

Axciscape Drawing Entities – Part 3 – 3D Tree

Axciscape includes a simple (crude) 3D Tree drawing function which creates a wireframe representation of a tree with accurate canopy extents, height, crown clearance height and stem diameter. It also supports 5 different crown shapes.

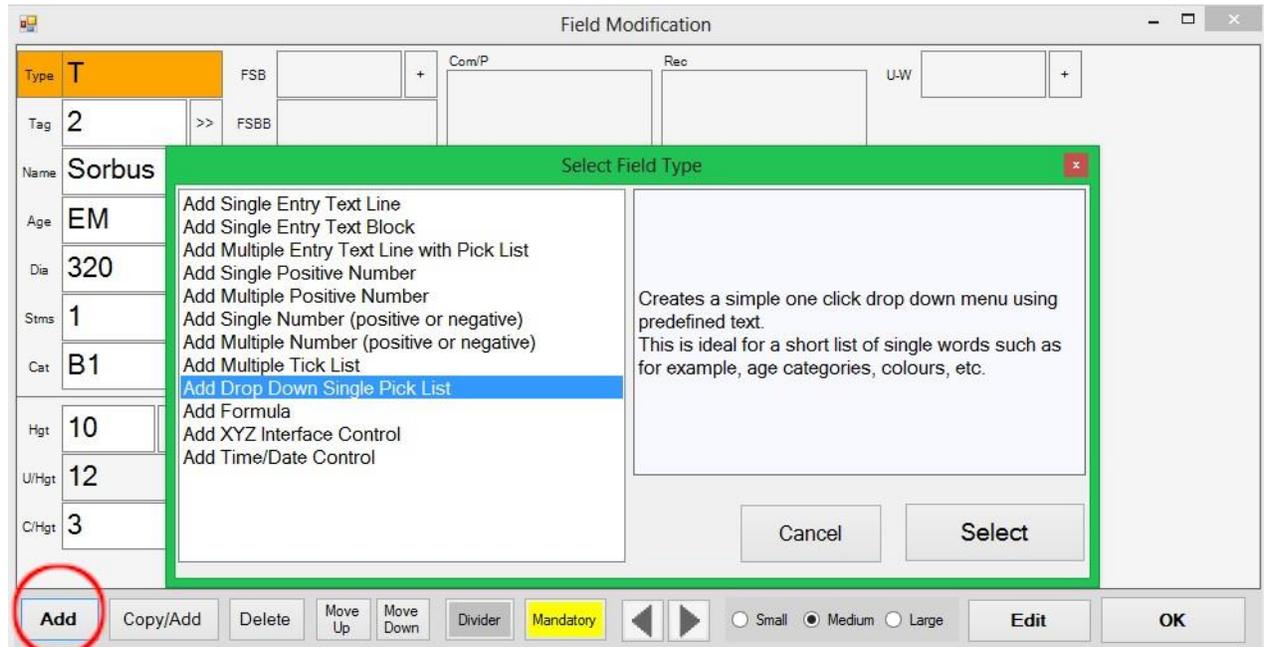
Axciscape won't show the results of the function directly as it only shows the map in 2D but it will export the 3D results for use in a suitable CAD program (such as the full version of AutoCAD, AutoCAD LT doesn't support 3D graphics).

For the purposes of this example I am using the demonstration file which ships with Axciscape. I have removed most of the trees so I can concentrate on just a few. I can use the existing fields in the demo file but require one additional field to define the 3D crown shape.

