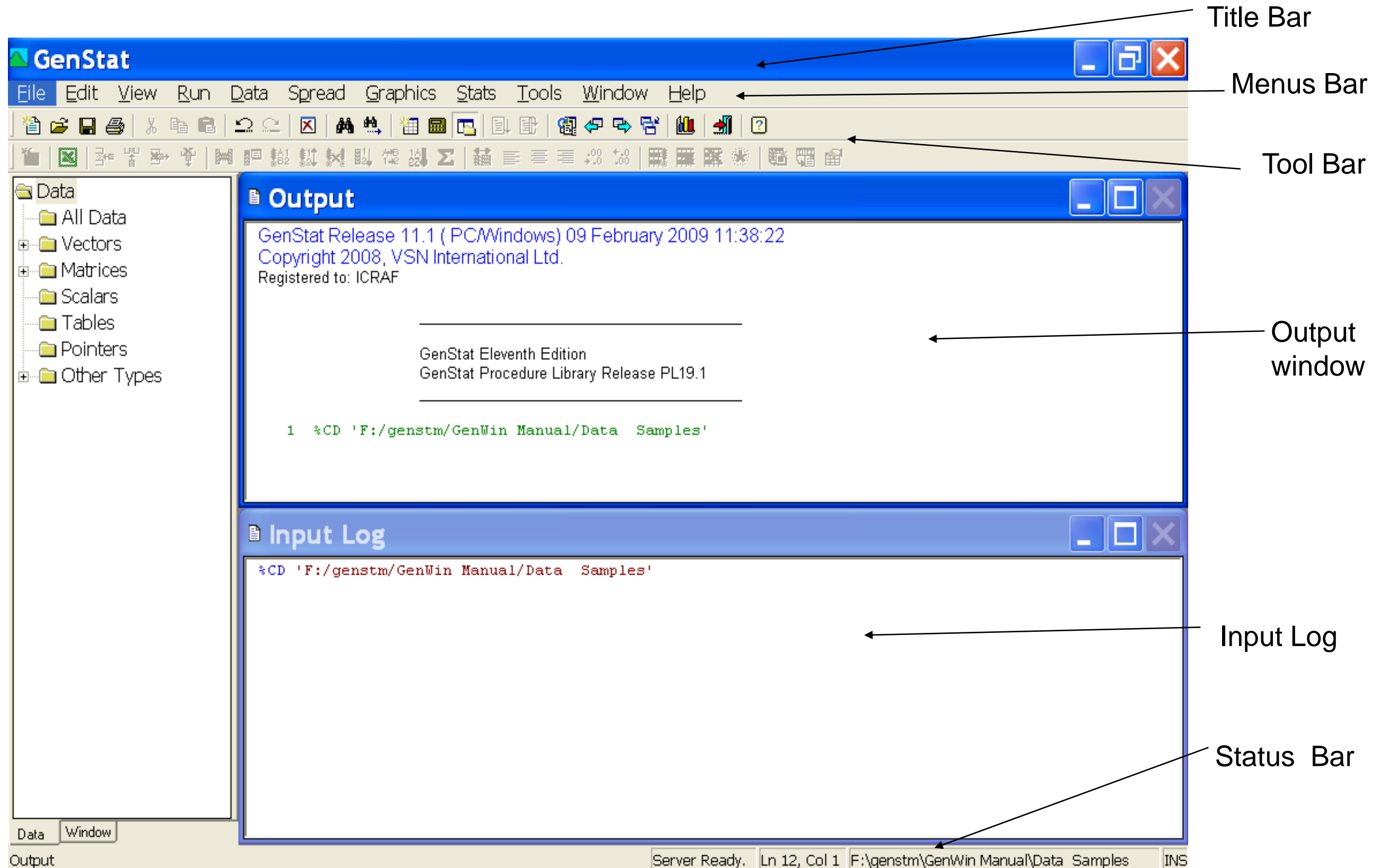# Introduction to GenStat Edition 14

Accessing GenStat
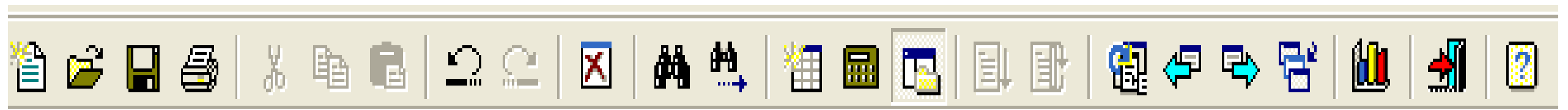
Start → All Programs → GenStat → GenStat 14ᵗʰ Edition

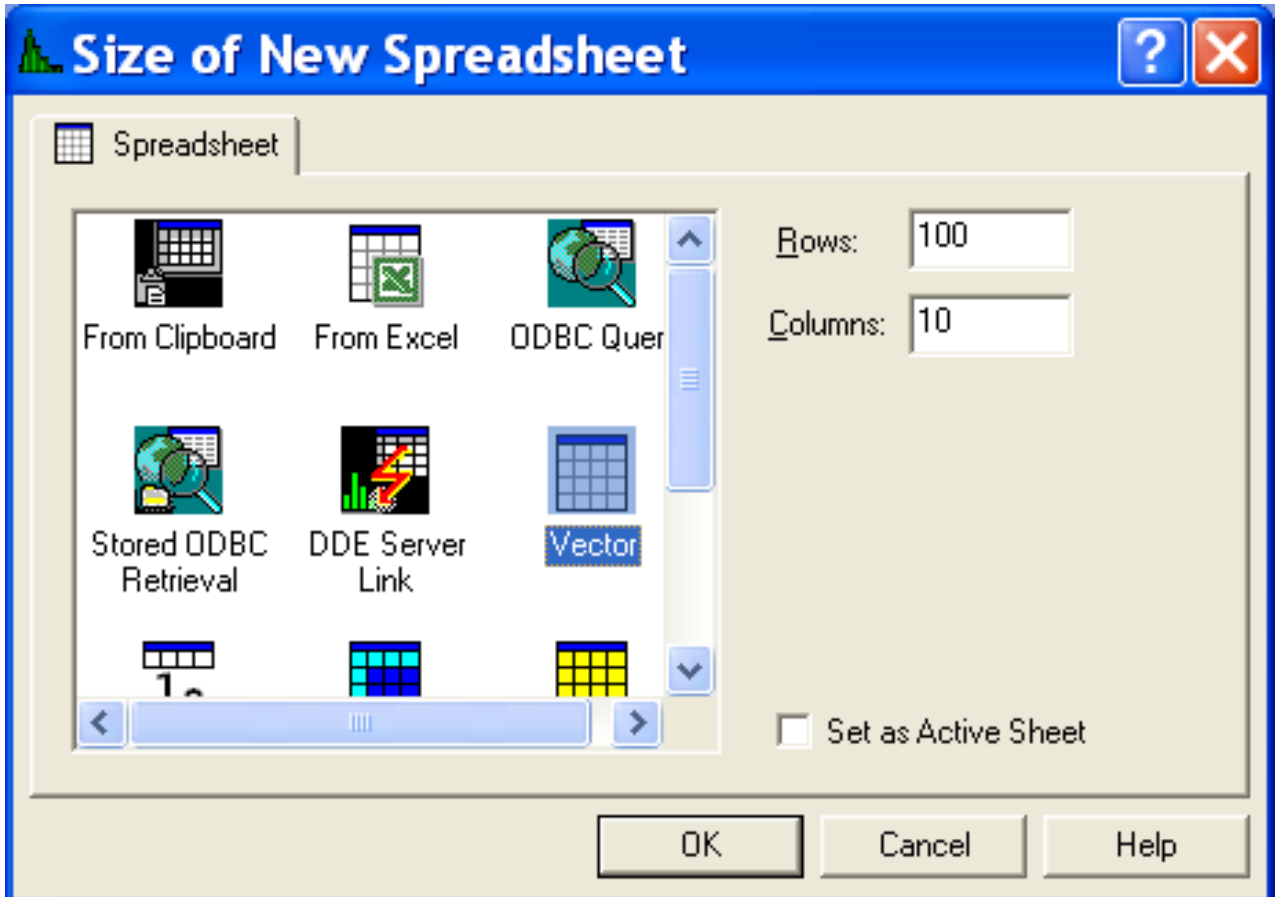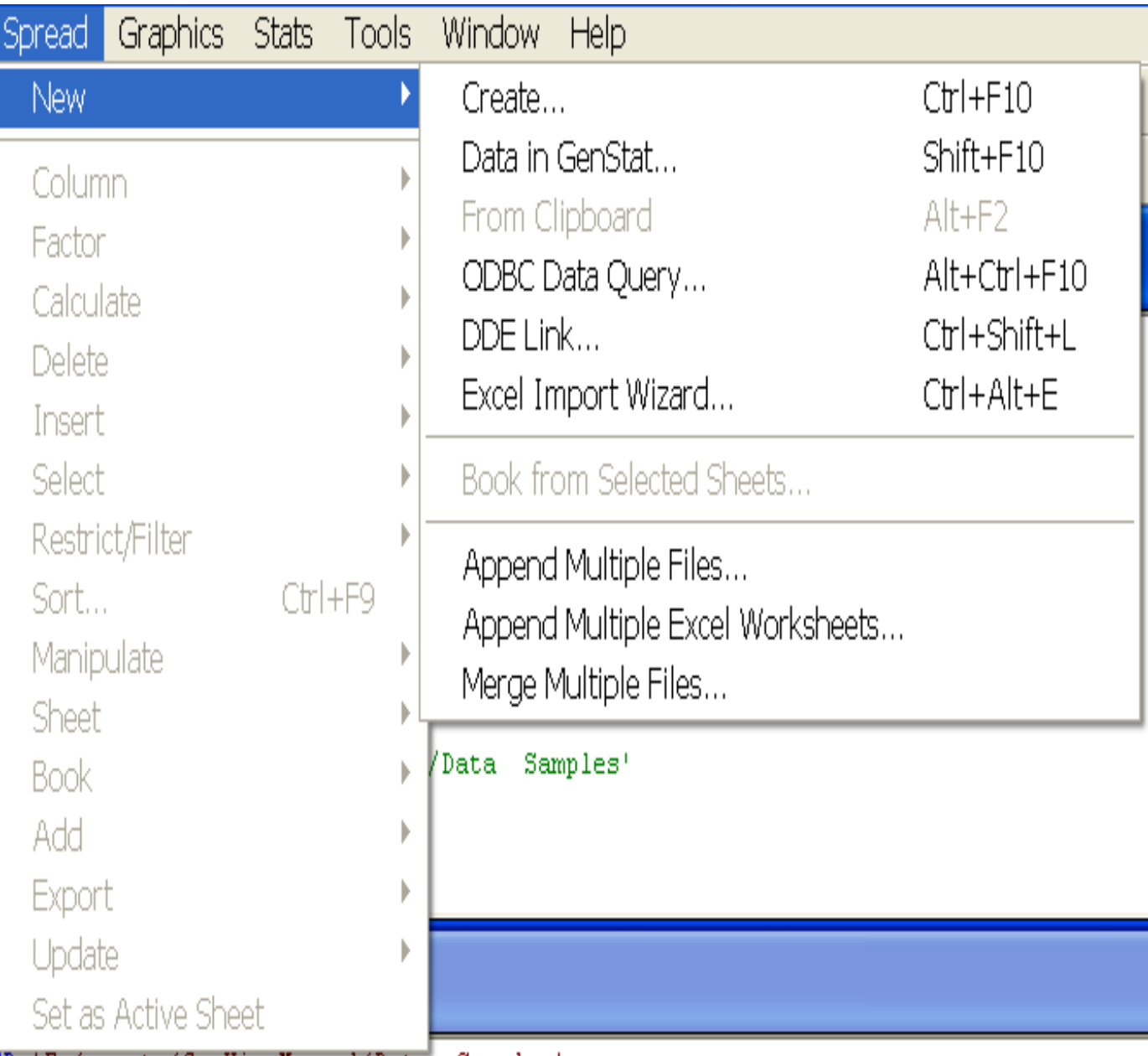5-Jan-12

