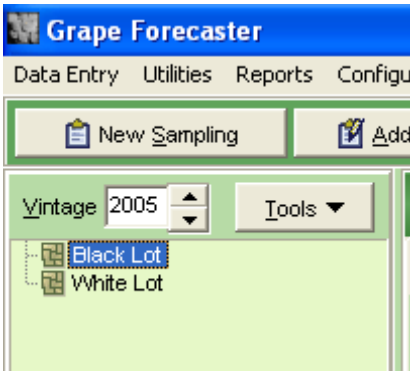
Chapter 3

Let's Start Sampling

Chapter contents

Setting up a Sampling

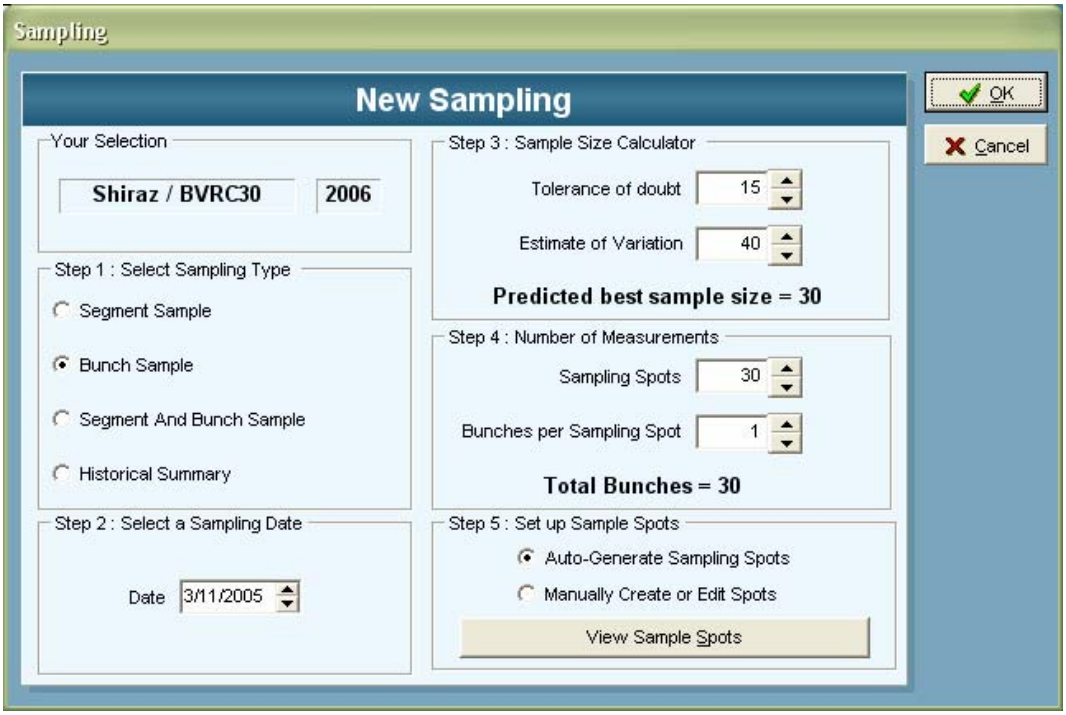


Step 1

Ensure you have selected the appropriate Vintage using the Vintage spinner buttons and the appropriate Lot or Patch from the list on the left of the screen.
If you don't see a list of Lots or Patches below the Vintage display, you must set up the Lots or Patches for that season. Go to *Configuration / Vintages Lots* or *Configuration / Vintage Patches* (if you are in "Patch Mode")

Step 2

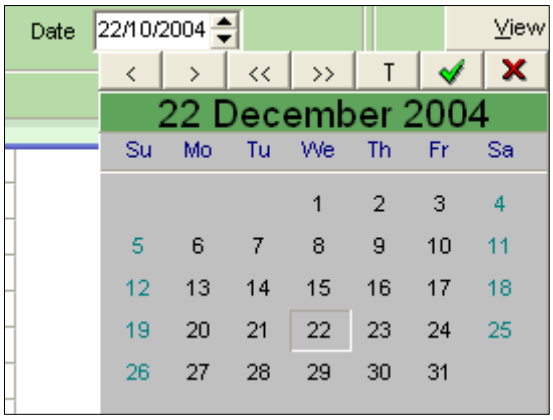
Click the New Sampling button to display the "Sampling" form:



Following the steps which you can see numbered on this form …

1. Select the sampling type … Segment, Bunch or Both or Historical Summary (we'll discuss the entry of Historial Summary data after the Segment and Bunch Sampling information has been covered … See Page) by clicking on the appropriate radio button.

2. Choose the sampling date (this is the “Scheduled Date” for samplings and the actual date if you are entering a Historical Summary record). The actual sampling date for your bunch or segment samplings will be entered later. To operate the special Date Selector used in Grape Forecaster you have several choices
   Double click your mouse, press the space bar or the F2 function key on your keyboard on the date edit cell to display a calendar:



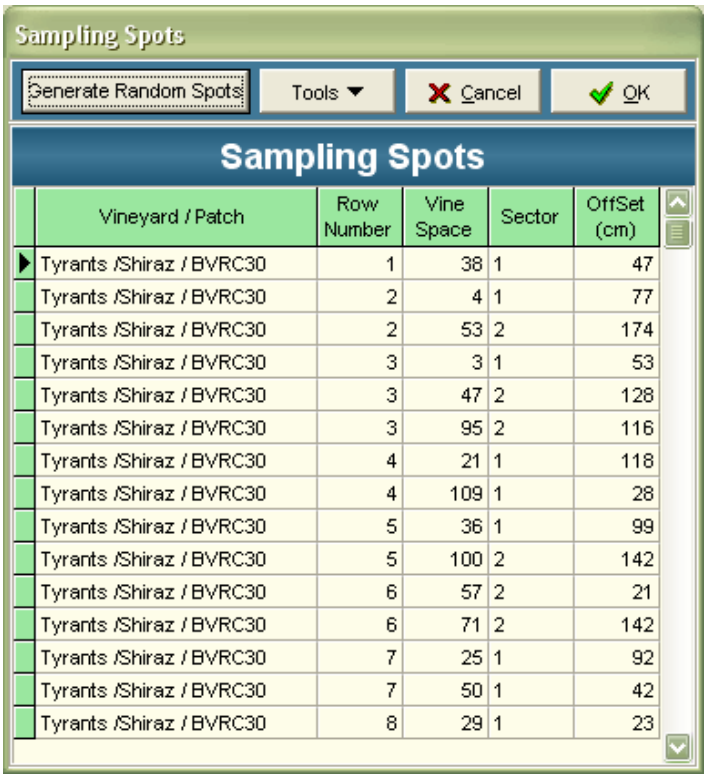
Use the “T” button to select today. Use the < & > buttons to move one month. Use the << & >> buttons to move one year. Click on the Tick button when done.