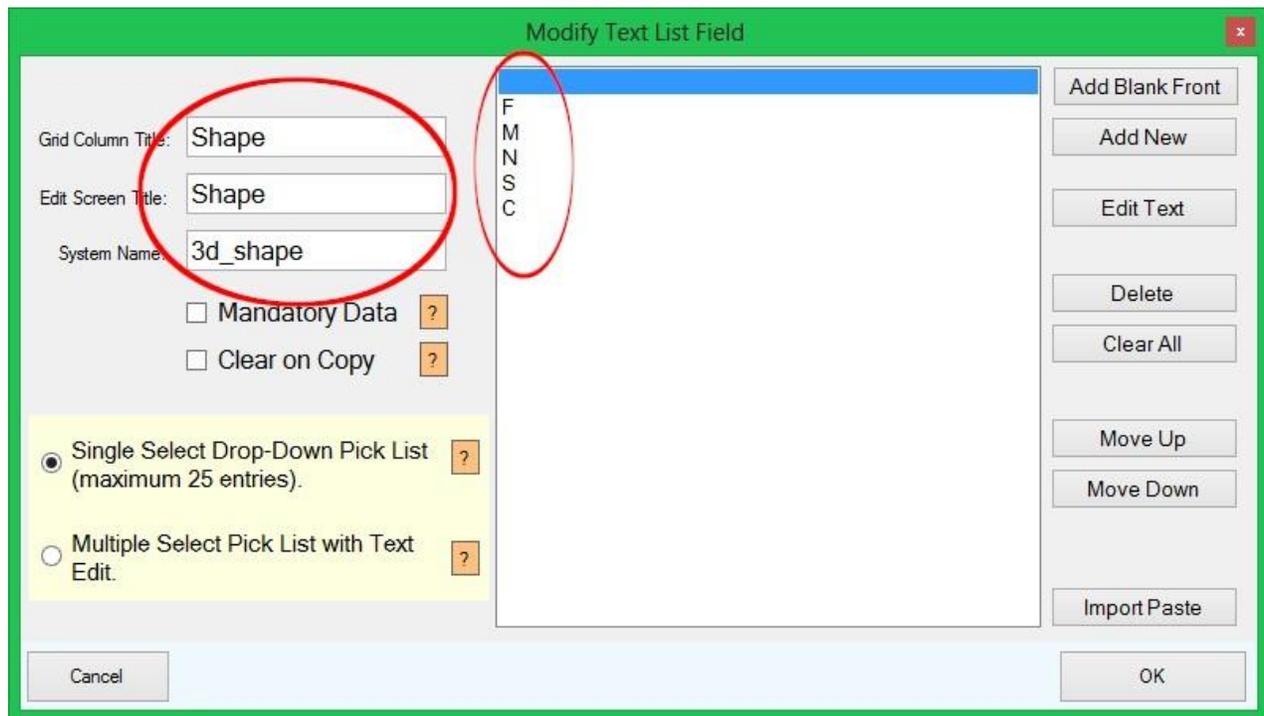
The following image shows the five remaining trees with their canopies, category symbol and tag text. To add a new field, select the tools icon (circled in red), and select 'Add/Modify Fields' from the tools menu.



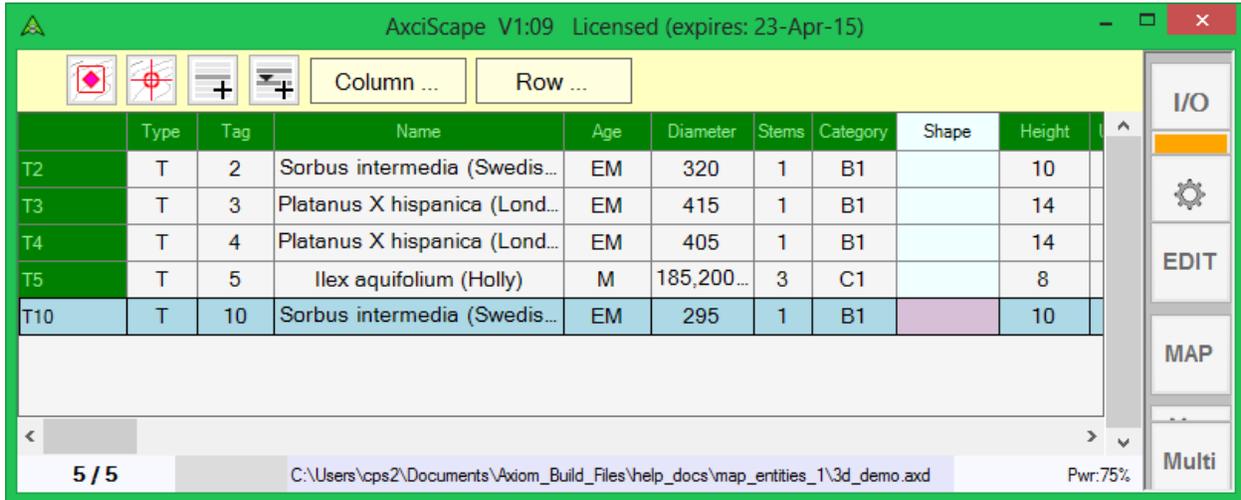
The Field Modification Window will appear. Select 'Add' to add a new field and select the 'Drop Down Single Pick List' item.