The menu bars

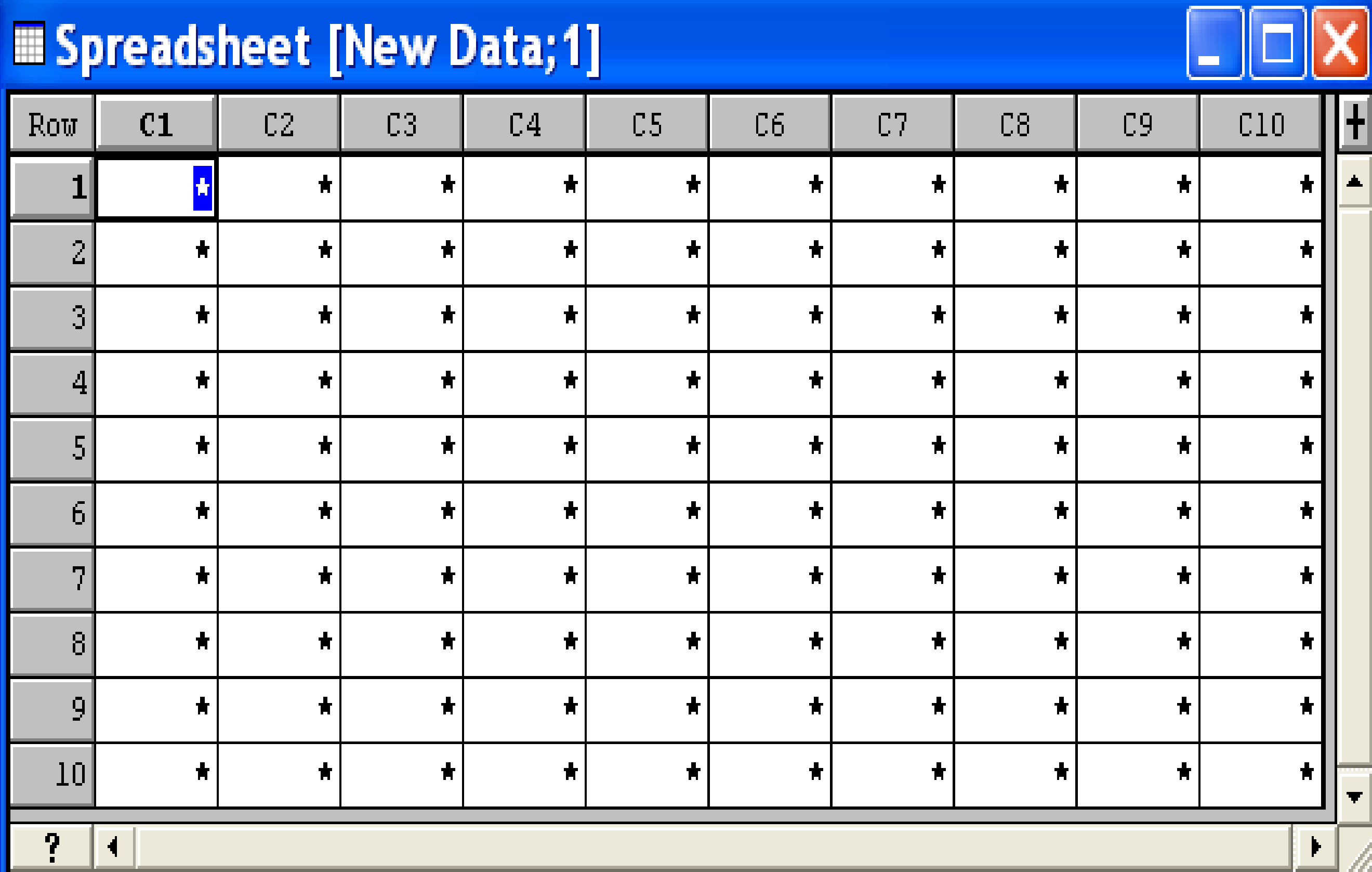**File Edit   Search Run   Data Spread   Graphics   Stats   Options   Window   Help**

Tool bars

Data input

Choose Spread → New → Create.

10 x 10 row by column vector

Replace variable names (C1, C2,..) either by using
Spread → Column → Attributes/Formats (pressing F9) or
very easily by right clicking in each of the Cs and clicking **Rename** and
proceeding.

Column Attributes/Format for C1

Column: C1 — Type: Variate

Name: Plots

Description: Experimental plot

Decimals: * Width: 6

Restrict data entered to be in the range:

Minimum: * Maximum: *

Identifying information used in output: Default

Justification
- Default
- Left
- Right
- Centred

Numeric Format
- General
- Scientific
- Fixed
- Date

Column created: 9-Feb-2009 2:48:17.97 pm

OK | Cancel | Apply | Help | Sheet... | Convert... | Fill... | Date Type...

Change Sheet or Column...

Sheet Type
- Vector
- Matrix
- Symmetric Matrix
- Diagonal Matrix
- Table
- Scalar

Soils

Column Type
- Variate
- Factor
- Text
- Units Vector

☐ Read Text as Date

Factor Options
☑ Sort Levels
Tolerance: 0

OK | Cancel | Apply | Help | Date

Loading Data From a GenStat file

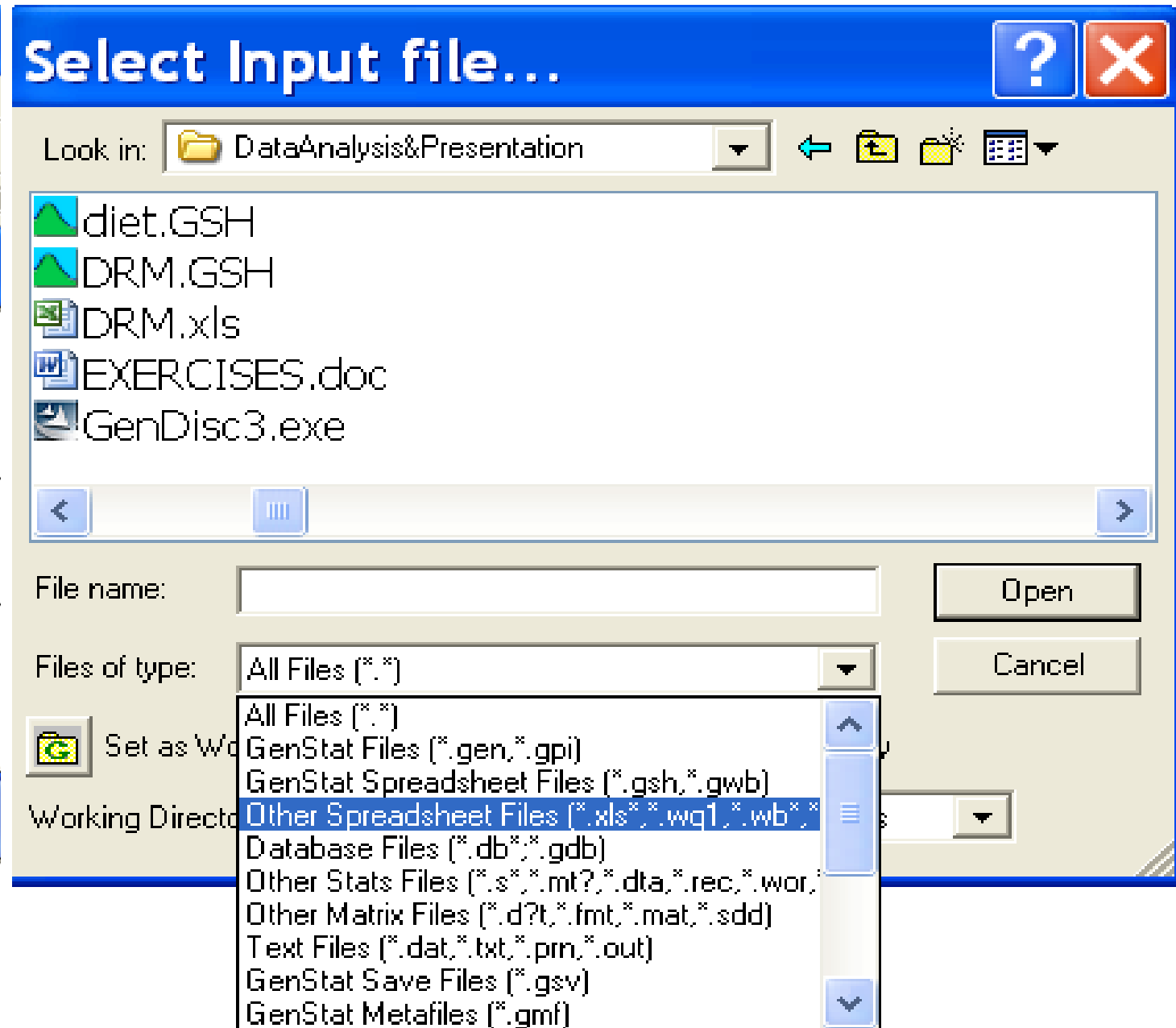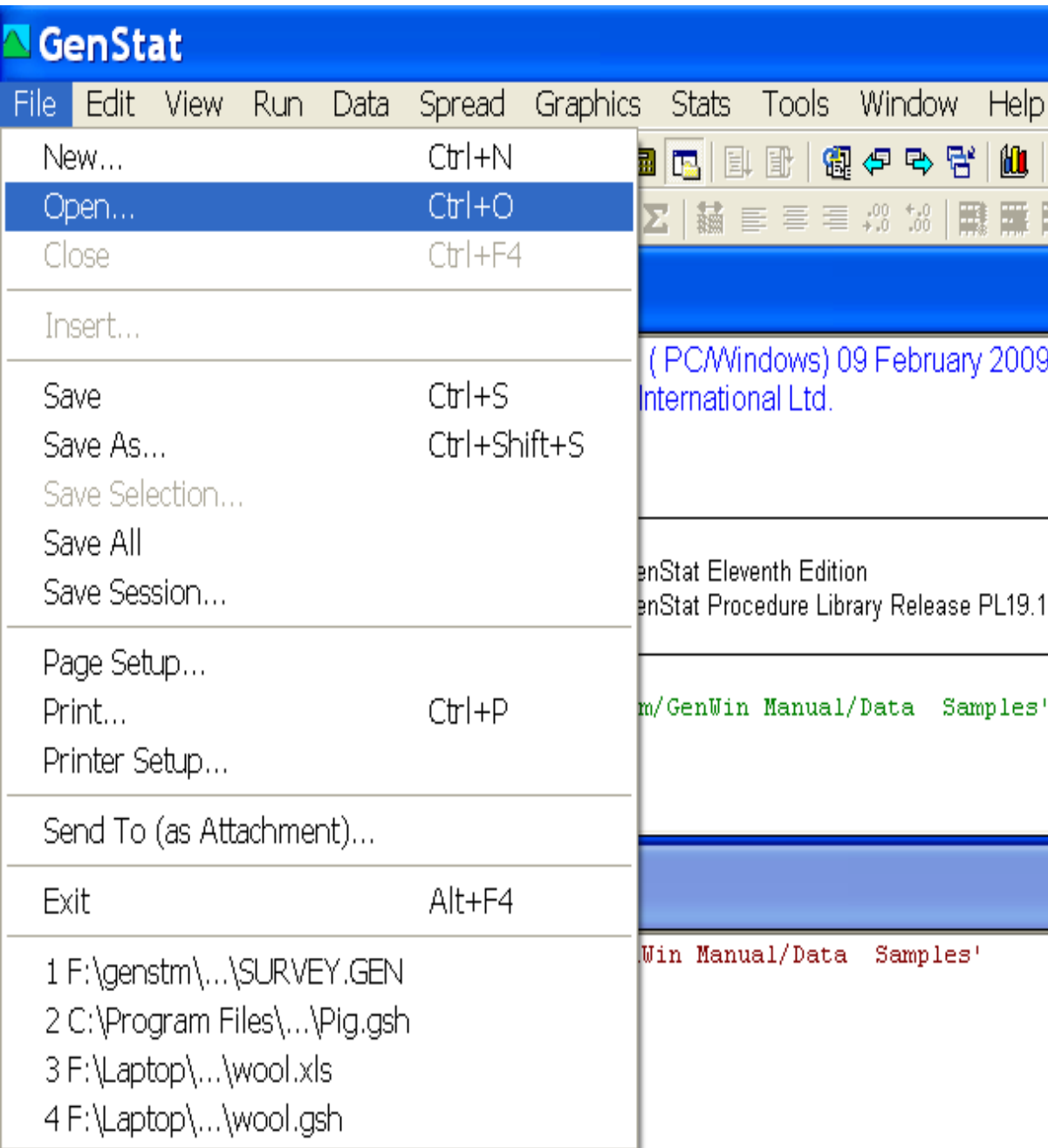Select **Data**→ **Load** → **Data file…**