   Alternatively, you can change the date y using the small spinner buttons.
   When you first enter the date edit cell, the spinner buttons will operate the Day number … Up and Down one day.
   To operate the Month number, click your mouse on the Month section of the date and use the Up and Down spinners to change by one month.
   To operate the Year number, click your mouse on the Year section of the date and use the Up ad Down buttons to change the date by one year.
   Try experimenting with these functionalities to become familiar with them.

3. Now set your Tolerance of Doubt and estimate of Variation values.
4. Now choose the number of sample sites and (if you have chosen a “Bunch Sampling” enter the number of bunches per site.
5. Now you can choose to simply accept a randomly generated set of sampling spots or you can choose to manually set up

or manipulate a set of sampling spots. To view a randomly generated set of spots, click on the **View Sample Spots** button. If you choose "Manual Mode", the button label changes to **Set up/View Sample Spots.**

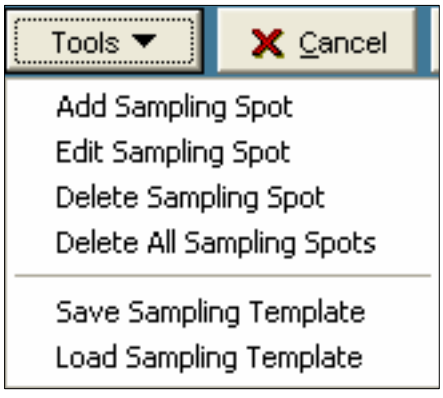
The Sample Spots screen looks like this…



Vineyard / Patch	Row Number	Vine Space	Sector	OffSet (cm)
Tyrants /Shiraz / BVRC30	1	38	1	47
Tyrants /Shiraz / BVRC30	2	4	1	77
Tyrants /Shiraz / BVRC30	2	53	2	174
Tyrants /Shiraz / BVRC30	3	3	1	53
Tyrants /Shiraz / BVRC30	3	47	2	128
Tyrants /Shiraz / BVRC30	3	95	2	116
Tyrants /Shiraz / BVRC30	4	21	1	118
Tyrants /Shiraz / BVRC30	4	109	1	28
Tyrants /Shiraz / BVRC30	5	36	1	99
Tyrants /Shiraz / BVRC30	5	100	2	142
Tyrants /Shiraz / BVRC30	6	57	2	21
Tyrants /Shiraz / BVRC30	6	71	2	142
Tyrants /Shiraz / BVRC30	7	25	1	92
Tyrants /Shiraz / BVRC30	7	50	1	42
Tyrants /Shiraz / BVRC30	8	29	1	23

Please Note: If you had chosen to use the Auto-Generated Spots and then click on the **View Sample Spots** button you will not see the **Generate Random Spots** and **Tools** buttons. They are only displayed for the "Manual Mode".

Manual Mode Options



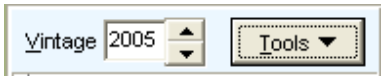
Click on the **Tools** button to display this menu.
The menu items enable you to manually override a set of randomly generated spots, or to create a completely new set of sampling spots.
If you have previously set up a sampling template you can choose it by selecting *Load Sampling Template.*
If you manually create a set of sampling spots and would like to save them as a template, choose *Save Sampling Template.*
No matter how you chose to set up the list of sampling spots, you are now ready to go sampling.

Step 3

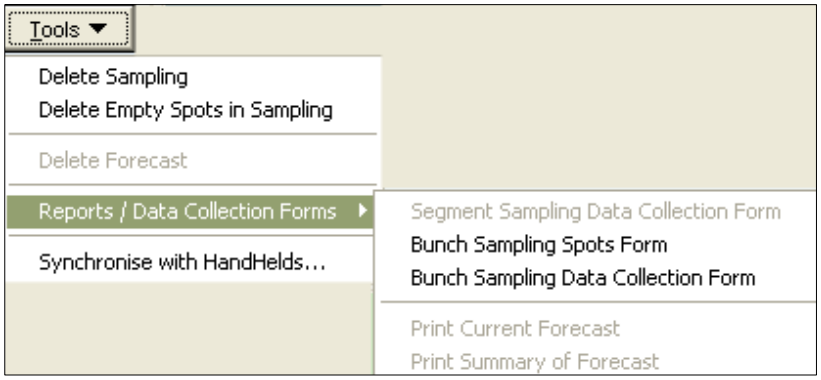
Your sampling task is now scheduled and the sampling spots have been set up.
You now have a choice of data collection methods:

1. Either print the sampling data entry forms so you can take them to the vineyard for data collection or…
2. Transfer the tasks to the "Grape Sampler" program on either a Palm or PocketPC computer.

To either print out the sampling data entry forms or transfer the sampling tasks to a handheld computer click on the **Tools** button



To display this menu …



Apart from enabling you to generate sampling forms and transfer data to and from handheld computers, the **Tools** menu options enable you to delete samplings, remove sampling spots that have no associated data and delete unwanted forecast records.

