1:00 pm**

- Lunch break, possibly as a group depending upon venue
- Interaction with the course instructor as possible with the group

#### **1:00 to 3:00 pm**

- Introduction to the report generator: Designing field books
- **Designing labels and barcodes, printing multiple labels**
- **Sorting and filtering prior to generating reports or labels**
- **Class exercise:** make your own reports or labels using your practice research group
- Importing data into existing experiments in a research group, especially via Excel files
- **Using the Generation II to Excel “express link”**

#### **3:00 to 3:15 pm**

- Refreshment break

#### **3:15 to 4:30 pm**

- Import data by relational index
- Importance of import profiles
- Notes on traits in each experiment

#### **4:30 to 5:00 pm**

- Review from the day’s topics, answers for any trainee specific questions
- Trainee’s own time to work on the day’s topics
- Interact with instructor on specific questions.

### **Day 3: Data Manipulation, Analysis, Varietal Comparisons, Images**

*With the experiments planted and data coming in during the season, this day focuses on data manipulation and calculations, basic analysis of variance, and varietal comparisons. Please note: The topics in bold will be covered more quickly since all participants should have viewed the online tutorial for that topic.*

#### **8:30 to 10:00 am**

- **Transformation (calculation) of data in your research group**
- Building functions and logical conditions (filters)
- Managing calculated traits
- Transformation scales for categorical and other types of data
- Graphs – bar, line, and point, trend maps of field data

#### **10:00 to 10:15 am**

- Refreshment break

#### **10:15 to 12:00 pm**

- Working with a PDA to download data to your research group
- Using the Gen IIPDA utility to download your data to your research group
- **Data analysis – ANOVA for an RCBD**
- Linear models, options, and basic understanding ANOVA output
- The GenStat® to AGROBASE Generation II Link
- Saving analyses to MS-Word® or Adobe Acrobat®

Note: Since this is an introductory course, only a very basic knowledge of statistics is assumed

#### **12:00 to 1:00 pm**

- Lunch break, possibly as a group depending upon venue
- Interaction with the course instructor as possible with the group

#### **1:00 to 3:00 pm**

- Performing multiple single analyses of variance
- Accessing other analyses in Generation II – histograms, descriptive statistics, regression, correlation
- Viewing means stored from analyses of variance for single factor experiments
- Computing ranks, percent of checks or varieties
- System settings for displays
- Generating reports from means tables
- Creating selection indices and new groups of varieties or hybrids
- Strategies for completing the yield testing cycle from one year to the next
- **Class exercise:** creating a selection index and new treatment group using your practice research group

#### **3:00 to 3:15 pm**

- Refreshment break

### **3:15 to 4:30 pm**

- Varietal comparisons – context in Generation II
- Head-to-Head comparisons of varieties or hybrids over years and locations
- Rolling average summaries across multi-year trials for unbalanced data sets
- Performance grid to view relative varietal performance across locations within a year
- GxE analyses with stored means
- **Image Display Module:** Image display for treatments, traits, plots, experiments

### **4:30 to 5:00 pm- Discussion session with course notes**

- Incomplete bloc designs - advantages and disadvantages
- Non-replicated designs – field layout, analysis, advantages and disadvantages
- Nearest neighbours designs and analysis – the advantages of spatial designs
- Line x Tester and Diallel designs

## **Day 4 - Plant Breeding System: Parents, Crosses, Populations, Nurseries**

*This day focuses entirely on the breeding system. This would be an introduction if you have never used the software before, or a refresher to help in “fine tuning” the software if you are a more advanced user. We will try to accommodate as many different crops and breeding schemes – whether self-pollinating, hybrid development, clonal crops breeding, and more. Please note: The topics in bold will be covered more quickly since all participants should have viewed the online tutorial for that topic.*

### **8:30 to 10:00 am**

- Identifying genotypes with desirable traits – querying the research group
- Parental genotypes for a breeding program – grouping, history, etc.
- Exporting and importing lists of parents from the DEMO research group
- **Class exercise:** importing lists of parents from your breeding program – trainees are encouraged to bring files with names of parents and any other descriptors (pedigree, source, etc.) from their breeding program to develop their practice research group

### **10:00 to 10:15 am**

- Refreshment break

### **10:15 to 12:00 pm**

- **Generating crosses for various breeding schemes – self-pollinating**, cross pollinating, polycrossing, cytoplasmic male sterile systems, synthetics, etc.
- **Confirming and managing crosses**
- Developing populations from crosses
- Developing nurseries with populations and other genetic material
- Making selections and segregating populations, clones, doubled haploids, etc.
- Viewing data from previous nurseries within a current nursery
- **Class exercise:** Make your own crosses from your own parental lists, then design populations, nurseries, make selections – learn to follow the “basic cycle” in Generation II

### **12:00 to 1:00 pm**

- Lunch break, possibly as a group depending upon venue
- Interaction with the course instructor as possible with the group

### **1:00 to 3:00 pm**

- Developing crosses and using 19 different breeding methods from within a nursery
- Viewing histories of populations
- Managing populations
- Grouping populations, nurseries
- Finding parents or populations in the breeding system
- Importing populations and crosses
- Relating the breeding system to the agronomic system
- “Converting” genotypes between the two systems
- Renaming populations – using the renaming tool
- **Class exercise:** Making crosses from within a nursery, learning about more of the breeding events and capabilities

### **3:00 to 3:15 pm**

- Refreshment break

**3:15 to 4:30 pm**

- Dendograms – seeing the connections across generations
- Questions and synthesis of the day's instruction
- Individual interaction with the instructor as time permits
- Review of exercises and assistance from instructor as time permits

**Day 5 – Seed Inventory and Advanced Topics**

*This day will presume a basic to intermediate competence in using the software. These topics concern more advanced features in the software not covered in the course already, and the new seed inventory module.*

**8:30 to 10:00 am: Seed Inventory**

- Creating seed lots from experiments or nurseries
- Creating seed lots from populations, treatments, or parents
- Creating and assigning seed lot locations
- Managing seed lots – splitting, merging, modifying, editing

**10:00 to 10:15 am**

- Refreshment break

**10:15 to 11:30 am: Seed Inventory: Continued**

- Viewing seed lots and using the main seed inventory node
- Creating seed lot equations
  - Allocating seed lots to experiments or nurseries
- Seed lot traits, importing seed lot information into the seed inventory system

**11:30 to 12:00 pm: Functions and Expressions - Review**

- This material, with examples, will be available as a PDF from our web site, and as such we will only cover specific user questions on FoxPro functions, expressions for searching, filtering, calculations, and the AGROBASE Generation II special functions.
- **Class exercise:** Writing functions and expressions for your particular needs

**12:00 to 1:00 pm**

- Lunch break, possibly as a group depending upon venue
- Interaction with the course instructor as possible with the group

**1:00 to 1:30 pm**

- Advanced report generation – title page, summary, bands and groupings, object properties, report variables, conditional printing, data grouping, aligning and resizing, calculations within a report, colors
- **Class exercise:** Tackling your specific report generation needs

**1:30 to 3:00 pm**

- Cross prediction
- Progeny analysis

**3:00 to 3:15 pm**

- Refreshment break

**3:15 to 4:00 pm**

- Final questions and synthesis
- Individual interaction with the instructor as time permits for your specific needs and questions