OR Select **File**→ **Open…** OR using the **Open Tool Bar**
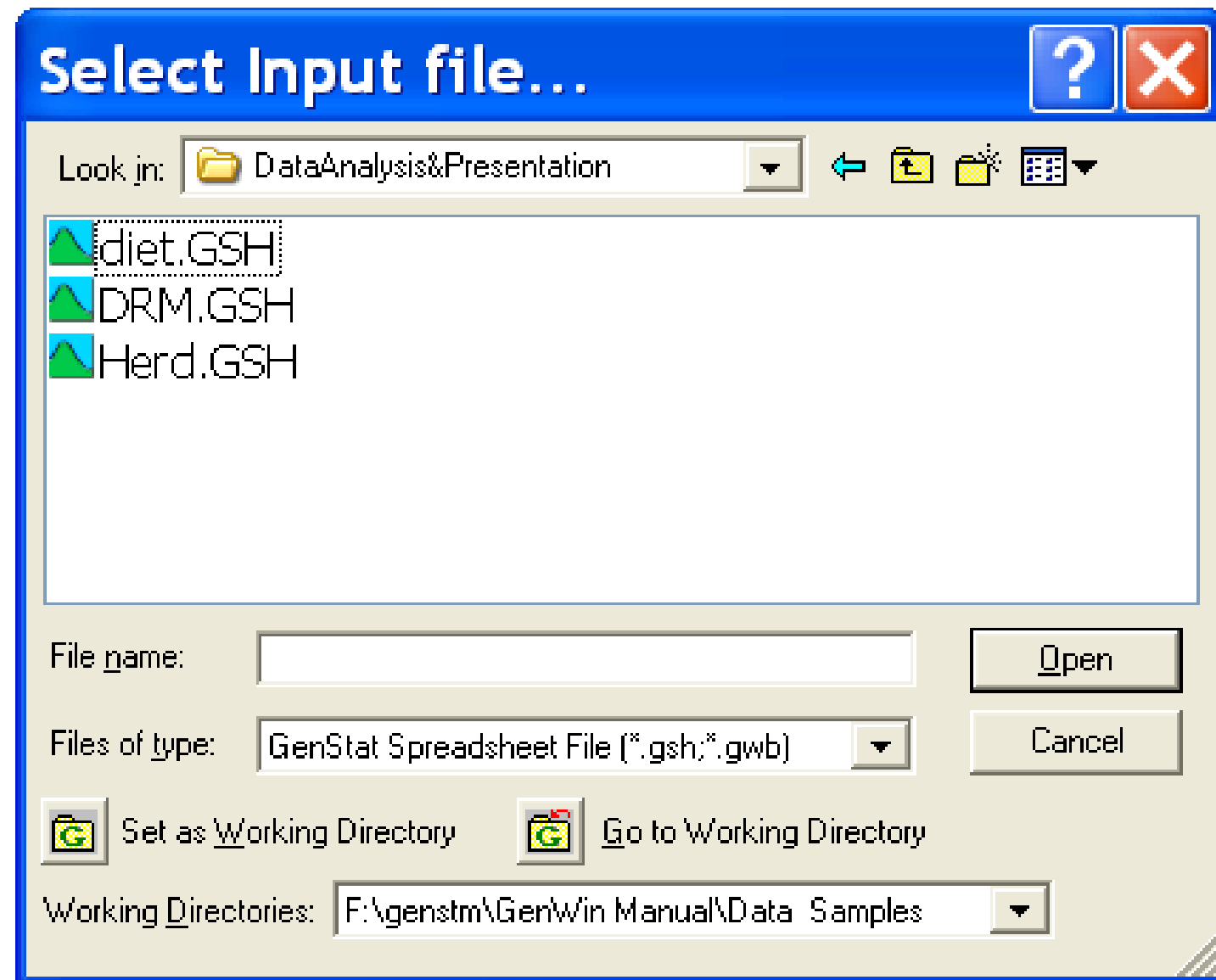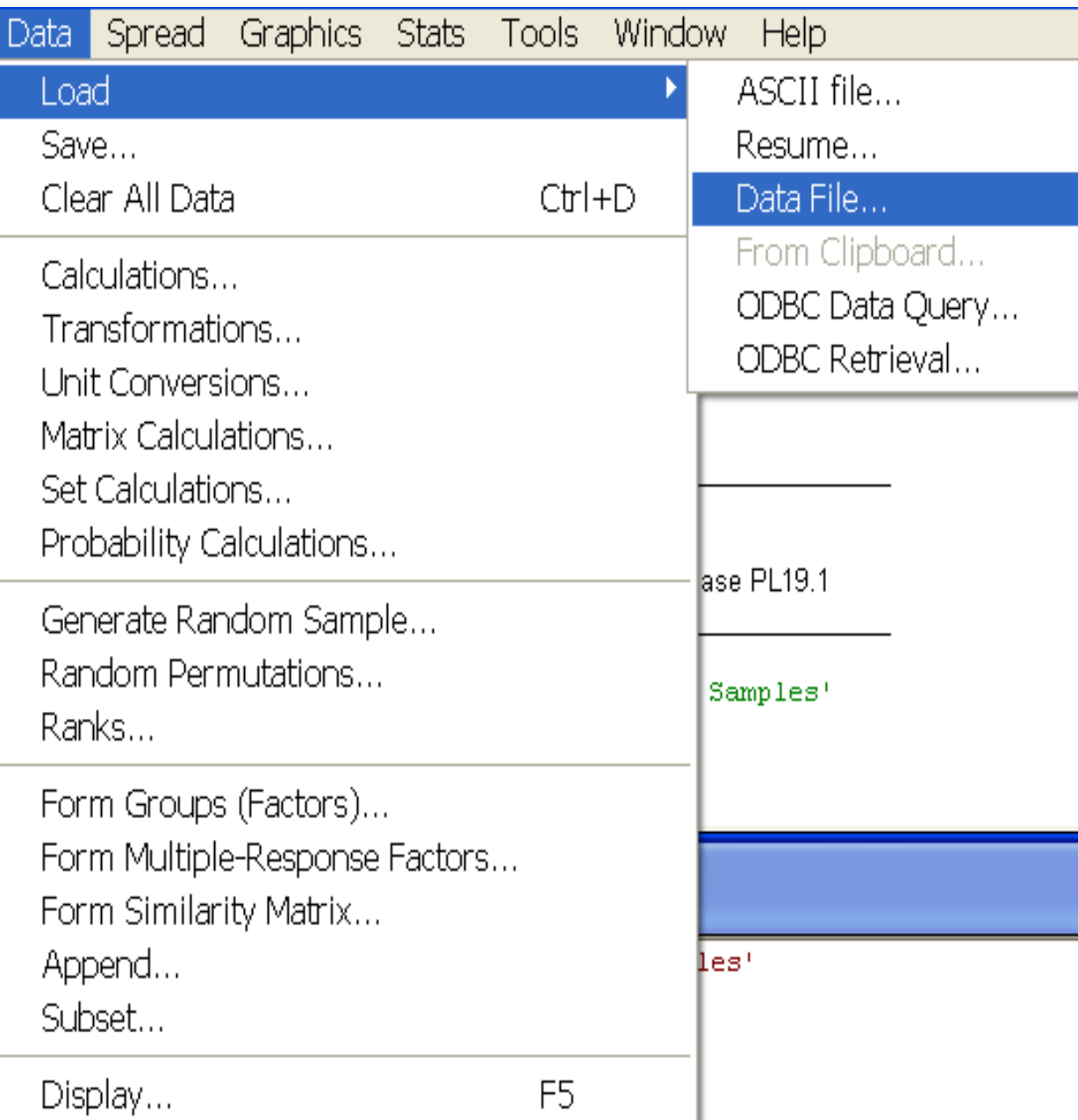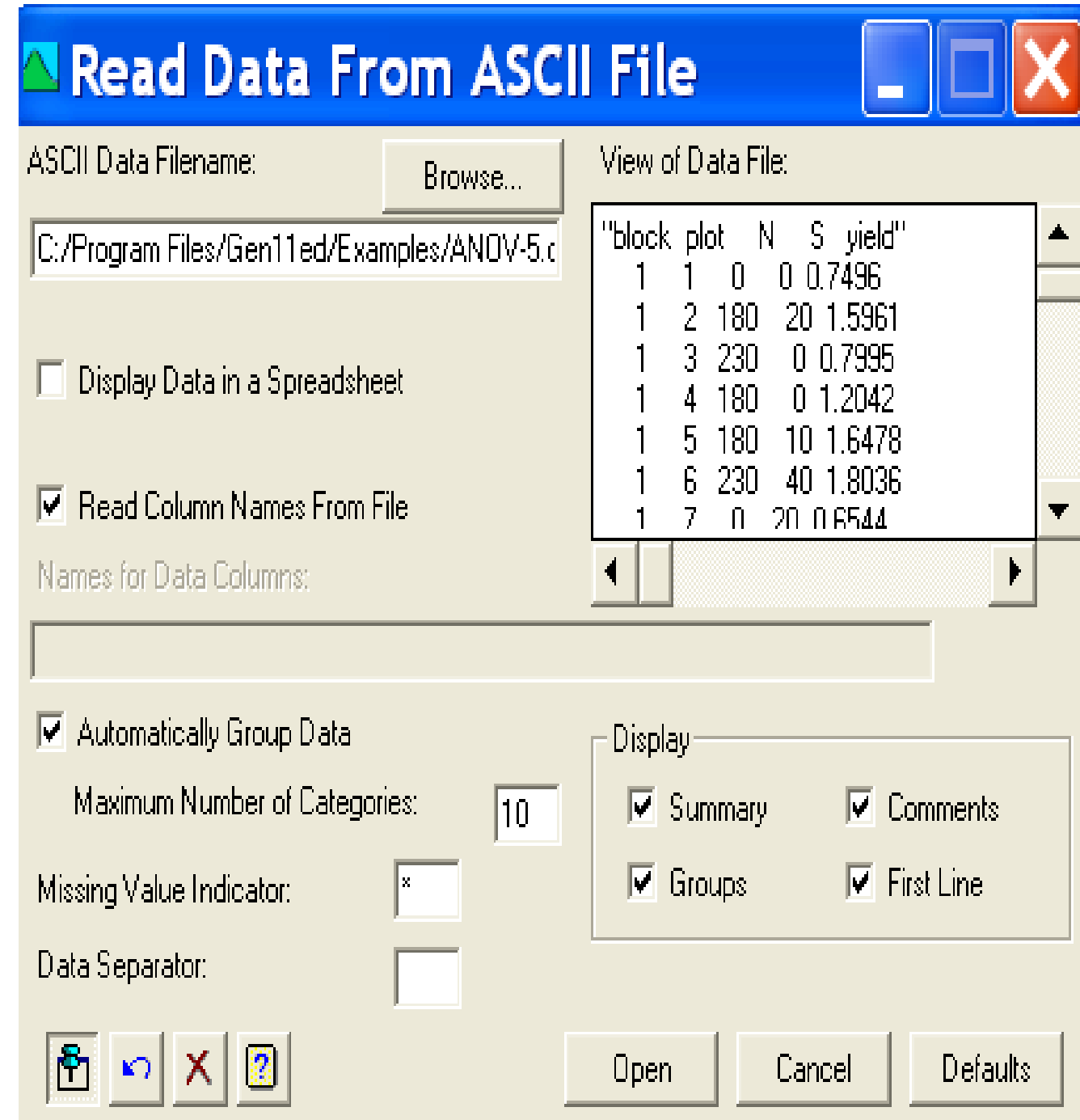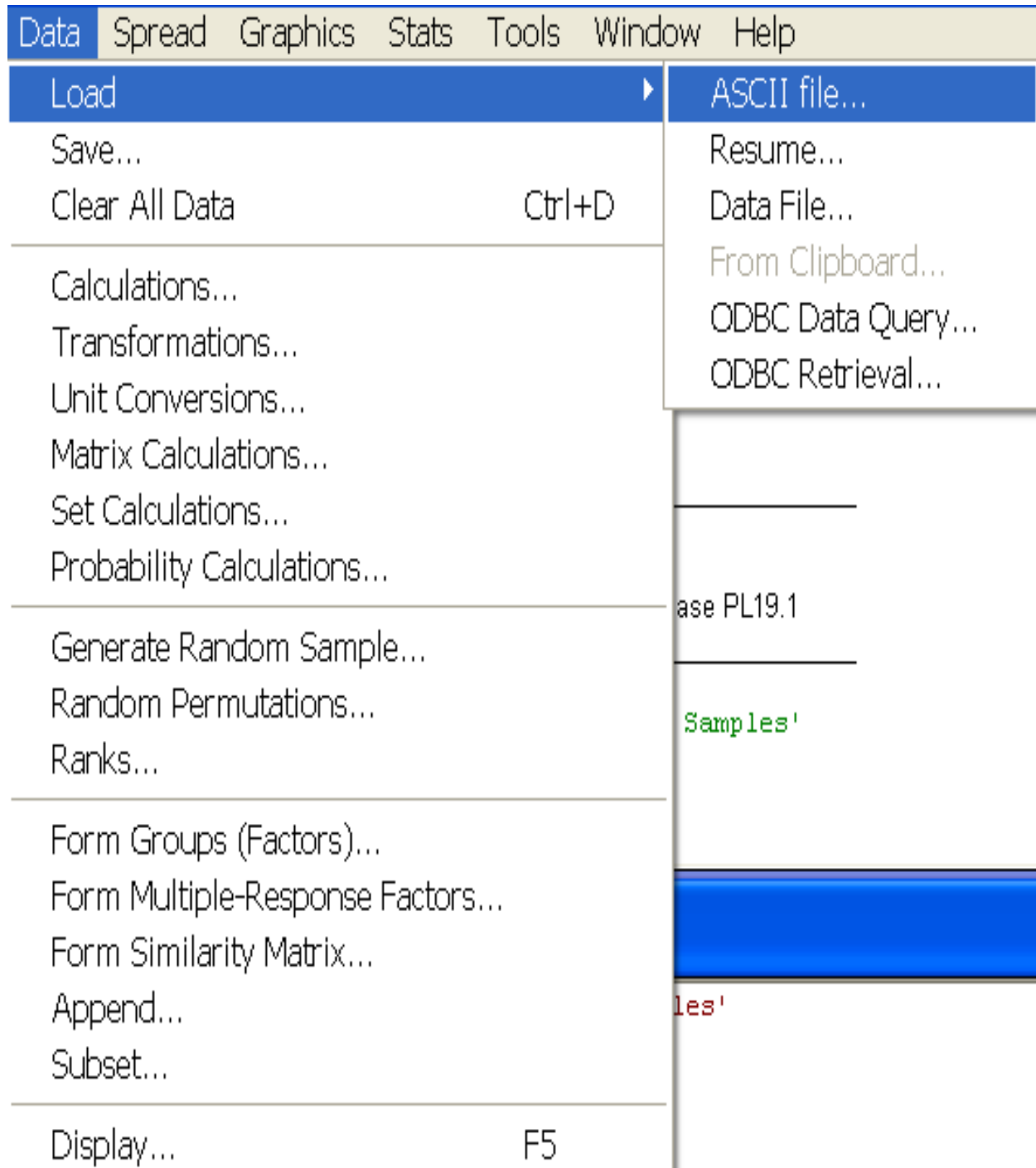
Loading Data From Excel Spreadsheet file