I have given the field a name of 'shape' and entered five letters into the listbox as shown, with a blank line at the front. Each of the letters represents a different crown shape where F=Full crown and C=Conical (more about this later).

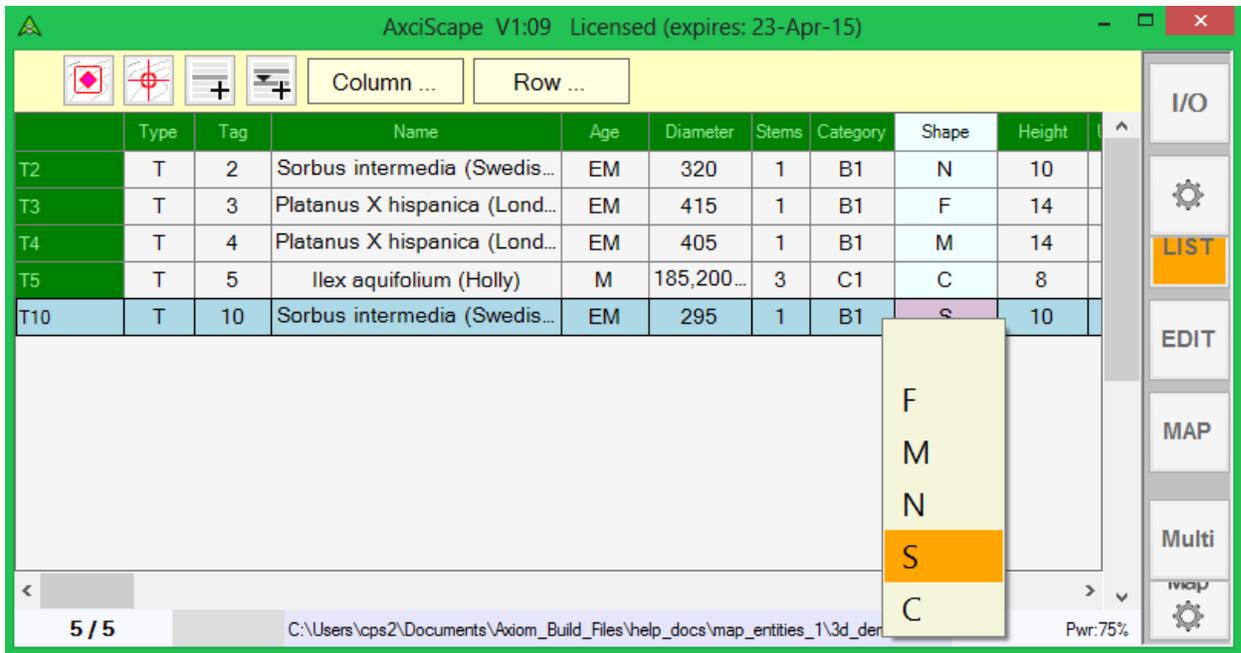


Click OK. But before you leave the modification window relocate the field so it's more accessible on the List screen. I have placed it after Category (as below).



