# iNTELLiTROL Irrigation

Irrigation Scheduling V5.61

**User Reference Manual** 

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# Introduction

iNTELLiTROL Irrigation is seamlessly incorporated into the iNTELLiTROL master controller. An iNTELLiTROL Network comprising valve and pump control cards can be used to provide a comprehensive automatic irrigation scheduling system.

This document assumes the user has a full understanding of the iNTELLiTROL Network software. As such, this document does not provide any information regarding the addressing of output devices, module interrogation, etc.

Manual control of output devices is covered in the iNTELLiTROL Network manual but is reproduced here for convenience.

Many of the operations described herein can be performed while the master controller is off. However, irrigations will not occur unless the master controller is actively controlling the network (the [Go] button is pressed).

### **Important Caveat**

Before using this, or any other form of automated irrigation control, it is imperative that a pressure or flow cut-off switch be installed on every pump. iNTELLiTROL is not a "real-time" controller. I.e. it can not respond immediately to over-pressure situations. It is the user's responsibility to ensure that the pump is shut-down in any undesirable situation including, but not restricted to, high pressure and/or flow.

# **Manual Irrigation Control**

The standard iNTELLiNet program allows the user to manually control valves and pumps directly from the master controller PC. There are two methods to achieve this.

### **Controlling from the Layout Screen**

If the layout screen is in "Comms Layout" mode then right clicking an output module will display a list of all output devices controlled by this card. If the layout screen is in "Farm Layout" mode then right clicking a device will display a single output device. In either case, each output device is represented by three colored squares; red, green and blue. If the output device is OFF then the red square will be highlighted. If the output device is ON then the green square will be highlighted. (A highlighted blue square indicates that the output is under automatic irrigation control.)



To manually turn ON an output (solenoid, pump, etc.) click the green square. To turn an output OFF, click the red square. It may take a few seconds for the field unit to respond so avoid clicking the square several times while waiting for a response.

### **Controlling from the Output Panel**

Selecting the menu option [View | Output Panel] displays a blue window listing all output devices. This panel shows three colored squares for each output device; red green and blue. Clicking the red square turns the output OFF and clicking the green square turns the output ON. Either the red and green squares will be highlighted depending on the state of the output. (If the blue square is highlighted it indicates the output is under automatic irrigation control.)

INTELLIT	ROL Outputs		×
Descri	ption	State	Battery
• 16.1	Block 1		0.0
• 16.2	Block 2		0.0
♦ 16.3	Block 3		0.0
♦ 16.4	Block 4		0.0
♦ 16.5	Block 5		0.0
♦ 16.6	Block 6		0.0
• 16.7	Block 7		0.0
<ul> <li>16.8</li> </ul>	Block 8		0.0

### **Un-timed Irrigations**

Please note that all manual irrigations are <u>not</u> timed. It is the user's responsibility to turn pumps and valves off when irrigation is complete.

# **Automated Irrigations**

Before automatic irrigations can be scheduled the output valves and pumps must be grouped into "Controllers". Generally there will be a separate controller for each farm or for each portion of a farm that is irrigated with a separate pump. It may be helpful to consider the "Controllers" configured in iNTELLiTROL as standard time based irrigation controllers that one would normally install in a pump shed.

# **Setting Up the Controllers**

Use the menu option [Tools | Configure Irrigation Controllers] to access the Controller Setup screen. The first time this screen is accessed it will be blank. Click [Add] to set up a new controller.

M Configure Irrigation Controllers					
Name of this Irrigation Controller Controller 1					
Pumps associated with this controller (Tick if pump is normally used for irrigation)	Valves associated with this controller				
AddDelete	Add Delete				
Pump Start Delay (seconds) 0 🚖 Valve Changeover Delay (seconds) 0 🚖 Off Colour On Colour					
Irrigating Not Irri	igating				
Pressure 0 0 100 0	100 External - Siren				
Flow 0 100 0	0 External - Siren 💌 🗶 Cancel				

First, enter an appropriate description of this controller.

Now it is time to select which pumps and which valves are controlled by this controller. For single farms with a single pump then only one controller will need to be configured so, all the output devices will be added to this controller. For multiple farms then an individual controller is normally set up for each farm.

There are two columns below the controller description. The left hand list contains all the pumps controlled by this controller. The right hand list contains all the valves controlled by this controller. At this stage both columns will be blank.

#### Adding a Pump

Click the [Add] button beneath the left hand column. This will display a list of all output devices entered in the layout screen. Click on the check-box for the pump (or pumps, if more than one pump is used) that will be controlled by this controller. A tick will appear in the box. If a box is ticked in error then clicking a second time will remove the tick. When the correct pumps have been selected click the [OK] button.

The selected pumps will be displayed in the left hand list.



#### Adding Valves

Valves are added to the controller in a similar fashion to adding pumps. Click the [Add] button beneath the right hand "Valves" list. Again, the list of output devices is displayed. Tick the valves to be controlled by this controller and then click [OK].