Select **File**→ **Open…** OR using the **Open Tool Bar**

Loading Data From a text file
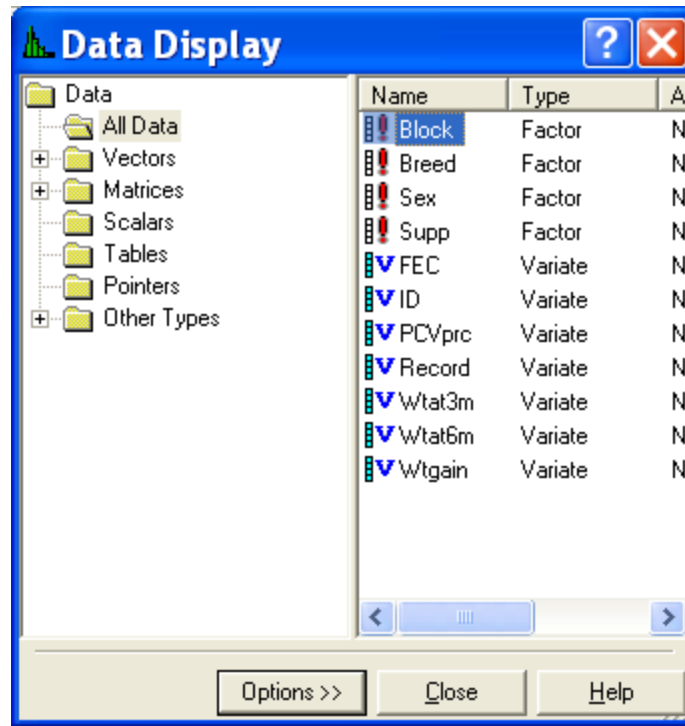
Select **Data**→ **Load** → **ASCII file…**