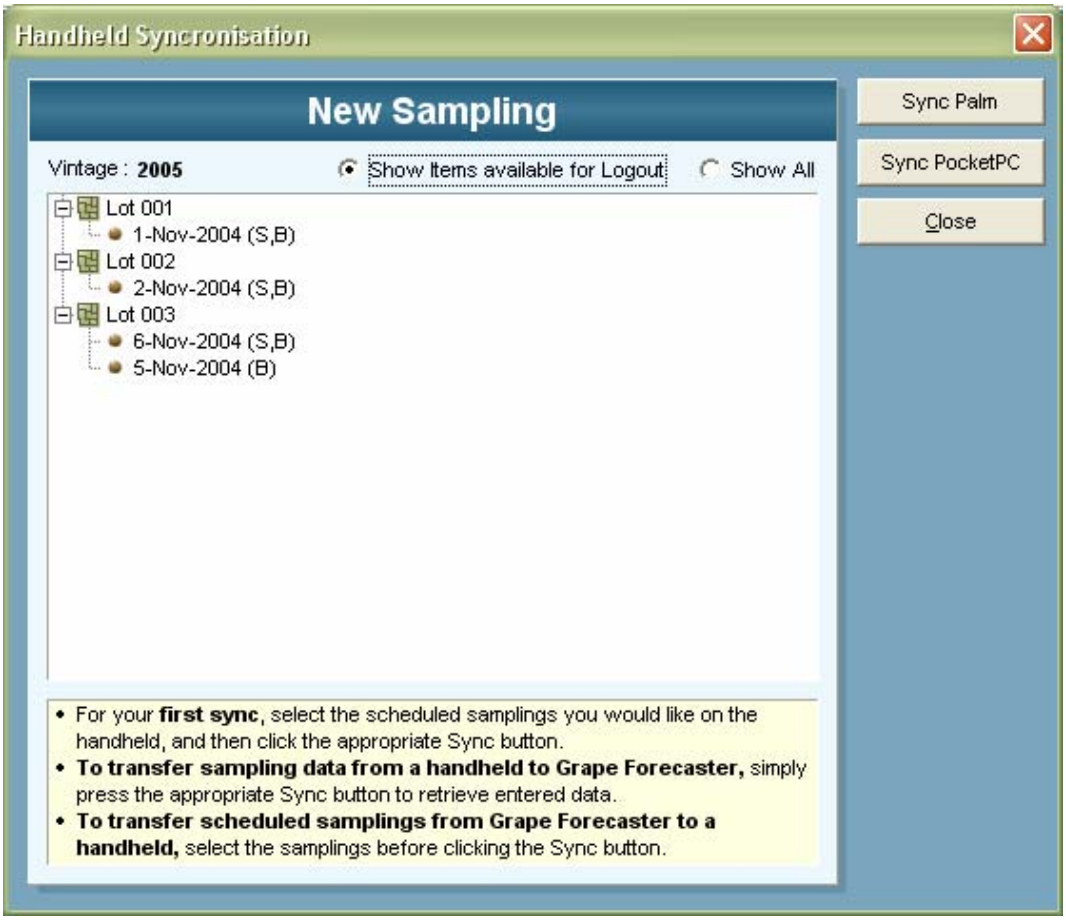
Data Collection Forms

If you are performing a Segment sampling, print the *Segment Sampling Data Collection Form.*
If you are performing a combined Segment and Bunch sampling, you should print the *Segment Sampling Data Collection Form* for the Segement sampling task and the *Bunch Sampling Data Collection Form* for entering the bunch data (Grams, Normal Berries etc)
If you are performing just a Bunch samplijng taks, you will need to print out the *Bunch Sampling Spots Form* to guide you to the

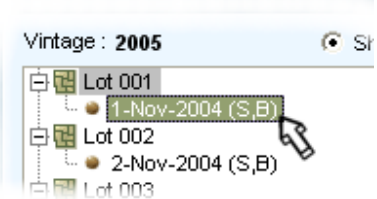
appropriate vine sapces in the vineyard and the *Bunch Sampling Data Collection Form* for entering the bunch data (Grams, Normal Berries etc).

Transfer Data to Grape Sampler

To transfer the sampling tasks to Grape Sampler on a handheld computer, select *Tools / Synchronise with Handhelds...* to display this form:



The screen will only display samplings that are avaiable for transferring to a handheld computer. Samplings that have already been completed or which have already been transferred to another handheld will not be displayed. To see all samplings, select the "Show All" option.



To select scheduled samplings to transfer to your handheld computer, simply click your mouse on them.

Please Note: Due to memory contraints in handheld computers, there is a restriction on the number of samplings (5) that can be sent to your handheld computer.

Having selected the scheduled samplings, simply click on the appropriate **Sync** button to transfer the jobs to your handheld.

Samplings already sent to a handheld

To check who has transferred samplings to Grape Sampler on a handheld, click on the "Show All" options. If a situation arises where you need to re-transfer samplings to a handheld or another handheld you can choose those samplings again.

To retrieve data from a handheld, simply connect your handheld to the Grape Forecaster computer and click the **Sync** button.

Data which has been transferred to Grape Sampler on a handheld will have precedence over the data on the Grape Forecaster computer … meaning, when transferring data from a handheld to Grape Forecaster the program will look for the sampling on Grape Forecaster and replace any sampling data with the incoming Grape Sampler data.

If for some (unlikely) reason a sampling that has been transferred to Grape Sampler on a handheld has been deleted in Grape Forecaster, the data on the handheld will be also be deleted rather than an attempt made to retrieve it.

Manually Entering and Editing data

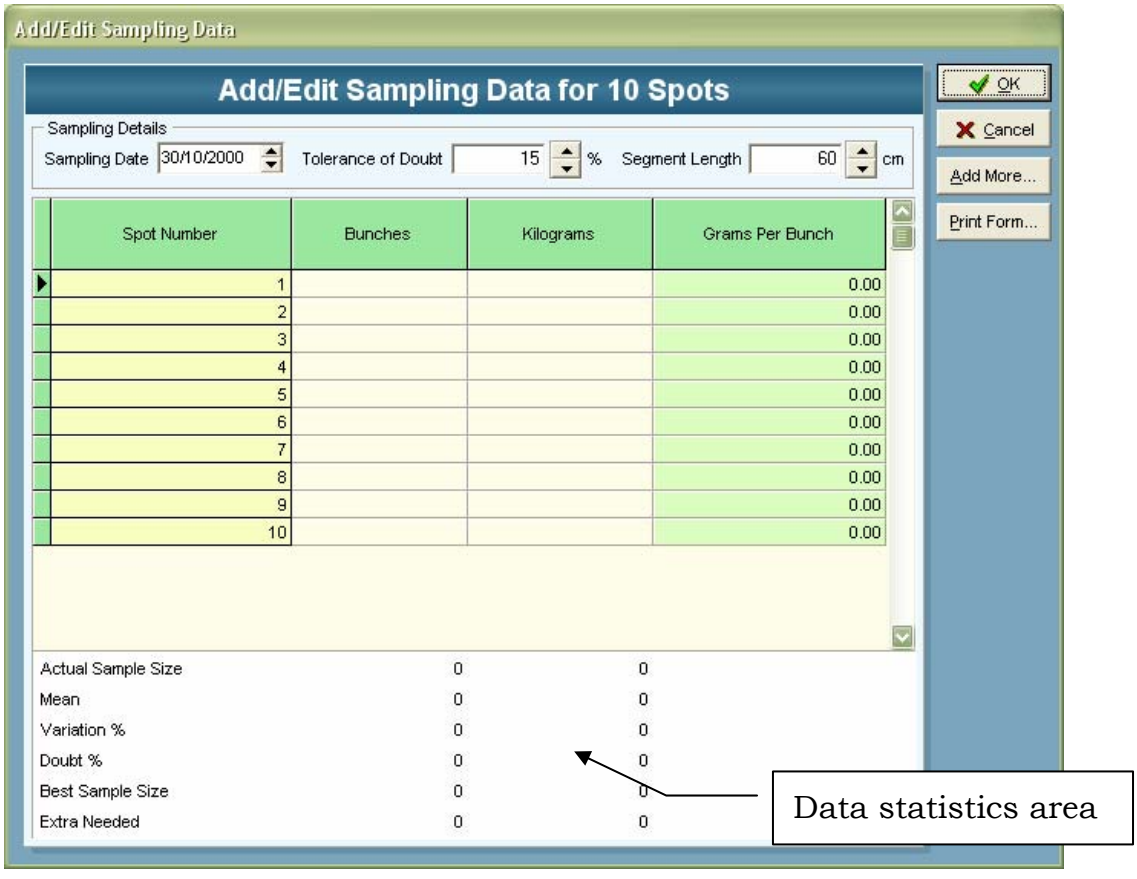
There are four basic types of measurement that can be entered in Grape Forecaster:

- Measurements of each Segment in a sample
- Measurements of each Bunch in a sample
- Actual production
- Historical summaries

If you click on the **Add / Edit data** button will see one of four different windows, depending on the type of sampling that you have selected from the sample list.

Entering and editing segment measurements

If you have selected a sampling of segment measurements, and you click on the **Add / Edit data** button, you will see a window that looks like this:



The number of rows available for data entry will match the number of segments you have scheduled to be measured.

Click on Sample Date and specify the actual day of sampling. In practice, the actual date could be different to the scheduled date. A comparison of the two could be useful when analysing operational performance.

The default segment length is 60 cm and the default tolerance of doubt is 15%. These can be changed by typing in the number you want or using the spin buttons. Each sampling of segments can have any segment length from 1 to 32000 cm.

Grape Forecaster accepts two types of measurement of segments:

- A count of the number of bunches in a segment
- A weight (in kilograms) of fruit picked from a segment

Other types of data for each segment can be calculated from these measurements.

The columns in the segment measurements data entry/edit are described in this table:

Column	Type	Contents
Spot Number	Information	Identification numbers that correspond to the sampling and recording form
Bunches	Data entry/edit	Counts of the number of bunches in each segment
Kilograms	Data entry/edit	Total weights (in kilograms) of all bunches picked in each segment
Bunch grams	Calculated	Mean weight/bunch (grams) of bunches picked and counted in each segment

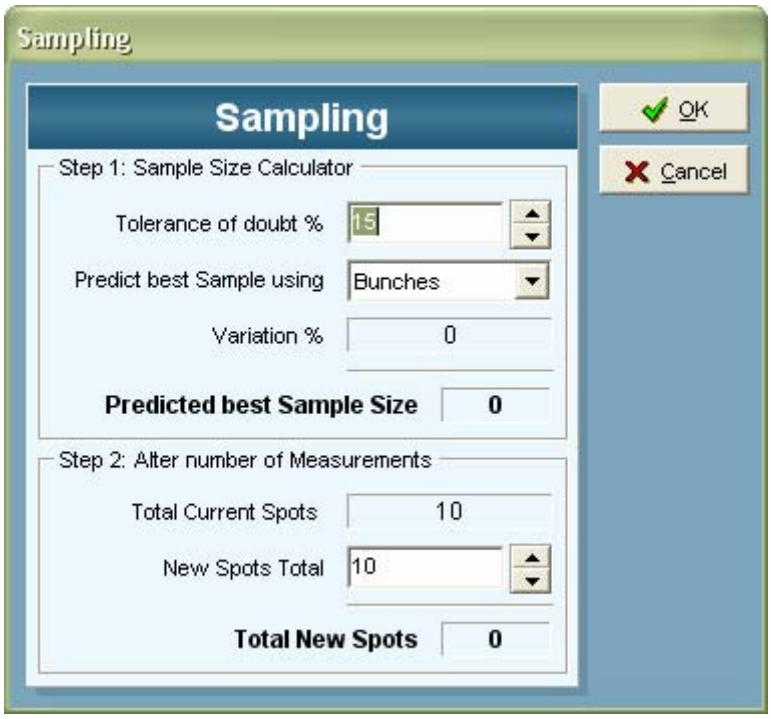
To enter data, position the cursor in a cell and type a number.

If no numbers have been entered, the the Data Statistics area of the window will disply zeros. As you enter more numbers, the statistics recalculate for the column that you are working in.

When you have entered all the data available for the sampling, you can check whether the sample size was adequate to meet your tolerance of doubt.

Scheduling an addition to a sample of segments

If you wish to schedule an addition to a sample of segments, click on the "Add More" button (you can do this at any time, regardless of the statistical calculations and messages). You will see a window like this:



The number of sampling points already set up and the estimate of the variation will vary depending on what you have scheduled and the variability of the data you have entered.

If you click on the **Cancel** button at this stage, no additional sampling points will be scheduled and you will be returned to the Segment measurements data entry window.

You can experiment with changes to your tolerance of doubt, if you wish.

To schedule an addition of sampling points, click on the **OK** button. You will notice that extra rows will have been added to the

Add/Edit window. The new sampling spots are re-randomised over the whole Lot.

The printed form will also include the new sampling points, re-randomised over the whole Lot. These will be appended to the previously-scheduled sampling points. To view the printable data collection form, click on the **Print Form** button.

The data that you previously entered will also be printed in the row corresponding to its sampling point. This indicates the sampling points that have already been measured, so that the people who make the measurements can know where they have already been and where they need to measure now.

Whether you decide to print out the form at this stage or later, you can return to the Segment measurements data entry window.

Entering additional data

The available number of cells will increase to match the total scheduled sample size.

Enter the additional data. The statistics will recalculate as you go.