M Select Control Output	
<ul> <li>[16.1] Block 1</li> <li>[16.2] Block 2</li> <li>[16.3] Block 3</li> <li>[16.4] Block 4</li> <li>[16.5] Block 5</li> <li>[16.6] Block 6</li> <li>[16.7] Block 7</li> <li>[16.8] Block 8</li> <li>[16.12] Fert. Pump</li> <li>[16.13] Front Lawn</li> <li>[16.15] Flush</li> <li>[16.16] Pump</li> <li>[26.1] Red Globe</li> <li>[26.2] Sultana</li> <li>[26.3] Fire Pearl</li> <li>[26.5] Apples</li> <li>[26.6] Pears</li> <li>[26.12] Fertigation Pump</li> <li>[26.13] Flush 1</li> <li>[26.14] Flush 2</li> <li>[26.15] Flush 3</li> <li>[26.16] Brown Block Pump</li> </ul>	
OK	🗙 Cancel

✓ Configure Irrigation Controllers	
Name of this Irrigation Controller Browns Block	
Pumps associated with this controller (Tick if pump is normally used for irrigation) Valve	s associated with this controller
<ul> <li>✓ [26.16] Brown Block Pump</li> <li>[26.2]</li> <li>[26.3]</li> <li>[26.4]</li> <li>[26.5]</li> <li>[26.6]</li> <li>[26.7]</li> <li>[26.8]</li> <li>[26.12]</li> <li>[26.13]</li> <li>[26.14]</li> <li>[26.14]</li> <li>[26.15]</li> </ul>	Red Globe Sultana Fire Pearl Arctic Pride Apples Pears Cherries Veggies ] Fertigation Pump ] Flush 1 ] Flush 2 ] Flush 3
Add Delete	Add Delete
Pump Start Delay (seconds) 30 🚖 Valve Changeover Delay	seconds) 15 🚖 Off Colour On Colour
Irrigating Not Irrigatin	g
Pressure V 1.9 30 60 0 5	External - Siren
Flow 0 0 0	External - Siren

### Default Pumps

There is a check-box alongside each entry in the pump list. Place a tick in this box if this pump would normally be used for irrigations. When scheduling an irrigation, any pump can be used, or not used, as desired. However, the default pumps will be automatically selected, making irrigation scheduling easier.

#### Pump Start Delay

When commencing an irrigation it is good practice to open the valve or valves for a certain period of time before starting the pump. This avoids high pressure spikes that would otherwise occur if the pump is started and the valves have not fully opened.

The "Pump Start Delay" field allows you to enter a value (in seconds) to wait after opening the valves before starting the pump.

Note: Variable speed pumps generally do not suffer from this pressure spike problem. In this case enter "0" in this field.

#### Valve Changeover Delay

For the same reason, when changing valves, it is good practice to open the new valve for a number of seconds before closing the old valve. Enter a value into this field (in seconds) between opening the new and closing the old valves.

#### Controller Colors

To easily distinguish this controller from others set up in iNTELLiTROL, you can select a colour to represent the device when it is OFF and a colour to represent this device when it is ON. Simply click either of the two colored panels to change the respective colours.

#### Monitoring a Pressure Sensor

If a pressure sensor has been connected to the pump then this sensor may be used to generate an alarm should the pressure go outside the prescribed set-points. There are two sets of low and high values. The first set applies when the pump is running and the second set applies when the pump is not running (e.g. system uses a jacking pump to maintain pressure).

To use the pressure sensor with this controller, place a tick in the check-box and enter the device address for the temperature sensor. Then enter appropriate values for the minimum and maximum allowable pressures when the pump is running and when the pump is not running. Set the Alarm Level to determine how you will be notified should an error condition be detected.

Note: A high pressure alarm will not normally be generated as the high pressure condition will normally trip the pressure cut-off switch and disable the pump. This will result in a low pressure situation, which would generate a low pressure alarm.

#### Monitoring a Flow Sensor

If a flow sensor is installed then it may be used in a similar manner to the pressure sensor. Simply enter the relevant details and iNTELLiTROL will generate an alarm should the flow readings go out of range.

#### Saving the Controller Details

Click the [OK] button and the controller details will be saved. This will place an entry in the Setup Irrigation Controllers screen. If Pump Start Delay or Valve Changeover Delay values were entered then these values are displayed with a P or V prefix respectively.

₩ Set up Irr	igation Controlle	rs	
Browns Block	P30 V15		
Home Block	P V		
Add	Edit	Delete	

Controllers may be edited or deleted by highlighting the controller (click on the line) and clicking the appropriate button. Double clicking the line will also allow editing of the controller details.

When finished setting up all the controllers, click the [Close] button. The controllers are now ready for irrigation scheduling.

# **Irrigation Scheduling**

The Irrigation Scheduling screen can be accessed by clicking the coloured "Irrigation" panel on the iNTELLiTROL Layout screen. Alternatively, use the [Network | Irrigation] menu item.