Data Structures & Spreadsheet
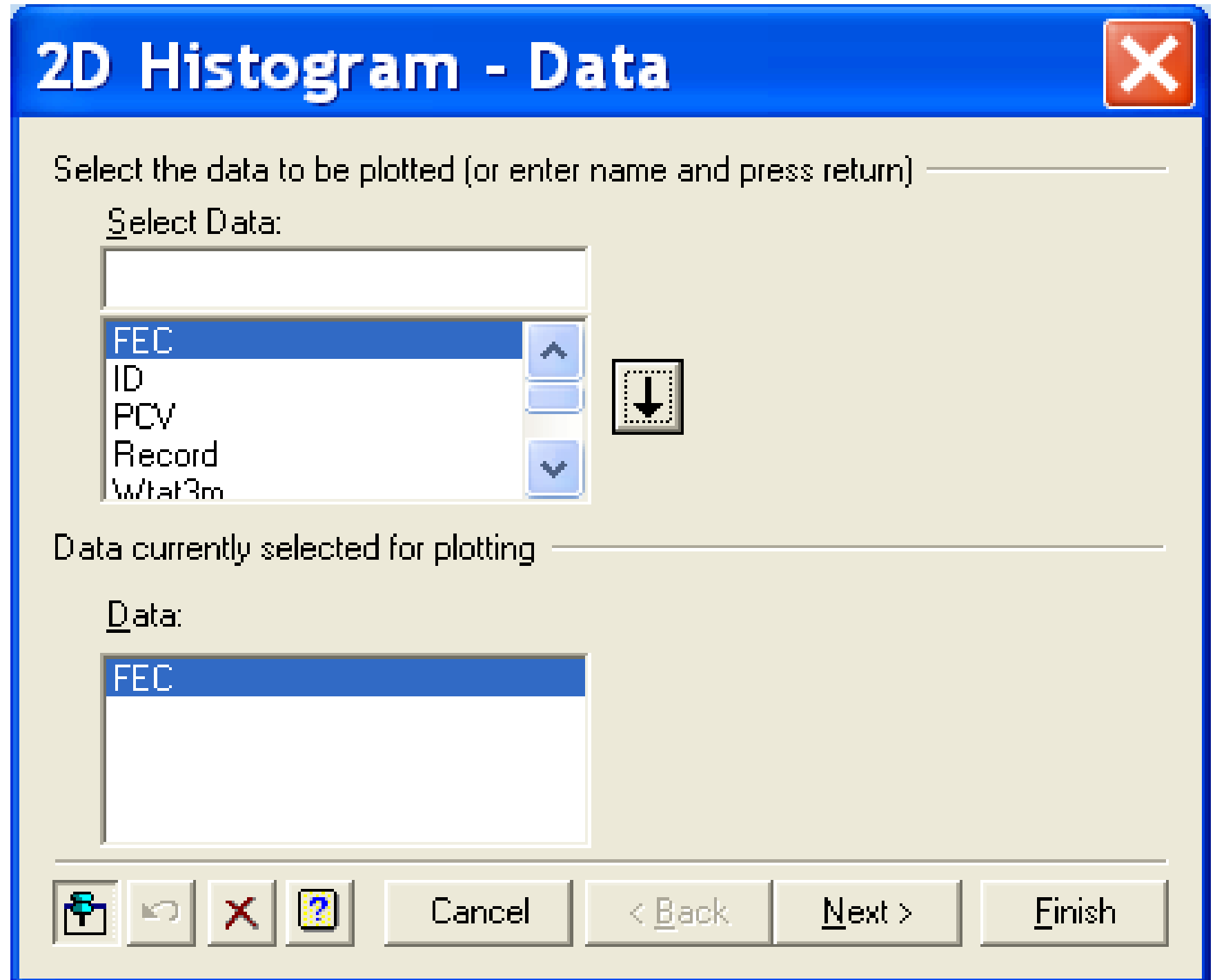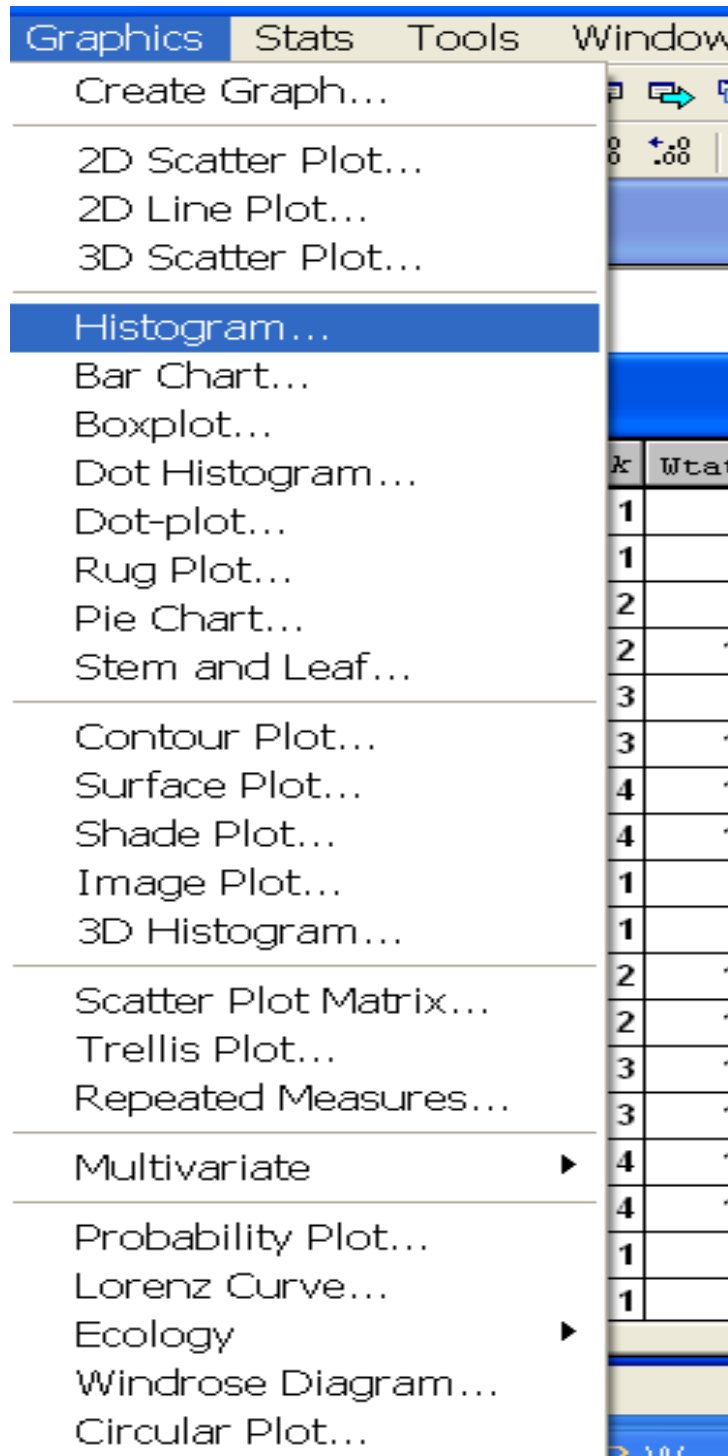
Factors (!)

Variables

Data Display Menu:

…

Data Display

Name	Type	A
Block	Factor	N
Breed	Factor	N
Sex	Factor	N
Supp	Factor	N
FEC	Variate	N
ID	Variate	N
PCVprc	Variate	N
Record	Variate	N
Wtat3m	Variate	N
Wtat6m	Variate	N
Wtgain	Variate	N

Data

All Data
Vectors
Matrices
Scalars
Tables
Pointers
Other Types

Options >>   Close   Help

Spreadsheet [DRM.gsh]

Row	Record	ID	Breed	Sex	Supp	Block	Wtat3m	Wtat6m	PCVprc	FEC	Wtgain
1	1	349	1	2	1	1	8	8.9	10	6500	0.9
2	2	326	1	2	1	1	9	10.1	11	2650	1.1
3	3	393	1	1	1	2	12	12.6	22	750	0.6
4	4	71	1	1	1	2	12.3	14.6	15	5200	2.3
5	5	271	1	1	1	3	13	13.7	19	4800	0.7
6	6	382	1	2	1	3	15.5	16.8	24	2450	1.3
7	7	85	1	2	1	4	16.3	18.2	27	200	1.9
8	8	176	1	2	1	4	15.9	17.7	21	3000	1.8
9	9	286	1	2	2	1	11	13.6	21	1600	2.6
10	10	183	1	1	2	1	9.9	11.7	21	450	1.8
11	11	21	1	2	2	2	11.6	13.1	25	2900	1.5
12	12	122	1	1	2	2	12.5	14.8	25	300	2.3
13	13	374	1	1	2	3	14.6	17.9	19	2250	3.3
14	14	32	1	2	2	3	14.2	16.9	22	2800	2.7
15	15	282	1	2	2	4	16.3	20.2	20	750	3.9

Exploring data

Graphics → Histogram

Boxplot

Graphics → Boxplot …
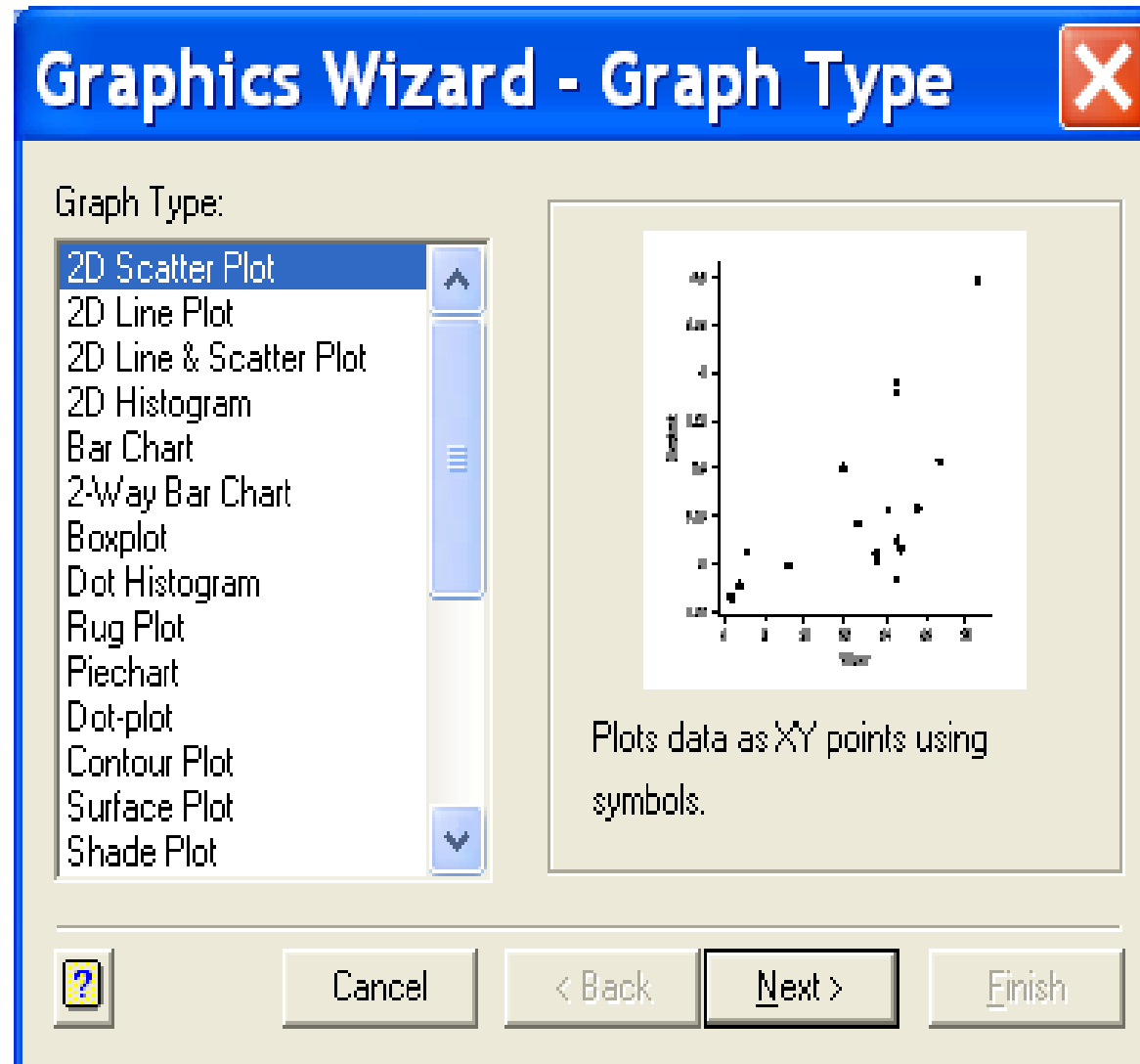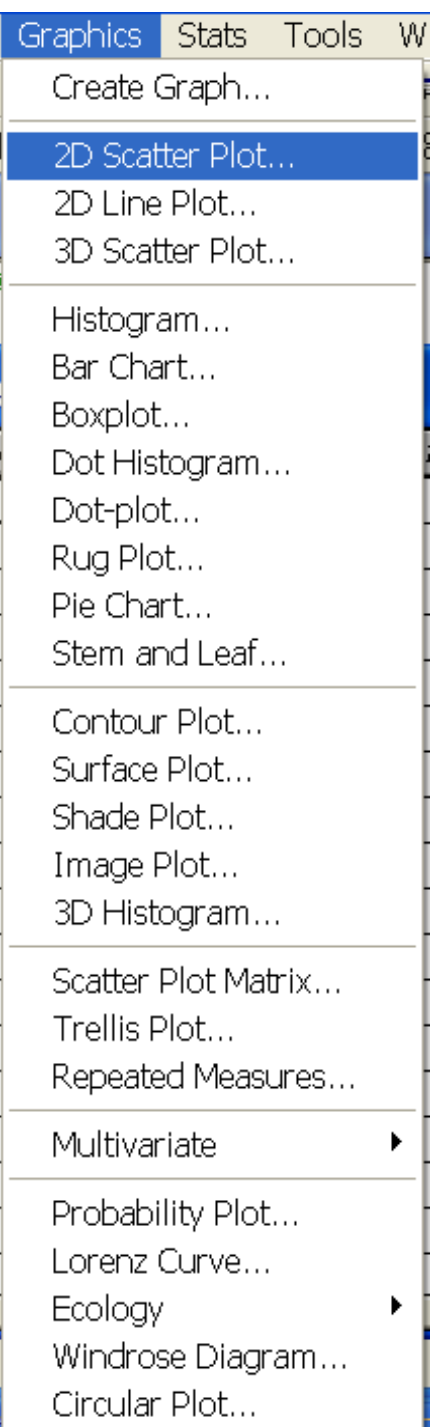
Scatterplot