If the Best Sample Size still exceeds the actual sample size, the number of additional segments needed will remain. You can then choose to add more sampling points or accept more doubt around the estimate of the mean from the sample than your tolerance.

Printing entered segment measurements

To print out any set of segment measurements:

1. If the Add/Edit Data window click on the Print Form button... or
2. On the main screen, ensure you have the appropriate Vintage and Lot selected then choose *Tools / Reports / Data Collection Forms / Segment Sampling Data Collection Form*

The print out of the segment measurements is presented in an identical format to the sampling guide, with data that has been entered printed in the recording boxes corresponding to the addresses of the sampling points.

Exercise 7: Entering and editing segment measurements

1. Ensure you are using the Demonstration Data (access this via *Utilities / Switch to Demonstration Data)*
2. Select the "Data exercise" Lot in the 2001 season.
3. Select the sample called "30-Oct-2000 (S)" and click on the **Add/Edit data** button.
4. Enter 30-Oct-2000 as the actual day of sampling.
5. Experiment with changing the segment length and tolerance of doubt if you wish, but accept the default segment length of 60 cm and tolerance of doubt of 15%.
6. Enter this data:

Segment	Bunches
1	13
2	14
3	11
4	4
5	2
6	13
7	8
8	11
9	2
10	13

7. Check whether the sample size was adequate to meet the tolerance of doubt.
8. Add 10 more sampling points to bring the total up to 20 (experiment with changes to tolerance of doubt, if you wish).
9. Note the increase of available entry rows to 20 and enter this additional data:
10. Print out the new form and have a look at it.

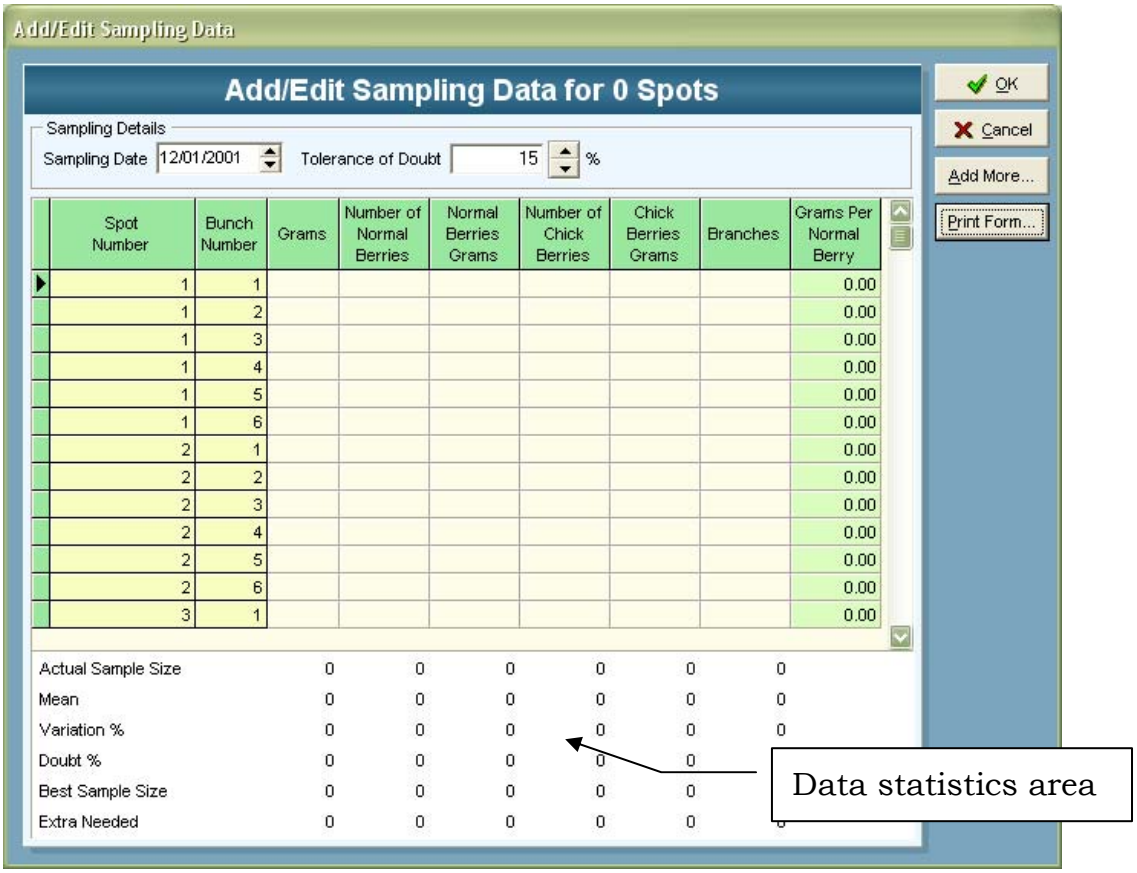
Segment	Bunches
11	14
12	10
13	6
14	10
15	5
16	10
17	8
18	12

19	10
20	11

11. Check the adequacy of the sampling but do not add any more sampling points.

Entering and editing bunch measurements

If you have selected a sampling of bunch measurements, and you click on the **Add/Edit Data** button, you will see a window that looks like this:



The number of rows available for data entry will match the number of bunches you have scheduled to be measured.

Click on the Sampling Date and specify the actual day of sampling. As with segment mesurements, the actual date could be different to the scheduled date and a comparison of the two could be useful.

Grape Forecaster accepts six types of measurement of bunches:

- The weight of whole bunch
- A count of berries regarded as “normal”
- The total weight of all “normal” berries (removed from stalk)
- A count of berries regarded as “small” (e.g. “chickens”)
- The total weight of all “small” berries (removed from stalk)

- A count of primary branches on the bunch stalk

Other types of data for each bunch can be calculated from these measurements.