🚲 Irrigation Control - Main Control Panel	
Irrigation Edit <u>Wi</u> ndow <u>Highlight</u>	
Control Panel Browns Block Home Block	
Browns Block	Home Block
On Off	Dff Dn
Controller is OFF	Controller is OFF
[26.1] Red Globe [26.2] Sultana [26.3] Fire Pearl [26.4] Arctic Pride [26.5] Apples [26.6] Pears [26.7] Cherries [26.8] Veggies [26.12] Fertigation Pump [26.13] Flush 1 [26.14] Flush 2 [26.15] Flush 3 [26.16] Brown Block Pump	[16.1] Block 1 [16.2] Block 2 [16.3] Block 3 [16.4] Block 4 [16.5] Block 5 [16.6] Block 6 [16.7] Block 7 [16.8] Block 8 [16.12] Fert. Pump [16.13] Front Lawn [16.14] Back Lawn [16.15] Flush [16.16] Pump
Pressure 0	Pressure 0
Flow U	Flow

This displays the Irrigation Control screen showing the Main Control Panel. There will be one control panel for each controller that has been set up.

The irrigation panels show all the valves and pumps controlled by each controller. At the top are the On/Off controls and, at the bottom, the pressure and flow indicators. To turn a controller on, click the [On] button. Any scheduled irrigations will run at the appropriate time. To stop the controller, click [Off]. This will stop all scheduled irrigations. Manual irrigations, however, may still be performed.

# **Scheduling Irrigations**

Irrigations are scheduled independently for each controller. Just beneath the main menu are a number of "tabs" representing each of the controllers. Click on the appropriate tab to set up irrigation schedules for that controller.

This displays the Irrigation Scheduling screen for the selected controller. The main portion of the screen shows a calendar. Weekdays are displayed in green and weekends are displayed in brown. The dark section at the top indicates the past and the light section at the bottom indicates the future. The junction between the dark and light sections represents "now".

Each line represents one day, starting at midnight on the left through midday in the middle to midnight at the right. The middle area is lighter, indicating the daytime. The day and date appear to the left of each line and the hours appear at the top.



To the immediate right of the calendar are seven navigation buttons which perform the following functions:

- **G**o to the very first irrigation.
- ▲ Go back one week
- Go back one day
- Go to "now"
- Go forward one day
- Go forward one week
- Go to the very last irrigation

#### Selecting Valves

To the right of the navigation buttons is a list of all valves that have been associated with this controller. To select a valve, simply click on the line. To select more than one valve hold down the <Ctrl> key and click on the respective lines. Clicking a line a second time with the <Ctrl> key down will deselect the valve.

Note: When viewing or setting up irrigations it is best to make the calendar as large as possible. Double clicking the blue title bar will maximize the window.

Note: The [Turn Controller On] button performs the same function as the [Go] button in the Main Control Panel. The controller must be on for irrigations to run.

### **Performing an Immediate Irrigation**

The simplest way to start an irrigation immediately is to highlight one or more valves in the right hand list and click the [Turn On Now] button. This will display the generic "Define an Irrigation Shift" window. This window is used to define or edit any new or existing irrigation shift.

Define an Irrigation Shift			
<ul> <li>Start after current shift</li> <li>Start at 29/10/2005 </li> <li>06:03 PM </li> <li>Duration 2 </li> <li>hrs 0 </li> <li>mins</li> <li>Select Pump(s)</li> <li>[16.16] Pump</li> </ul>	<ul> <li>✓ [16.1] Block 1</li> <li>✓ [16.2] Block 2</li> <li>[16.3] Block 3</li> <li>[16.4] Block 4</li> <li>[16.5] Block 5</li> <li>[16.6] Block 6</li> <li>[16.7] Block 7</li> <li>[16.8] Block 8</li> <li>[16.12] Fert. Pump</li> <li>[16.13] Front Lawn</li> <li>[16.14] Back Lawn</li> <li>[16.15] Flush</li> </ul>	∂p 10p11p ト ▲ ● ♥ ♥	Time: Shift duration: Schedule dur: [16.1] Block 1 [16.2] Block 2 [16.3] Block 3 [16.4] Block 4 [16.5] Block 5 [16.6] Block 6 [16.7] Block 7 [16.8] Block 8 [16.12] Fert. Pump [16.13] Front Lawn [16.14] Back Lawn [16.15] Flush
	🗸 ок	X Cancel	Turn On Now
Fri 11-11-05			User Defined Irrigation Schedules
Sat 12-11-05			
Sun 13-11-05			
Mon 14-11-05			
Tue 15-11-05			
Wed 16-11-05 Thu 17-11-05			New Edit Delete
Turn Controller Off Controller is O	N 📕 Idle		

To turn on the selected valves simply enter a value for the duration (in hours and/or minutes) and click [OK].



The irrigation shift will commence immediately and run for the selected duration. The pump will start after "Pump Start Delay" seconds.

### Shifts and Schedules

For the purpose of this document an irrigation **Shift** is defined as a single watering event, regardless of how many valves are turned on. Every valve will remain open for the full duration of the shift.