Graphics → Graphics Wizard … then select desired graph here scatterplot

Summary statistics

Choose Stats → Summary Statistics → Summarise Contents of Variates.

Calculating columns

Spread → Calculate → Column

Group is the combined factor of breed and dietary supplement

Hypothesis Testing

Stat → Statistical Tests → One and two sample t-tests …

Result

Two-sample t-test

Variate: Wtgain
Group factor: Breed

Test for equality of sample variances

Test statistic F = 1.43 on 15 and 15 d.f.

Probability (under null hypothesis of equal variances) = 0.49

Summary

Sample	Size	Mean	Variance	Standard deviation	Standard error of mean
1	16	1.856	0.900	0.949	0.2372
2	16	2.481	1.290	1.136	0.2839

Difference of means: -0.625
Standard error of difference: 0.370

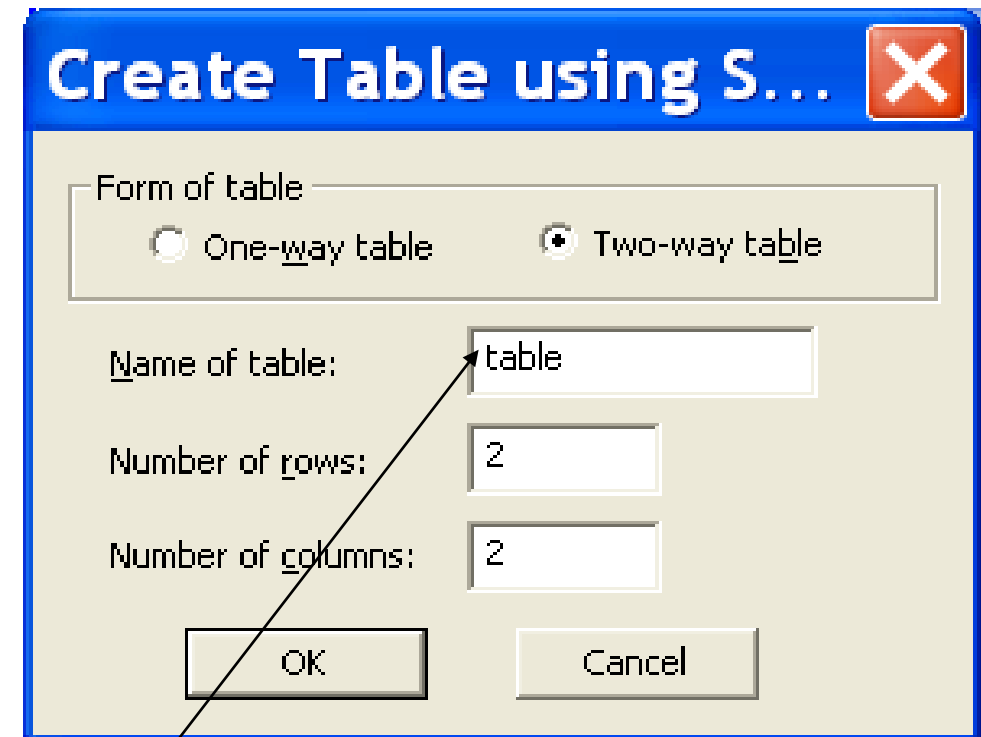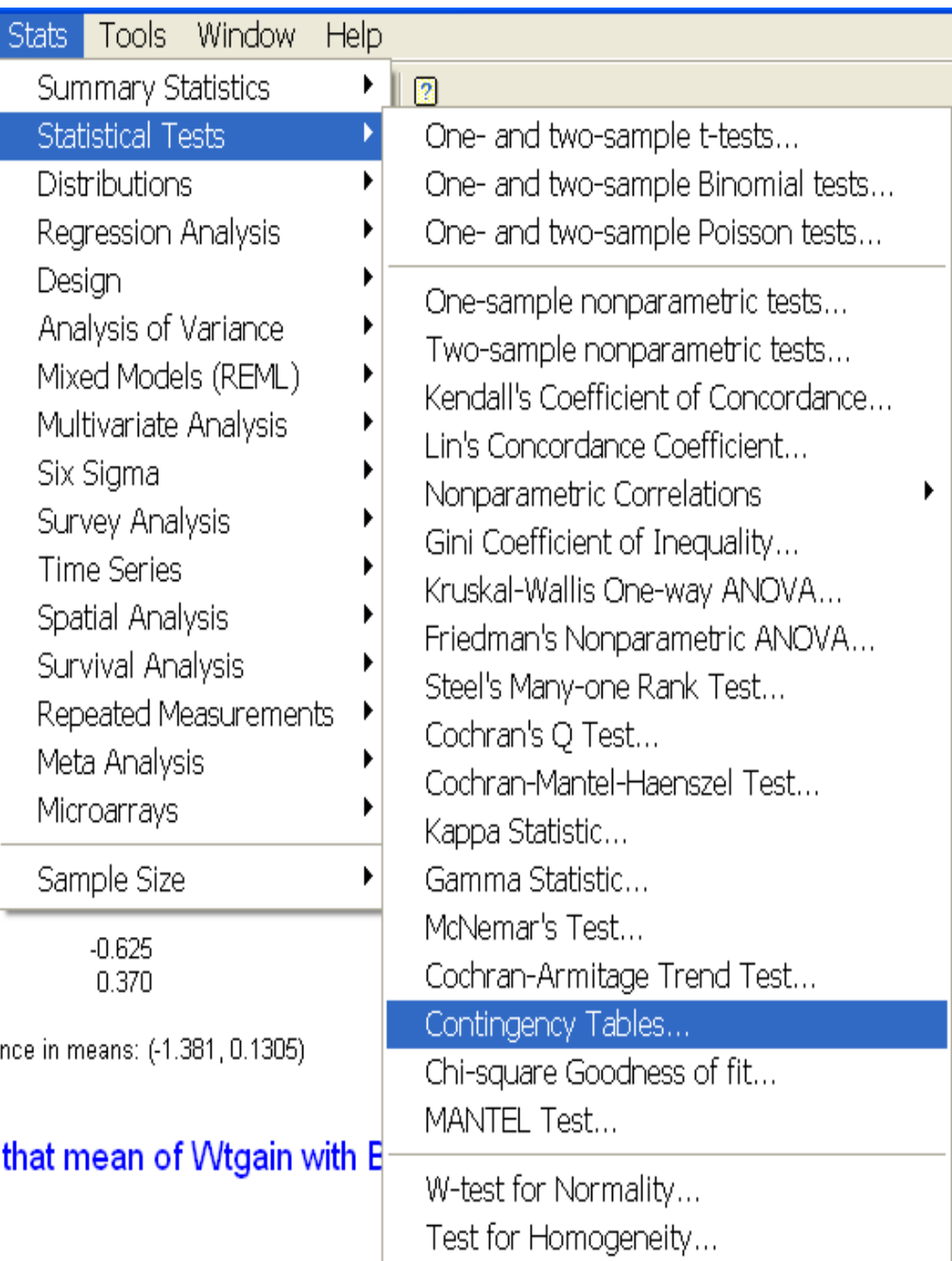95% confidence interval for difference in means: (-1.381, 0.1305)

Test of null hypothesis that mean of Wtgain with Breed = 1 is equal to mean with Breed = 2
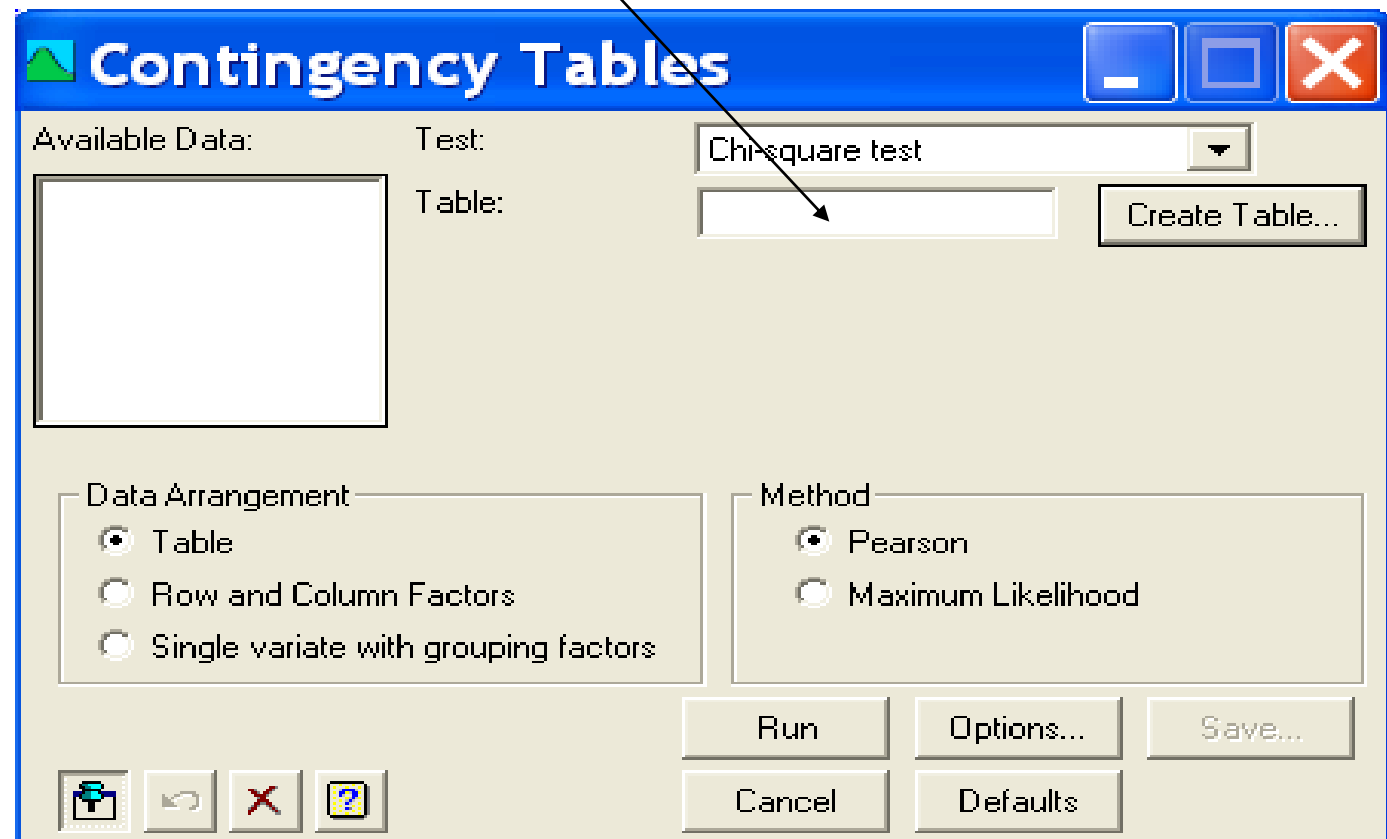
Test statistic t = -1.69 on 30 d.f.