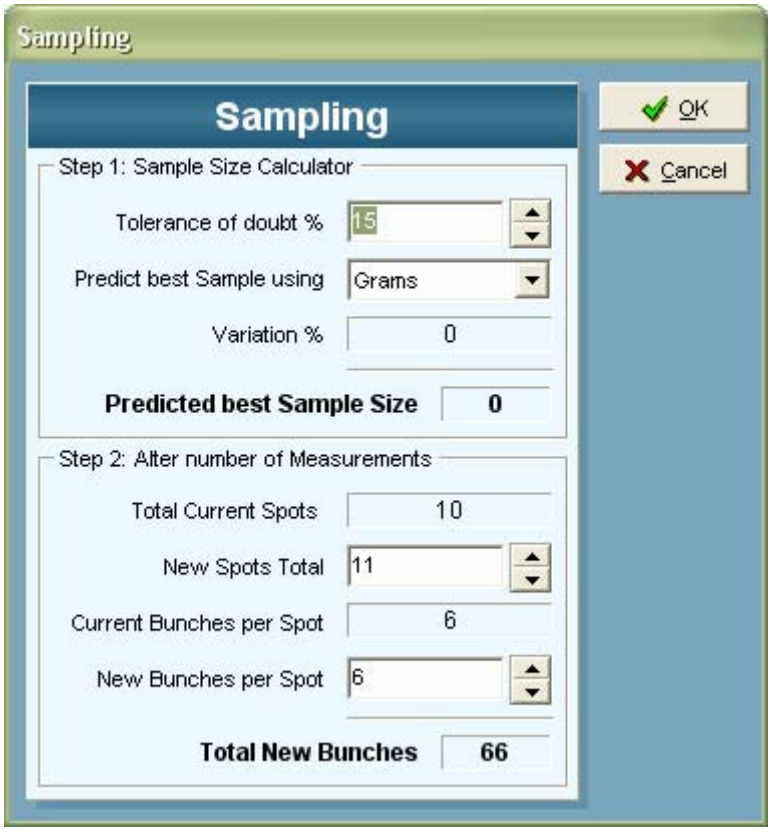
The columns in the "Bunch characteristics entry" window are described in this table:

Column	Type	Contents
Bunch	Information	Serial identification numbers of each bunch
Bunch grams	Data entry/edit	Weight of whole bunch
Normal berries	Data entry/edit	Count of berries regarded as "normal"
Normal grams	Data entry/edit	Total weight of all "normal" berries (removed from stalk)
Chick berries	Data entry/edit	Count of berries regarded as "small" (e.g. "chickens")
Chick grams	Data entry/edit	Total weight of all "small" berries (removed from stalk)
Branches	Data entry/edit	Count of primary branches on the bunch stalk
Grams/Bunch	Calculated	Mean weight/berry (grams) for each bunch (whole bunch weight per counted normal berry)

To enter data, position the cursor in a cell and type a number. The Statistics area of the window works the same as the "Segment measurements" window (see above).

Scheduling an addition to a sample of bunches

If you wish to schedule an addition to a sample of bunches, click on the **Add More** button (you can do this at any time, regardless of the statistical calculations and messages). You will see a window like this:



This is the same window that you used to schedule the sampling initially. However, there are some differences:

- the numbers of sampling spots and bunches per spot that have already been set up are displayed
- you cannot specify less than these numbers in the "Number of measurements" box
- the estimate of variation in the Sample size calculator should be derived from the data in which the cursor was positioned in the "Bunch characteristics entry" window

The number of sampling points already set up and the estimate of the variation will vary depending on what you have scheduled and the variability of the data you have entered.

If you click on the Cancel button at this stage, no additional sampling points will be scheduled and you will be returned to the data entry window.

You can experiment with changes to your tolerance of doubt, if you wish.

To schedule an addition of sampling points, click on the **Add More** button and increase the number of sampling points in a similar way to adding sampling points to a sampling of Segments (see above).

To schedule an addition of bunches per sampling point, click on the New Bunches Per Spot spinner buttons and increase the number of bunches per sampling spot.

If you were to now choose **Print Form** you would see that the printed form includes the new sampling points, re-randomised over the whole Lot.

Entering additional data

The available number of cells will increase to match the total scheduled sample size.

Enter the additional data. The statistics will recalculate as you go.

If the Best Sample Size still exceeds the actual sample size, the number of additional segments needed will remain. You can then choose to add more sampling points or accept more doubt around the estimate of the mean from the sample than your tolerance.

Exercise 8: Entering and editing bunch measurements

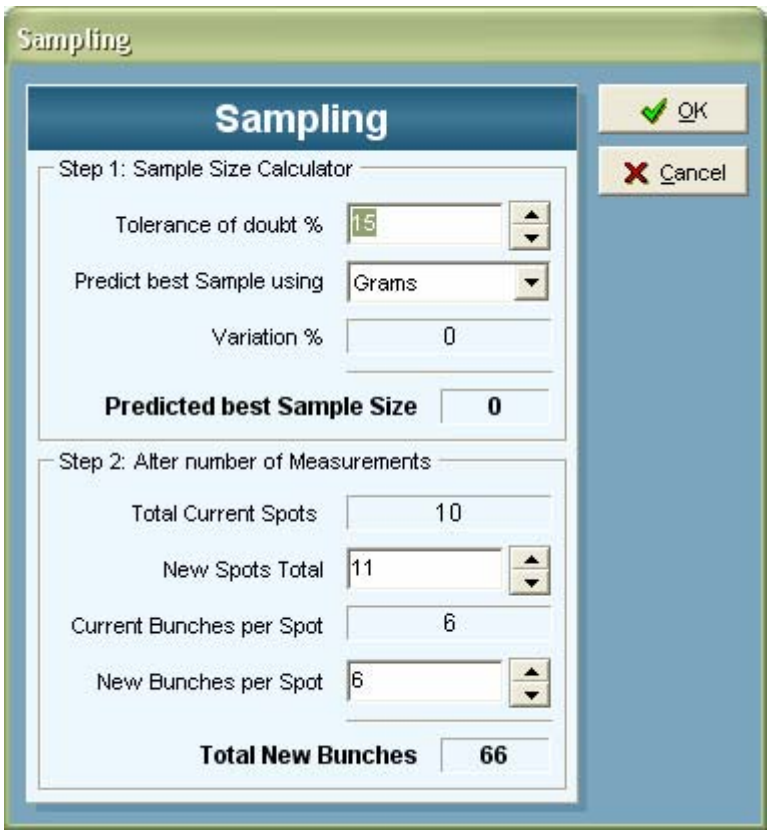
1. Ensure you are using the Demonstration Data (access this via *Utilities / Switch to Demonstration Data)*
2. Select the "Data exercise" Lot in the 2001 Vintage.
3. Select the sample called "12-Jan-2001 (B)" and click on the **Add/Edit Data** button (or Double click on the data grid on the main screen)
4. Specify 12-Jan-2001 as the actual day of sampling.
5. Experiment with changing the tolerance of doubt if you wish, but accept the default of 15%.
6. Enter this data:

Bunch	Bunch grams	Normal berries	spacing	Bunch	Bunch grams	Normal berries
1	46	98		31	55	62
2	127	136		32	60	60
3	38	77		33	69	81
4	17	28		34	12	20
5	26	56		35	4	4
6	81	96		36	44	49
7	53	72		37	80	106
8	24	65		38	7	9
9	10	45		39	4	5
10	24	21		40	55	59
11	144	107		41	61	49
12	24	43		42	15	29
13	23	18		43	55	69
14	38	69		44	5	10
15	37	37		45	54	72
16	72	71		46	207	171
17	49	45		47	32	63
18	46	27		48	40	75
19	5	7		49	100	83
20	63	81		50	84	73
21	10	17		51	67	86
22	52	104		52	14	27
23	21	37		53	33	53
24	71	118		54	44	42
25	33	72		55	32	45

26	59	78
27	18	32
28	6	2
29	26	42
30	42	54

56	78	76
57	41	54
58	51	78
59	26	37
60	13	14

7. Check whether the sample size was adequate to meet the tolerance of doubt.



8. Click on the **Add More...** button to add 1 more sampling point to bring the total up to 11 [if it was available you could experiment with changes to tolerance of doubt, if you wished].
   To add one more sampling spot, simply use the spinner button to change the sampling spots from 10 to 11.

   Click the OK button to return to the data entry window... Note that the number of sampling spots has increased and you now have 66 bunch data entry rows.

Bunch	Bunch grams	Normal berries
61	46	27
62	52	104
63	33	53
64	26	37
65	55	69
66	207	171

9. Print out the new form and have a look at it using the **Print Form...** button.

10. Now click **Close** to return the data entry window.

11. Check whether the sample size is now adequate to meet the tolerance of doubt.
12. Use the **Add More...** button to add add 1 extra bunch per sampling spot to bring the total up to 7 [if it was available you could experiment with changes to tolerance of doubt, if you wished]. Use the
13. Note the increase of available entry rows to 77 and enter this additional data:

Bunch	Bunch grams	Normal berries
67	26	42
68	5	10
69	46	98
70	38	69
71	127	136
72	207	171
73	23	18
74	24	65
75	7	9
76	71	118
77	61	49

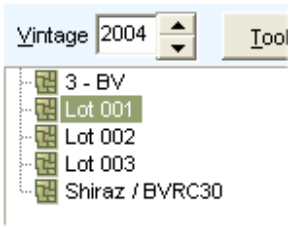
14. Print out the new form and have a look at it.
15. Check the adequacy of the sampling but do not add any more bunches.

Actual Harvest Deliveries

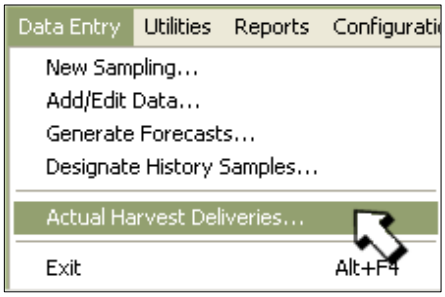
Grape Forecaster provides a quick way of entering actual harvest data.

The steps to enter actual harvest delivery records are as follows:

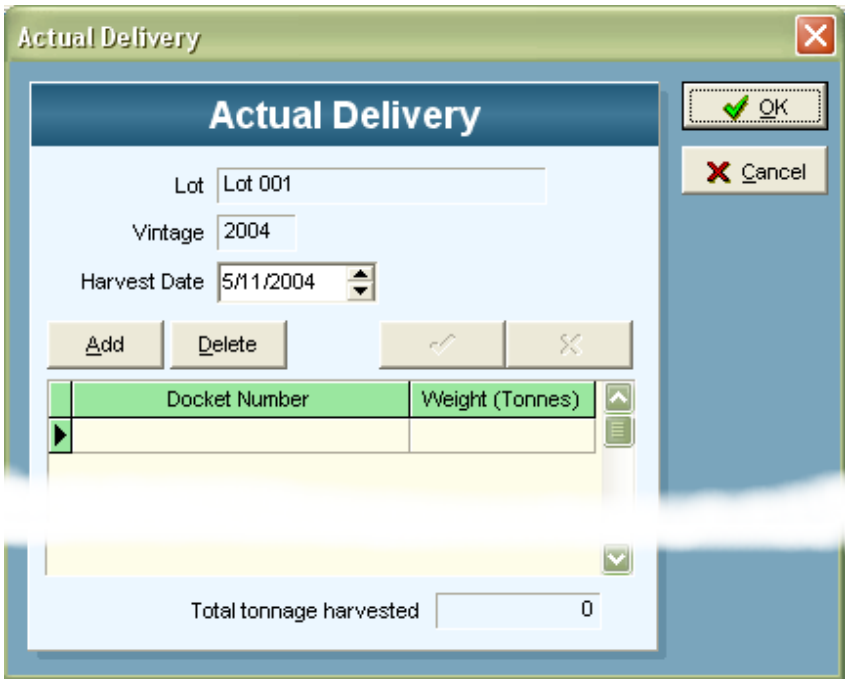
1. Ensure you have the appropriate vintage and lot selected then …



2. Select *Data Entry / Actual Harvest Deliveries* from the menu



3. The following window will be displayed…



4. Select the appropriate date then click the **Add** button to enter the harvest delivery docket number and the weight in tonnes.

5. Repeat step 4. until all harvest deliveries for the selected Vintage-Lot have been entered.
6. Click **OK** to save the data or **Cancel** to exit without saving.