An irrigation **Schedule** is a series of shifts that are linked together and run one after the other in a continuous sequence. At the end of the first shift the valves for Shift 1 will close and the valves for Shift 2 will open. If any valve is selected for two consecutive shifts then the valve will remain open for the entire duration of both shifts.

### A Closer Look at the "Define an Irrigation Shift" Screen

Whenever a new irrigation shift is added or an existing shift is edited the "Define an Irrigation Shift" screen is used. This screen contains all the functionality required to set up an irrigation



shift. Either "Start after current shift" or "Start at" will be selected depending on whether or not this is the first (or only) shift in an irrigation schedule. If this shift is the second or later shift in a schedule then "Start after current shift" will be selected.

If "Start at" is selected then a start date/time is also required.

### **Duration**

This determines how long the selected valves remain open. The duration is specified in hours and/or minutes.

### Select Pump(s)

Place a tick against all the pumps required to run this shift. If a pump has been defined as a "default" pump in the controller configuration then it will automatically be ticked. Any pump may be selected or deselected regardless of the default settings.

### Valves

The right hand box contains a list of all the valves associated with this controller. Place a tick against the valves that are to be opened when this shift runs. Any valve may be opened or closed, regardless of whether it was initially selected or not.

#### Saving the Shift

Click [OK] to save the shift. Changes become effective immediately unless the shift is actually running. If changes are made to the currently running shift then the controller should be stopped and restarted to load in the new changes.

### **Scheduling a Shift**

To schedule a shift to run sometime in the future, select the required valves (use <Ctrl> and click the appropriate lines in the valve list) and then, holding down the left mouse button,



"drag" the selected valves to the desired start time on the calendar. When "dragging" the valves the cursor will change to the "drag" icon. Note that the tip of the arrow is

the active point of this cursor, not the square box. Wherever the tip of the arrow is pointing, that will be the starting date/time for the new shift.

When the arrow tip is pointing to the correct date/time, release the mouse button. The standard "Define an Irrigation Shift" window will be displayed. Enter the shift duration and make any required changes to the start time, pumps and valves. Then click [OK].

The new shift will be displayed at the specified start date/time.

Any number of shifts can be set up in this fashion.

### Moving a Shift

Once a shift has been defined and is placed on the calendar it may be moved to any location, even into the past, if desired. Simply grab the shift (by holding down the left mouse button) and drag the shift to any other location on the calendar. The shift will the commence at the new date/time.

If a shift is dragged to "now" then it will commence immediately.

### **Editing a Shift**

Double clicking any shift displays the "Define an Irrigation Shift" window with relevant details for the selected shift. Change any of the information as required and click [OK]. Note that changing the start date/time for a shift has the same result as dragging the shift over the calendar.

### **Quick Viewing a Shift**

Clicking the shift once with the left mouse button selects that shift. The currently selected shift is drawn with a red border. The details of the currently selected shift are displayed at the right hand side of the screen. A coloured arrow will point to each of the valves in the shift while the start time and duration are displayed above the valve list.

The **right** and **left arrow keys** provide a handy method of moving between shifts. The right arrow selects the next shift while the left arrow selects the previous shift.

### **Creating an Irrigation Schedule**

An irrigation schedule is simply a group of shifts all linked together so that they run consecutively, one immediately after the other. To create an irrigation schedule, each of the component shifts must first be defined and placed on the calendar. They can be placed anywhere on the calendar but there must be no other shifts in-between.

Once all the shifts are defined they are then "linked" together to create the schedule. To link a shift, right click the shift and select [Link to Prior Shift] from the popup menu. Note that a later shift is linked back to a previous shift. Thus, the first shift in a schedule is not linked to any other shift.

When two or more shifts are linked together a "link" is placed around the junction of the two shifts. This indicates where one shift stops and the next shift starts.



The group of linked shifts is now a schedule. Grabbing any of the shifts within the schedule and "dragging" the shift will drag the entire schedule. The shifts are no longer individual entities but are bound together.

### **Quick Viewing a Schedule**

Clicking on any shift within a schedule displays both shift and schedule information to the right of the screen.



The date/time and duration of the selected **shift** are displayed above the valve list. The total duration of the entire **schedule** is also shown. The valve list now has two coloured indicators. The darker dots indicate that these valves will be watered sometime during this irrigation **schedule**. The lighter arrows indicate that these valves are active during the currently selected **shift**.

Use the left and right arrow keys to select the next and previous shifts for a quick view of each shift in the schedule. Double clicking any shift in the schedule will still bring up the "Define an Irrigation Shift" screen where changes can be made to the component shifts.

### Saving a Schedule for Future Use

Once a schedule has been defined it may be saved and re-used as many times as required. Right click any of the shifts within the schedule and select [Copy to Schedule List] from the popup menu. This displays a window that lists the shifts within the schedule. The shifts may be modified or deleted, or new shifts added until the schedule is exactly as required.