Probability = 0.101

Chi-square Tests for Two-way Tables

Select **Stats** → **Summary Statistics** →
Summaries of Groups [Tabulation] … a
Summary by Groups

Create Tables

Correlation statistics

Select **S̲tats → C̲orrelations …**

Regression Analysis

Select **Stats** → **Regression Analysis** → **Linear Models …**
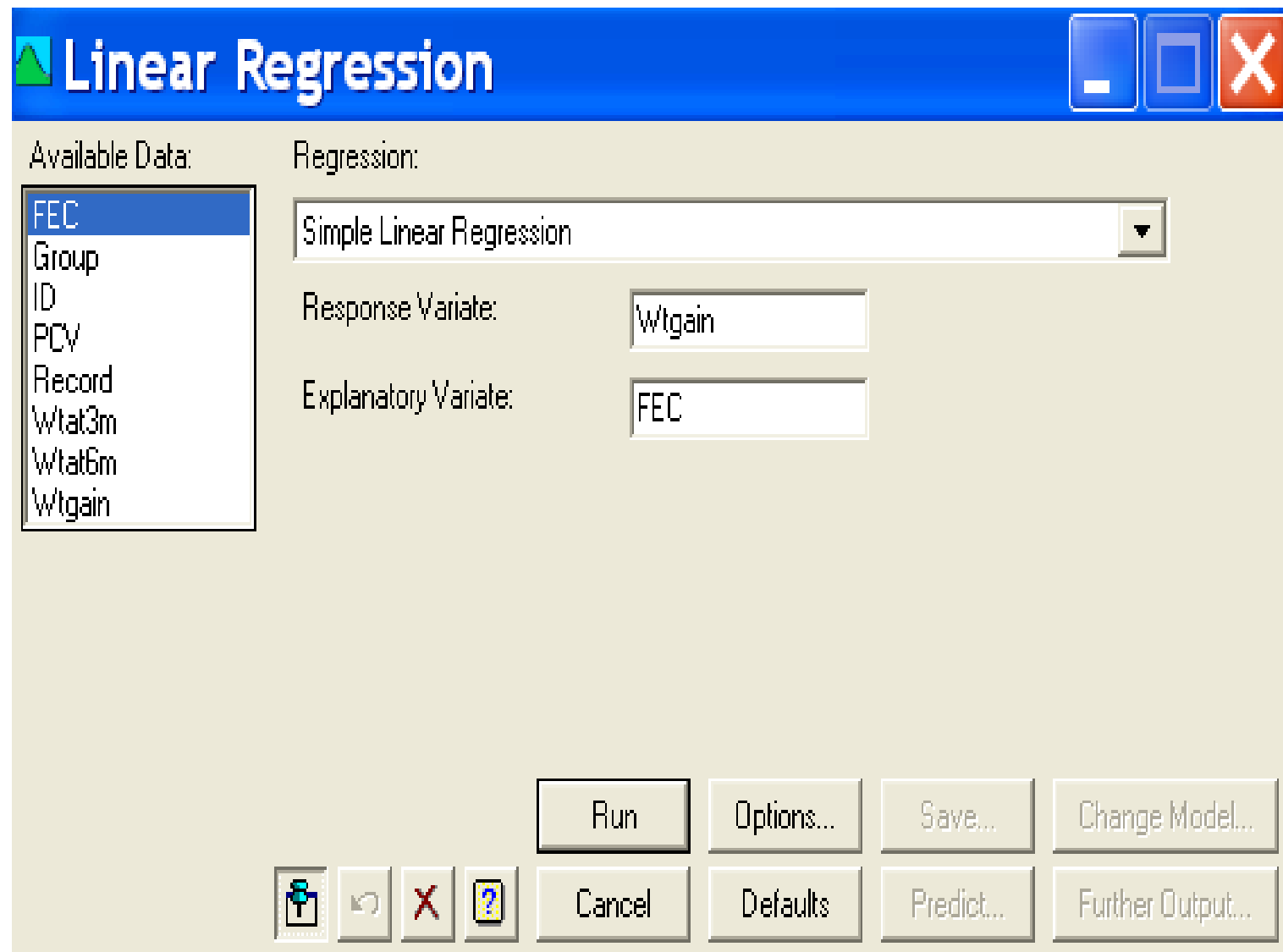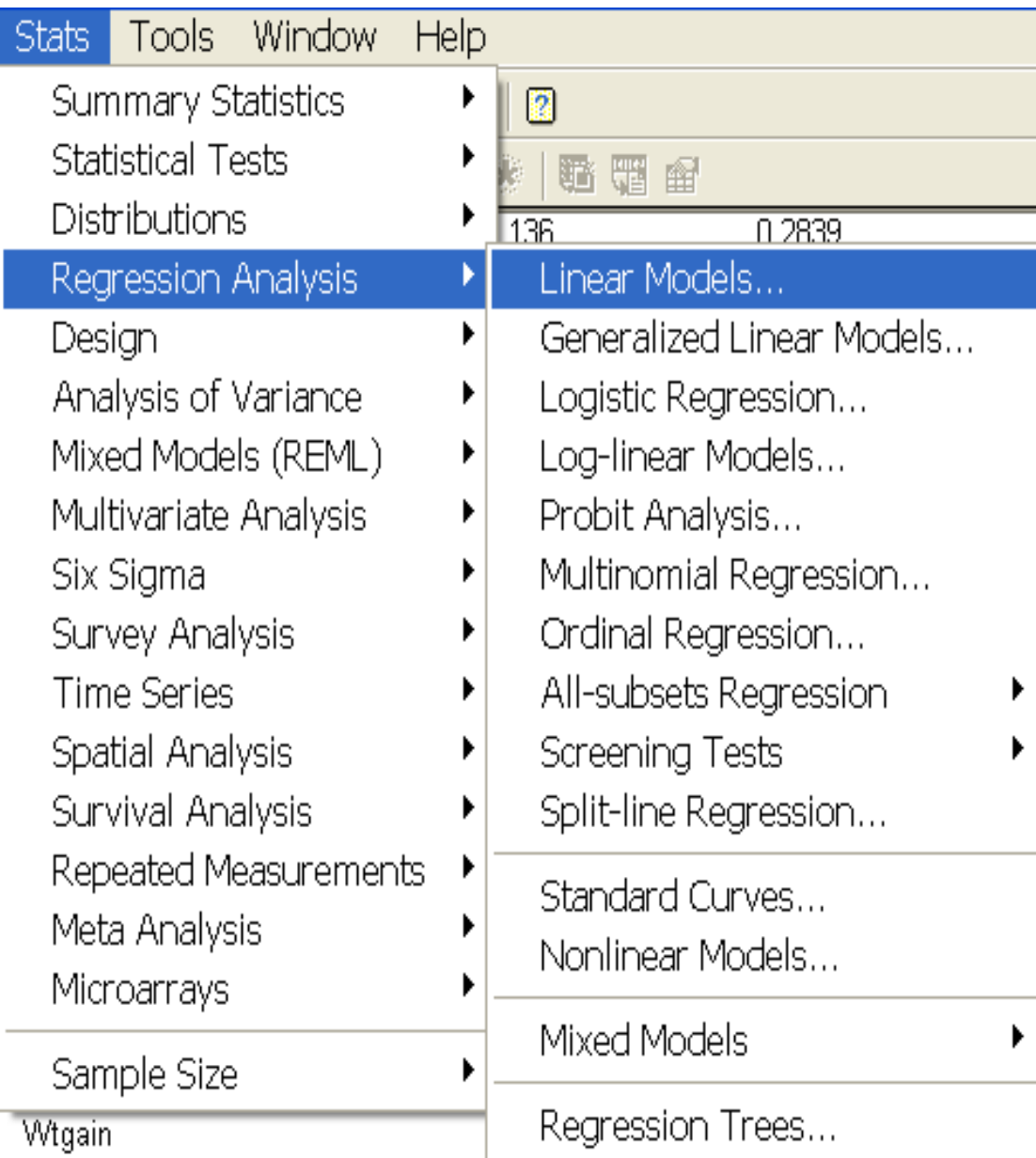
Regression Analysis

```
64  FIT [PRINT=model,summary,estimates; CONSTANT=estimate; FPROB=yes; TPROB=yes] FEC
```

Regression analysis

Response variate: Wtgain
    Fitted terms: Constant, FEC

Summary of analysis

Source	d.f.	s.s.	m.s.	v.r.	F pr.
Regression	1	4.41	4.405	4.19	0.050
Residual	30	31.56	1.052		
Total	31	35.97	1.160		