Exercise 9: Entering and editing actual production

1. Ensure you are using the Demonstration Data (access this via *Utilities / Switch to Demonstration Data)*
2. Select the "Data exercise" Lot in the 2001 Vintage.
3. Select *Data Entry / Actual Harvest Deliveries* from the menu.
4. Click on the calendar button and specify 02-Mar-2001 as the Harvest date.
5. Enter this data:

Docket No.	Weight (Tonnes)
1001	2.6
1002	2.61

6. Click on the **OK** button.
7. Repeat this exercise for the "Data Exercise" Lot in the 1998 season. Specify 27-Feb-1998 as the Harvest date and enter the following data:

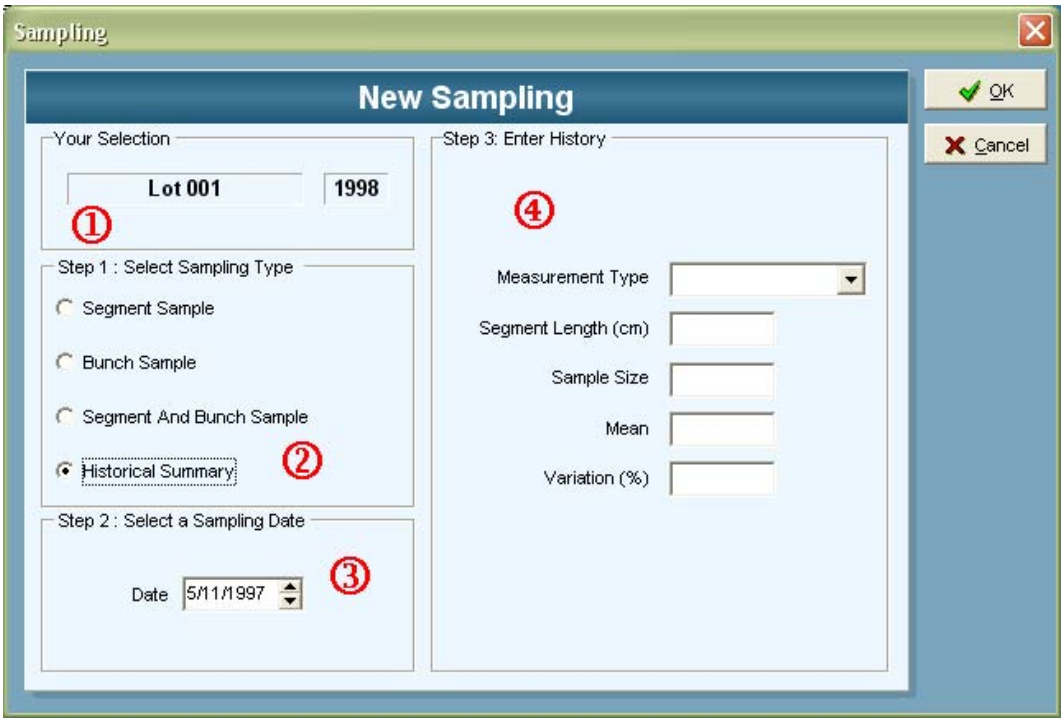
Docket No.	Weight (Tonnes)
701	10.00
702	12.35

(Total tonnage harvested should be 22.35 tonnes)

Entering and editing historical summaries

Grape Forecaster provides a quick way of entering historical data in the form of summary statistics.
The steps to enter a historical summary record are as follows:

1. On the main Grape Forecaster screen, select the appropriate vintage and lot then click on the **New Sampling** button.



2. Choose “Historial Summary”

3. Select the appropraite sampling date

4. Enter the data

Grape Forecaster accepts five types of historical statistic:

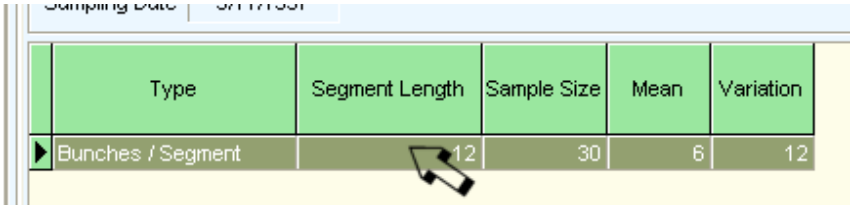
- Bunches per segment
- Grams per bunch
- Berries per bunch
- Grams per berry
- Kilograms per segment

The associated data items required are these:

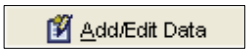
Segment length (cm)	Length of the segment used for counting or picking bunches. Note that this data is only required when Segment samplings are being entered.
Sample size	Number of segments or bunches measured in the sample
Mean	Mean (average) calculated from the sample
Variation (%)	Coefficient of Variation calculated from the sample

If you click on the "Cancel" button the data you have entered will not be saved, you will be returned to the main Grape Forecaster window.

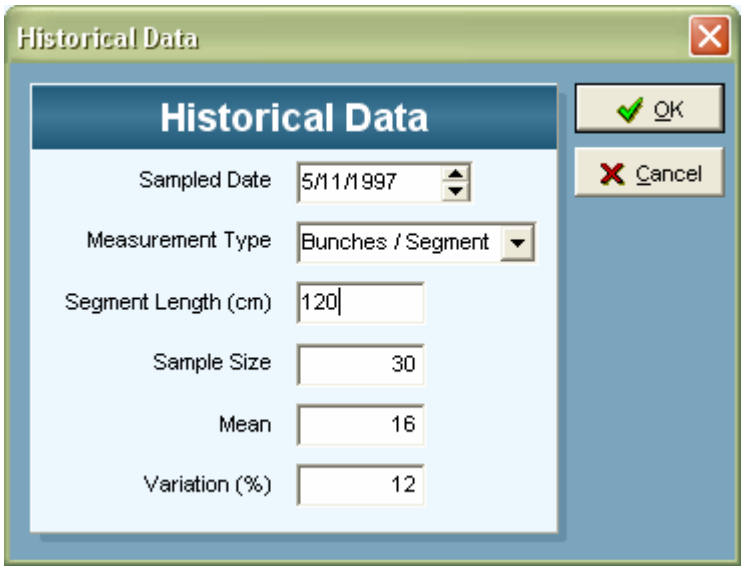
To edit an historical summary record either double click on the grid on the main screen…



… or click on the Add / Edit Data button on the main screen…



…to re-display this data entry form …



Exercise 10: Entering and editing historical summaries

1. Ensure you are using the Demonstration Data (access this via *Utilities / Switch to Demonstration Data)*
2. Select the "Data exercise" Lot in the 1998 season.
3. Enter this data for each of the samplings in the list:

Date	Type	Segment length (cm)	Sample size	Mean	Variation (%)
18-Nov-97	bunches / segment	213	10	74.9	22.4
18-Dec-97	bunches / segment	120	30	42.6	30.6
18-Dec-97	berries / bunch	-	29	114.6	33.7
20-Feb-98	bunches / segment	213	30	83.6	21.6
20-Feb-98	kilograms / segment	213	30	12.1	28.5
20-Feb-98	grams / bunch	-	119	120.7	56.8
20-Feb-98	berries / bunch	-	119	96.4	55.7
20-Feb-98	grams / berry	-	119	1.28	25.1