ሕ Create User Defined Irrigation Sched	ule			
Group Name Stone Fruit	Link Color 📃	(Click box to change	color)	
2 hrs [16.1] Block 1 [16.2] Block 2 [16.16 2 hrs [16.3] Block 3 [16.4] Block 4 [16.16 2 hrs [16.5] Block 5 [16.6] Block 6 [16.16	5] Pump 5] Pump 5] Pump			Assign a unique color to identify this schedule Enter a description of the new schedule
Total duration: 6 hrs				
Add Shift Edit Shift Delete Shift	<ul> <li>✓</li> </ul>	' OK 🛛 🗙 Can	cel	

Then, two of the most important features; provide a meaningful description of the schedule and assign an identifying color.

Click [OK] to save the schedule.



The new User Defined Schedule appears in the bottom list, below the valve list. Schedules in this list may be "dragged" across to the calendar just as a valve can be dragged across. Whenever the schedule is added to the calendar it will be coloured for easy identification.

As with any other shift or schedule, this schedule may be moved around the calendar to any desired location.

### **Unlinking Shifts**

Shifts within a schedule may also be "unlinked" from the previous shift. Right click the shift and select [Unlink from Prior Shift] from the popup menu. The schedule will be split at that point although all the prior shifts will remain linked together and all the later shifts will also remain linked. To remove the links from all the shifts and dissolve the entire schedule into individual shifts right click any of the shifts and select [Dissolve Schedule] from the popup menu.

### **Deleting Shifts**

An individual shift may be deleted by right clicking the shift and selecting [Delete Shift] from the popup menu.

### **Deleting Schedules**

An entire schedule may be deleted by right clicking any of the shifts within the schedule and selecting [Delete Entire Schedule] from the popup menu.

### **Repeating a Shift or Schedule**

Any shift or schedule may be repeated any number of times. A schedule, for example, may be repeated every three days, or repeated every Tuesday and Friday. A 20 minute shift may be repeated every 40 minutes to provide pulse irrigation, etc, etc.

To repeat a shift or schedule, right click any of the shifts within the schedule and select [Repeat] from the popup menu. This will display the "Irrigation Repetition" window.

🚲 Irrigation Repetition	
Repeat C Selected shift ⓒ All linked shifts	RepeatType
Number of Repetitions 6 Minutes	Cancel
16.1 16.2 for 2 hrs	
16.3 16.4 for 2 hrs	
16.5 16.6 for 2 hrs	

All shifts in the schedule are displayed and the selected shift is highlighted.

"Repeat" The box the allows user to choose between repeating only the selected shift or repeating the entire schedule.

The "Repeat Type" box allows a choice between repetitions based on a

regular interval (i.e. one or more minutes, hours or days) or on selected days of the week.

The required number of repetitions is entered into the "Number of Repetitions" box. Note that this is the total number of repetitions. I.e. if the schedule is repeated 10 times on Mondays and Thursdays then it will repeat 5 times on Monday and 5 times on Thursday for a total of 10 repetitions.

### Regular Interval

Repetition by regular interval duplicates the shift or schedule based on selected number of minutes, hours or days. The new shifts/schedules a spaced evenly apart.

#### Days of Week

🚲 Irrigation Re	petition	K
Repeat C Selected shift	All linked shifts     RepeatType     Regular Interval      Days of Week	
Number of Repetitions 6	Monday     Saturday       Tuesday     Sunday       Wednesday     All       Thursday     None       Friday     None	
16.1 16.2 for 2 hrs		
16.316.4 for 2 hrs		_
16.5 16.6 for 2 hrs		

The Days of Week option allows the user to select which days of the week the repetitions are to occur. Thus, they may be repeated only on weekends or just Tuesdays and Fridays, etc.

Once the required repetition parameters have been set, click [OK].



The calendar will display the new shifts/schedules. Note that each of these shifts and/or schedules are completely independent of the originating shift/schedule and of any of the other repetitions. They may be individually moved, modified or deleted without affecting any of the other shifts or schedules.

# Water Budgeting

The water budgeting feature allows the user to increase or decrease the length of a pre-defined irrigation base on current weather conditions. For example, if the weather has been unusually hot, the irrigation duration can be increased to apply more water, without needing to set up a whole new irrigation schedule.



To increase the duration of a schedule, click on any shift within the schedule. The shift and schedule information will be displayed to the right. Just above the valve list is a box marked "Relative %". Either type in a value that represents the percentage change or use the up/down buttons to select a value in increments of 5%. To add 30% more water (because of the excessive heat) enter 130 which equals 130% of the normal watering. Every shift within the schedule will increase its duration by the specified amount.

Note that this change only affects the current schedule. All other schedules will remain at their original duration.

If there has been unusually cool weather or a rain event has occurred then the duration of the next irrigation may be decreased. Simply click on one of the shifts within the schedule and enter, say, 80 in the "Relative %" box. This will apply 80% of the normal amount of water.