Percentage variance accounted for 9.3
Standard error of observations is estimated to be 1.03.
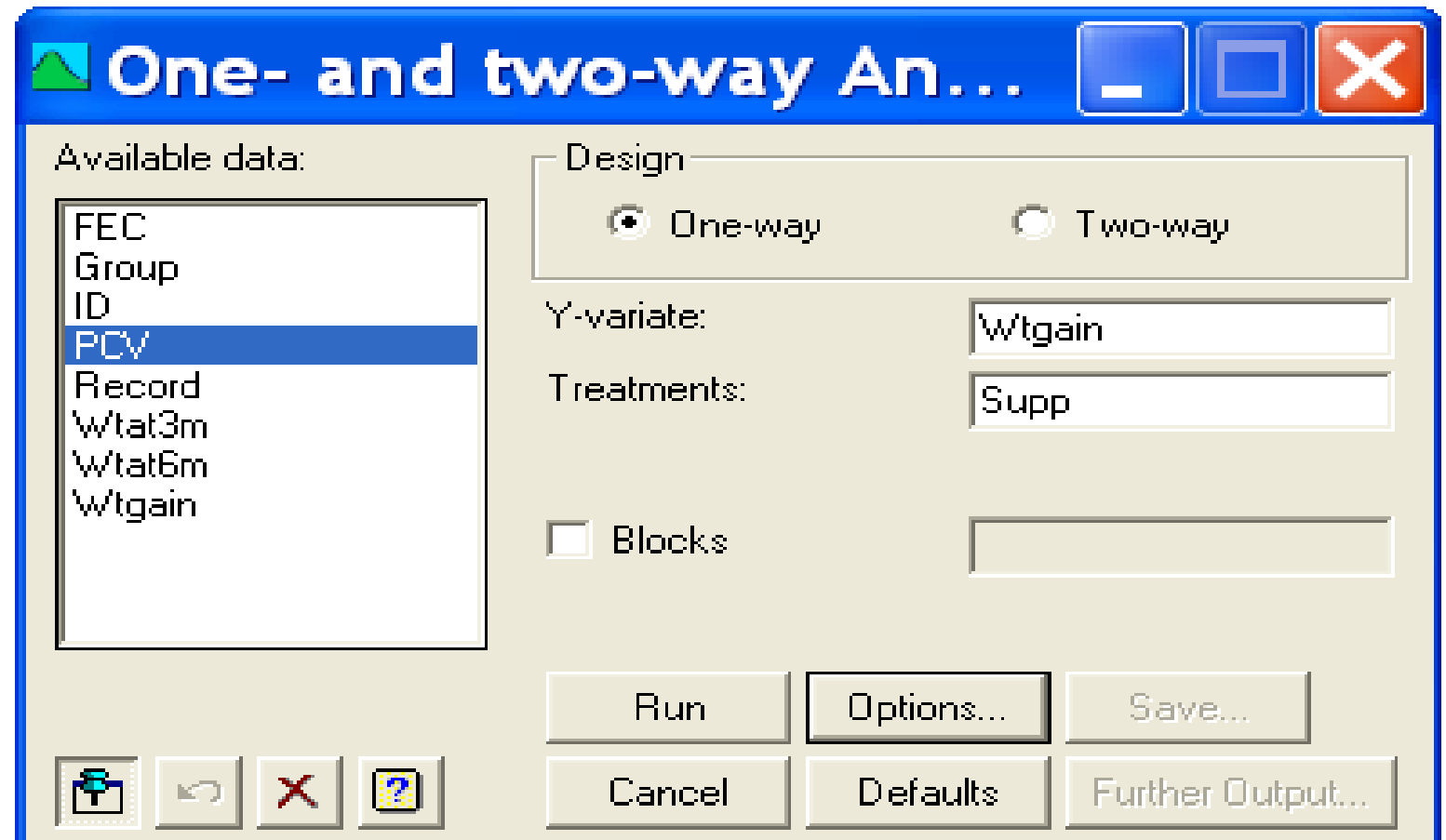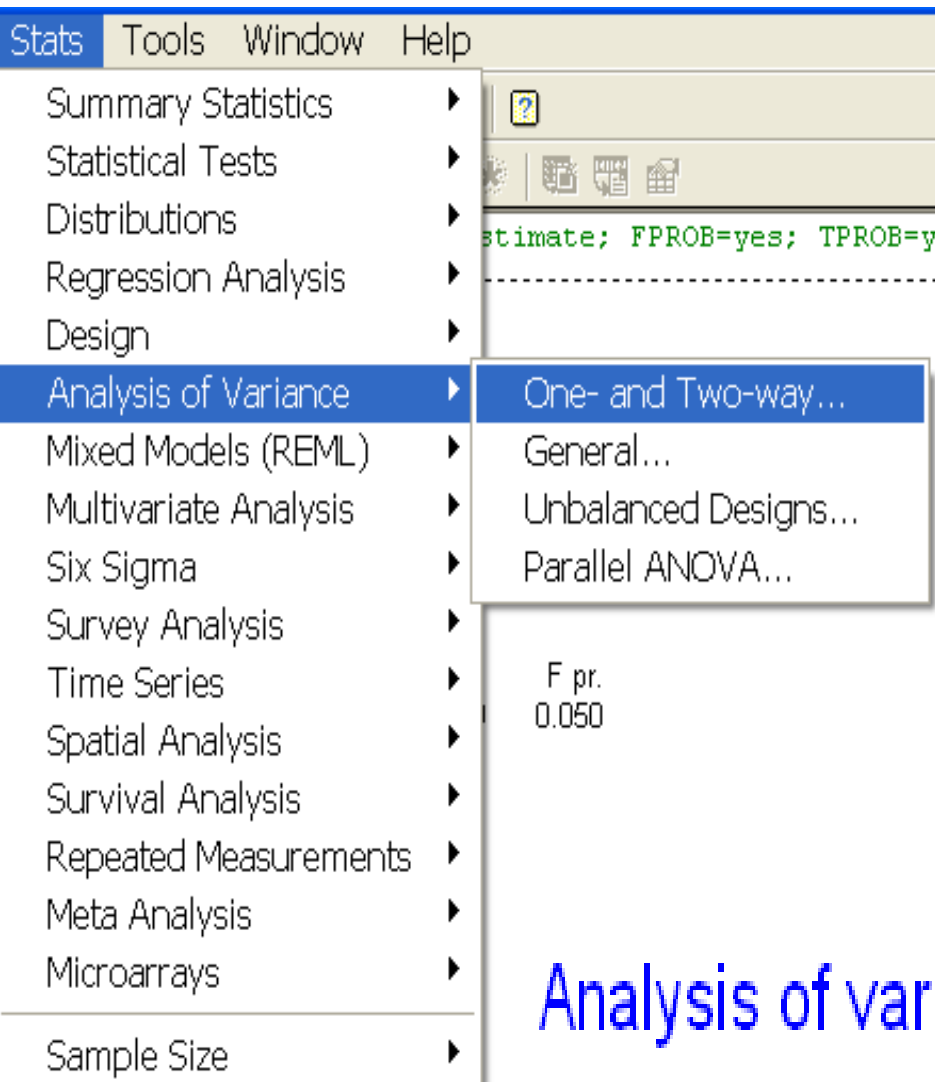
Message: the following units have high leverage.

Unit	Response	Leverage
1	0.90	0.285
4	2.30	0.165
5	0.70	0.135
16	1.00	0.198

Estimates of parameters

Parameter	estimate	s.e.	t(30)	t pr.
Constant	2.565	0.265	9.67	<.001
FEC	-0.000224	0.000109	-2.05	0.050

Analysis of Variance
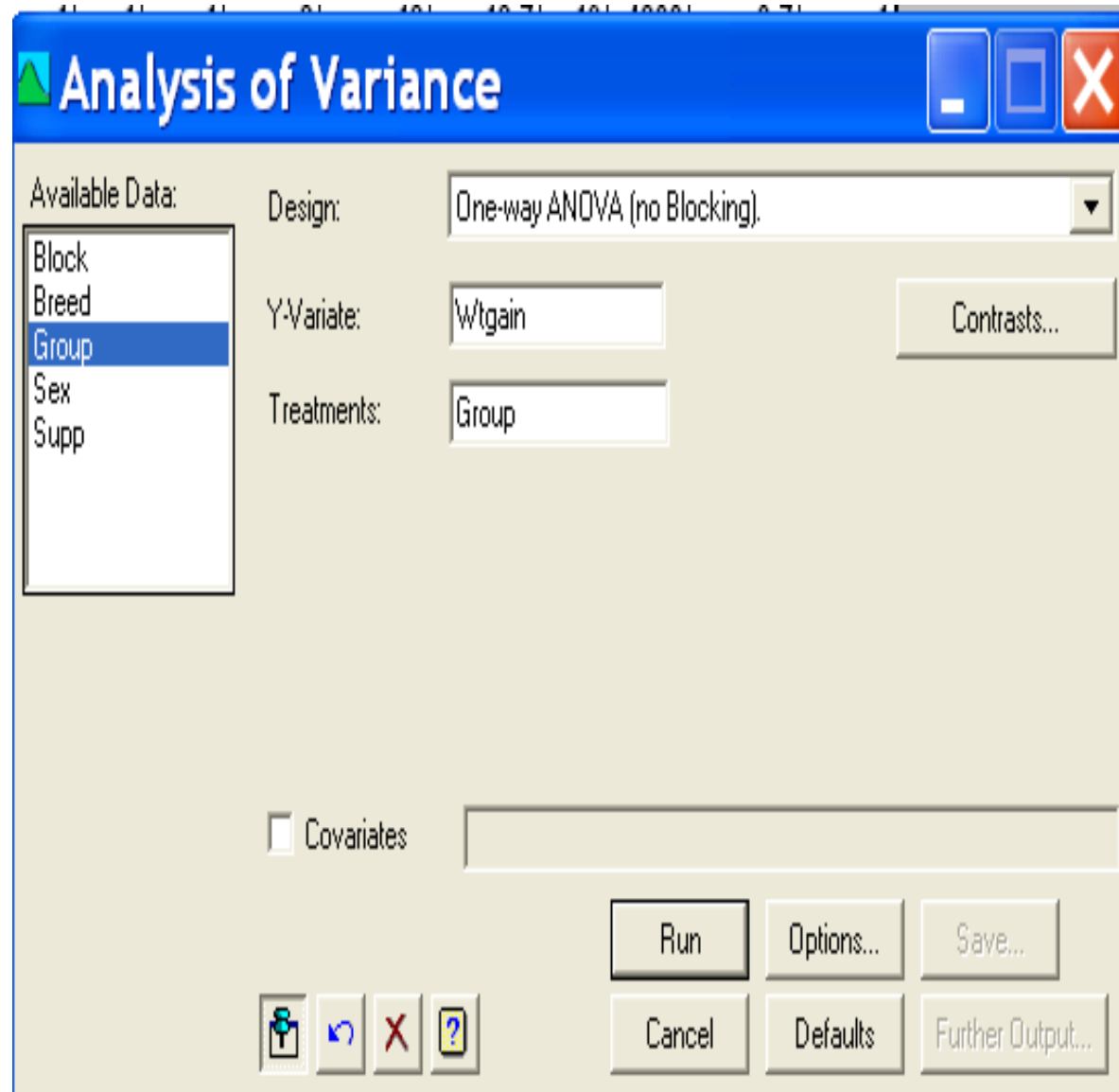
Select **Stats** → **Analysis of Variance …**

Variate: Wtgain

Source of variation	d.f.	s.s.	m.s.	v.r.	F pr.
Supp	1	18.6050	18.6050	32.14	<.001
Residual	30	17.3637	0.5788		
Total	31	35.9687			

Analysis of Variance

Select **S<u>t</u>ats** → **Analysis of Variance** → **General …**

Learning by yourself

Use the tutorial (see below) for guidance