# The Irrigation List

The standard method of viewing the irrigation schedules is graphically, in the calendar format. However, the schedules may also be viewed as a list. This has several advantages and many "global" functions can be performed in the list view that cannot be performed in the calendar view.

To display the schedules as a list, right click anywhere on the calendar and select [Irrigation List] from the popup menu. If the mouse was clicked on an unused area of the calendar then "now" will be close to the top of the list. If the mouse was over a schedule when it was clicked then the selected schedule will be near the top of the list.

all	🚠 Edit Irrigation Shifts					
E	<u>File E</u> dit <u>H</u> ighlight					
	Start Date/Time	Duration	Budget	Valves & Pumps		
	31/10/05 08:15	3 hrs	100%	[26.1] Red Globe [26.16] Brown Block Pump	~	
	31/10/05 11:15	3 hrs	100%	[26.2] Sultana [26.16] Brown Block Pump		
	31/10/05 14:15	3 hrs	100%	[26.3] Fire Pearl [26.16] Brown Block Pump		
	02/11/05 02:00	3 hrs	50%	[26.1] Red Globe [26.16] Brown Block Pump		
	02/11/05 03:30	3 hrs	50%	[26.2] Sultana [26.16] Brown Block Pump		
	02/11/05 05:00	3 hrs	50%	[26.3] Fire Pearl [26.16] Brown Block Pump		
	03/11/05 01:00	3 hrs	100%	[26.1] Red Globe [26.16] Brown Block Pump		
	03/11/05 04:00	3 hrs	100%	[26.2] Sultana [26.16] Brown Block Pump		
	03/11/05 07:00	3 hrs	100%	[26.3] Fire Pearl [26.16] Brown Block Pump		
	04/11/05 01:00	1 min	100%	[26.13] Flush 1 [26.16] Brown Block Pump		
	04/11/05 01:01	1 min	100%	[26.14] Flush 2 [26.16] Brown Block Pump		
	04/11/05 01:02	1 min	100%	[26.15] Flush 3 [26.16] Brown Block Pump		
	04/11/05 01:03	4 hrs	100%	[26.1] Red Globe [26.2] Sultana [26.3] Fire Pearl [26.16] Brown Block Pump		
	04/11/05 05:03	4 hrs	100%	[26.4] Arctic Pride [26.5] Apples [26.6] Pears [26.16] Brown Block Pump		
	04/11/05 09:03	3 hrs	100%	[26.7] Cherries [26.8] Veggies [26.16] Brown Block Pump		
	07/11/05 02:00	10 mins	100%	[26.1] Red Globe [26.16] Brown Block Pump		
	07/11/05 02:10	15 mins	100%	[26.1] Red Globe [26.12] Fertigation Pump [26.16] Brown Block Pump		
	07/11/05 02:25	5 mins	100%	[26.1] Red Globe [26.16] Brown Block Pump		
	07/11/05 02:30	10 mins	100%	[26.2] Sultana [26.16] Brown Block Pump		
	07/11/05 02:40	15 mins	100%	[26.2] Sultana [26.12] Fertigation Pump [26.16] Brown Block Pump	-	
	07/11/05 02:55	5 mins	100%	[26.2] Sultana [26.16] Brown Block Pump		
	07/11/05 03:00	10 mins	100%	[26.3] Fire Pearl [26.16] Brown Block Pump		
	07/11/05 03:10	15 mins	100%	[26.3] Fire Pearl [26.12] Fertigation Pump [26.16] Brown Block Pump		
	07/11/05 03:25	5 mins	100%	[26.3] Fire Pearl [26.16] Brown Block Pump		
	09/11/05 01:00	20 mins	100%	[26.1] Red Globe [26.16] Brown Block Pump	v	

As with the calendar, the shaded entries represent the past and the un-shaded entries are in the future.

Every shift is displayed, one shift per line. Each shift has a colored square on the left hand side. This square is the same color as the schedule when it is displayed on the calendar and identifies the shift as a part of the schedule. All the linked shifts (forming schedules) are grouped by a large bracket, also on the left hand side.

The start date/time, duration, relative percentage duration and the valves and pumps are all displayed, providing a comprehensive view of the scheduled irrigations. Double clicking any line displays the "Define an Irrigation Shift" window to allow modifications to be made.

## **Irrigation List Functionality**

All functionality is contained in the [Edit] menu. Simply highlight one or more shifts and select an option from the [Edit] menu. Alternatively, click the right mouse button and a popup menu will appear with the same options.

07711705-03:00	10 mins	100% [26.3] Fire Pearl [26.16] Brown Block Pump
07/11/05 03:10	15 mins	100% [26.3] Fire Pearl [26.12] Fertigation Pump [26.16] B
07/11/05 03:25	5 mins	100% [26.3] Fire Pearl [26.16] Brown Block Pump
09/11/05 01:00	20 mins	100% Factor Let 1 res 161 Brown Block Pump
09/11/05 01:20	20 mins	10 Own Block Pump
09/11/05 01:40	20 mins	1( Brown Block Pump
09/11/05 02:00	20 mins	1( Unlink Selected Shifts own Block Pump
09/11/05 02:20	20 mins	1( ] Brown Block Pump
09/11/05 02:40	20 mins	10 Delete Selected Shifts own Block Pump
09/11/05 03:00	20 mins	1600 Brown Block Pump
09/11/05 03:20	20 mins	100% [26.2] Sultana [26.16] Brown Block Pump
09/11/05 21:00	3 hrs	100% [26.1] Red Globe [26.16] Brown Block Pump
10/11/05 00:00	3 hrs	100% [26.2] Sultana [26.16] Brown Block Pump
10/11/05 03:00	3 bre	100% I 26 3) Fire Pearl I 26 16) Brown Block Pump

If a single shift is selected then the following options are available:

### Edit Shift

This is the same as double clicking the line. It displays the "Define an Irrigation Shift" windo to allow modifications to be made to the shift.

#### **Unlink Selected Shifts**

Unlinks the selected shift from the prior shift. If the same shift is linked to the next shift then this link will stay in place. Remember, shifts link back to prior shifts, not forward.

#### Delete Shift

Deletes the selected shift.

All these options are also available in the calendar view. However, more options are available when multiple shifts are selected. These options are not available in the calendar view.

04/11/05 05:03	4 hrs	100%	[26.4] Arctic Pride [26.5] Apples [	26.6] Pears [26.16] Brown Block Pump	
04/11/05 09:03	3 hrs	100%	[26.7] Cherries [26.8] Veggies [26	6.16] Brown Block Pump	
07/11/05 02:00	10 mins	100%	[26.1] Red Globe [26.16] Brown B	Block Pump	
07/11/05 02:10	15 mins	100%	[26.1] Red Globe [26.12] Fertigat	ion Pump [26.16] Brown Block Pump 👘	
07/11/05 02:25	5 mins	100%	[26.1] Red Globe [26.16] Brown Block Pump		
07/11/05 02:30	10 mins	100%	[26.2] Sultana [26.16] Brown Block Pump		
07/11/05 02:40	15 mins	100%	2 Edit Shift	Pump [26.16] Brown Block Pump	
07/11/05 02:55	5 mins	100%	[2] Link Selected Shifts	k Pump	
07/11/05 03:00	10 mins	100%	[2 Uslick Calcased Chiles	ock Pump	
07/11/05 03:10	15 mins	100%		n Pump [26.16] Brown Block Pump	
07/11/05 03:25	5 mins	100%	2 Delete Shift	ock Pump	
09/11/05 01:00	20 mins	100%	2 Delete Selected Shifts	lock Pump	
09/11/05 01:20	20 mins	100%	[20.2] эчкала (20.10) вточит вто	k Pump	
09/11/05 01:40	20 mins	100%	[26.1] Red Globe [26.16] Brown B	Block Pump	
09/11/05 02:00	20 mins	100%	[26.2] Sultana [26.16] Brown Bloc	ok Pump	
09/11/05 02:20	20 mins	100%	[26.1] Red Globe [26.16] Brown Block Pump		
09/11/05 02:40	20 mins	100%	[26.2] Sultana [26.16] Brown Bloc	ok Pump	
09/11/05 03:00	20 mins	100%	[26.1] Red Globe [26.16] Brown B	Block Pump	
09/11/05 03:20	20 mins	100%	[26.2] Sultana [26.16] Brown Bloo	ck Pump	
09/11/05 21:00	3 hrs	100%	[26.1] Red Globe [26.16] Brown B	Block Pump	
10/11/05/00/00	3 bre	100%	126 21 Sultana 126 161 Brown Bloc	-k Pump	

#### Link Selected Shifts

This option will link all highlighted shifts together to form a single schedule. In the calendar view you would need to right click and select [Link to Prior Shift] for every shift you wanted to be a part of the schedule. This may be OK if there are only three or four shifts. However, if the schedule comprises 50 pulse irrigation sessions then the global [Link Selected Shifts] option is much easier.

#### Unlink Selected Shifts

This will remove all backward links from the selected shifts. If the last shift in the selection is linked forward then that link will remain. If an entire schedule is highlighted then this function is the same as [Dissolve Schedule] in the calendar view.

#### **Delete Selected Shifts**

As its name suggests this option deletes all highlighted shifts. This is extremely useful if you have mistakenly "repeated" an irrigation schedule 50 or so times. Caution must be exercised when using this function as the shifts are permanently deleted.

### Highlighting a Valve

Selecting the [Highlight] menu option displays a list of all the valves associated with the current controller. Clicking on any of the valves will highlight every entry that contains that particular valve. This provides an easy way of identifying every irrigation event for a particular crop.

alla	🛣 Edit Irrigation Shifts 📃 🗖 🔀					
Eile	File Edit Highlight: Fire Pearl					
	Start Date/Time	Duration	Budget	Valves & Pumps		
	04/11/05 01:01	1 min	100%	[26.14] Flush 2 [26.16] Brown Block Pump	~	
	04/11/05 01:02	1 min	100%	[26.15] Flush 3 [26.16] Brown Block Pump		
	04/11/05 01:03	4 hrs	100%	[26.1] Red Globe [26.2] Sultana [26.3] Fire Pearl [26.16] Brown Block Pump		
	04/11/05 05:03	4 hrs	100%	[26.4] Arctic Pride [26.5] Apples [26.6] Pears [26.16] Brown Block Pump		
	04/11/05 09:03	3 hrs	100%	[26.7] Cherries [26.8] Veggies [26.16] Brown Block Pump		
	07/11/05 02:00	10 mins	100%	[26.1] Red Globe [26.16] Brown Block Pump		
	07/11/05 02:10	15 mins	100%	[26.1] Red Globe [26.12] Fertigation Pump [26.16] Brown Block Pump		
	07/11/05 02:25	5 mins	100%	[26.1] Red Globe [26.16] Brown Block Pump		
	07/11/05 02:30	10 mins	100%	[26.2] Sultana [26.16] Brown Block Pump		
	07/11/05 02:40	15 mins	100%	[26.2] Sultana [26.12] Fertigation Pump [26.16] Brown Block Pump		
	07/11/05 02:55	5 mins	100%	[26.2] Sultana [26.16] Brown Block Pump		
	07/11/05 03:00	10 mins	100%	[26.3] Fire Pearl [26.16] Brown Block Pump		
	07/11/05 03:10	15 mins	100%	[26.3] Fire Pearl [26.12] Fertigation Pump [26.16] Brown Block Pump		
	07/11/05 03:25	5 mins	100%	[26.3] Fire Pearl [26.16] Brown Block Pump		
	09/11/05 01:00	20 mins	100%	[26.1] Red Globe [26.16] Brown Block Pump		
	09/11/05 01:20	20 mins	100%	[26.2] Sultana [26.16] Brown Block Pump		
	09/11/05 01:40	20 mins	100%	[26.1] Red Globe [26.16] Brown Block Pump		
	09/11/05 02:00	20 mins	100%	[26.2] Sultana [26.16] Brown Block Pump		
	09/11/05 02:20	20 mins	100%	[26.1] Red Globe [26.16] Brown Block Pump		
	09/11/05 02:40	20 mins	100%	[26.2] Sultana [26.16] Brown Block Pump		
	09/11/05 03:00	20 mins	100%	[26.1] Red Globe [26.16] Brown Block Pump		
	09/11/05 03:20	20 mins	100%	[26.2] Sultana [26.16] Brown Block Pump		
	09/11/05 21:00	3 hrs	100%	[26.1] Red Globe [26.16] Brown Block Pump		
	10/11/05 00:00	3 hrs	100%	[26.2] Sultana [26.16] Brown Block Pump		
	10/11/05 03:00	3 hrs	100%	[26.3] Fire Pearl [26.16] Brown Block Pump	~	

# **Irrigation History**

If all irrigations (even manual ones) are performed via the irrigation scheduling software then the calendar (and Irrigation List) will contain a complete record of every irrigation that has occurred. This is useful information and is often a requirement for contract growing.

If using the calendar to provide an irrigation history then any past irrigations must NOT be moved, changed or deleted. New irrigation shifts and schedules must NOT be placed in the past. You may copy a past irrigation to the "User Defined Irrigation Schedules" list for future use.

# **General Overview**

During the normal course of irrigation the [Control Panel] tab provides a general overview of all controllers.

🛣 Irrigation Control - Main Control Panel						
Irrigation Edit Window Highlight						
Control Panel Browns Block Home Block						
Browns Block	Home Block					
📕 Off 🕨 On	📕 Off 🕨 On					
Irrigation in progress Due to end on 31-10-05 at 11:30pm	Irrigation in progress Due to end on 1-11-05 at 1:26am					
● [26.1] Red Globe ● [26.2] Sultana	•[16.1] Block 1 •[16.2] Block 2					
[26.3] Fire Pearl     [25.4] Arotic Pride	o [16.3] Block 3					
[26.5] Apples	• [16.5] Block 5					
[26.6] Pears [26.7] Cherries	• [16.6] Block 6 [16 7] Block 7					
[26.8] Veggies	[16.8] Block 8					
[26.12] Fertigation Pump [26.13] Flush 1	[16.12] Fert. Pump [16.13] Front Lawn					
[26.14] Flush 2	[16.14] Back Lawn					
<ul> <li>[26,15] Flush 3</li> <li>[26,16] Brown Block Pump</li> </ul>	o [16.16] Pump					
Pressure 0	Pressure 0					
Flow 0	Flow 0					

The currently active valves are highlighted, as are all running pumps. The valves in the current irrigation schedule that are not currently active are shown with a blue dot.

If pressure and/or flow sensors are connected then the current pressure and flow rate will be displayed in the relevant panels, along with the minimum and maximum set-points.