	Type	Tag	Name	Age	Diameter	Stems	Category	Shape	Height
T2	T	2	Sorbus intermedia (Swedis...	EM	320	1	B1		10
T3	T	3	Platanus X hispanica (Lond...	EM	415	1	B1		14
T4	T	4	Platanus X hispanica (Lond...	EM	405	1	B1		14
T5	T	5	Ilex aquifolium (Holly)	M	185,200...	3	C1		8
T10	T	10	Sorbus intermedia (Swedis...	EM	295	1	B1		10

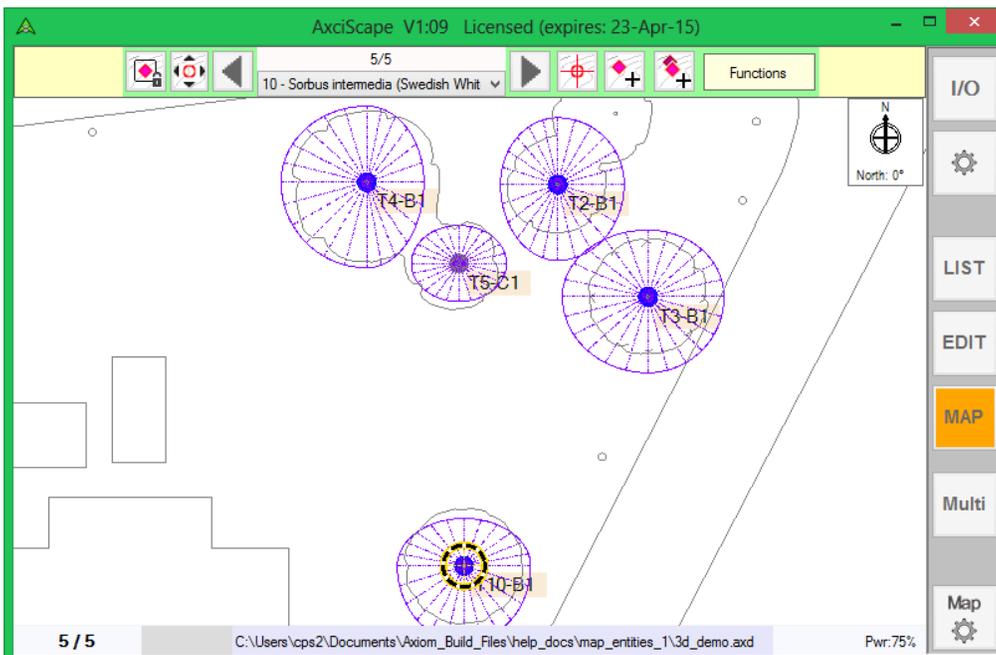
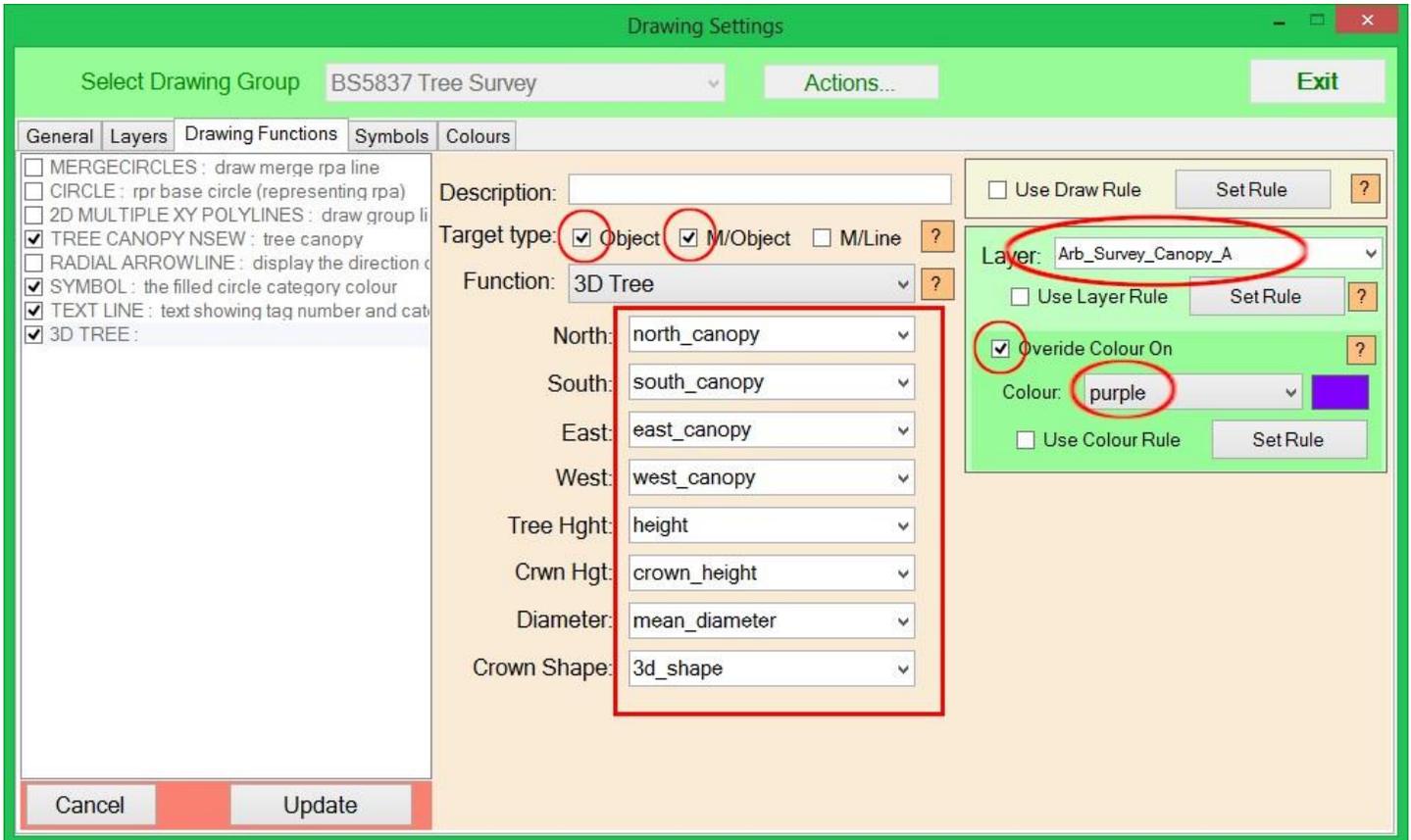
Now it's a case of defining a shape for each of the trees by clicking on the Shape field. In the image below I have allocated a shape to each of the trees.



	Type	Tag	Name	Age	Diameter	Stems	Category	Shape	Height
T2	T	2	Sorbus intermedia (Swedis...	EM	320	1	B1	N	10
T3	T	3	Platanus X hispanica (Lond...	EM	415	1	B1	F	14
T4	T	4	Platanus X hispanica (Lond...	EM	405	1	B1	M	14
T5	T	5	Ilex aquifolium (Holly)	M	185,200...	3	C1	C	8
T10	T	10	Sorbus intermedia (Swedis...	EM	295	1	B1	S	10

- The shape is calculated by using a ratio of the lower crown dimensions.
- Using the F (full) setting will set the upper crown to 95% of the lower crown to produce a very broad crown shape.
- M (medium) represents 75%.
- N (narrow) is 60%.
- S (semi-conical) and C (conical) have a pointed top (0%) but the S setting has a broader middle.
- C and S would be used for some conifer species which have a typical triangle shape (also some broadleaves such as Italian Alder can have this appearance).

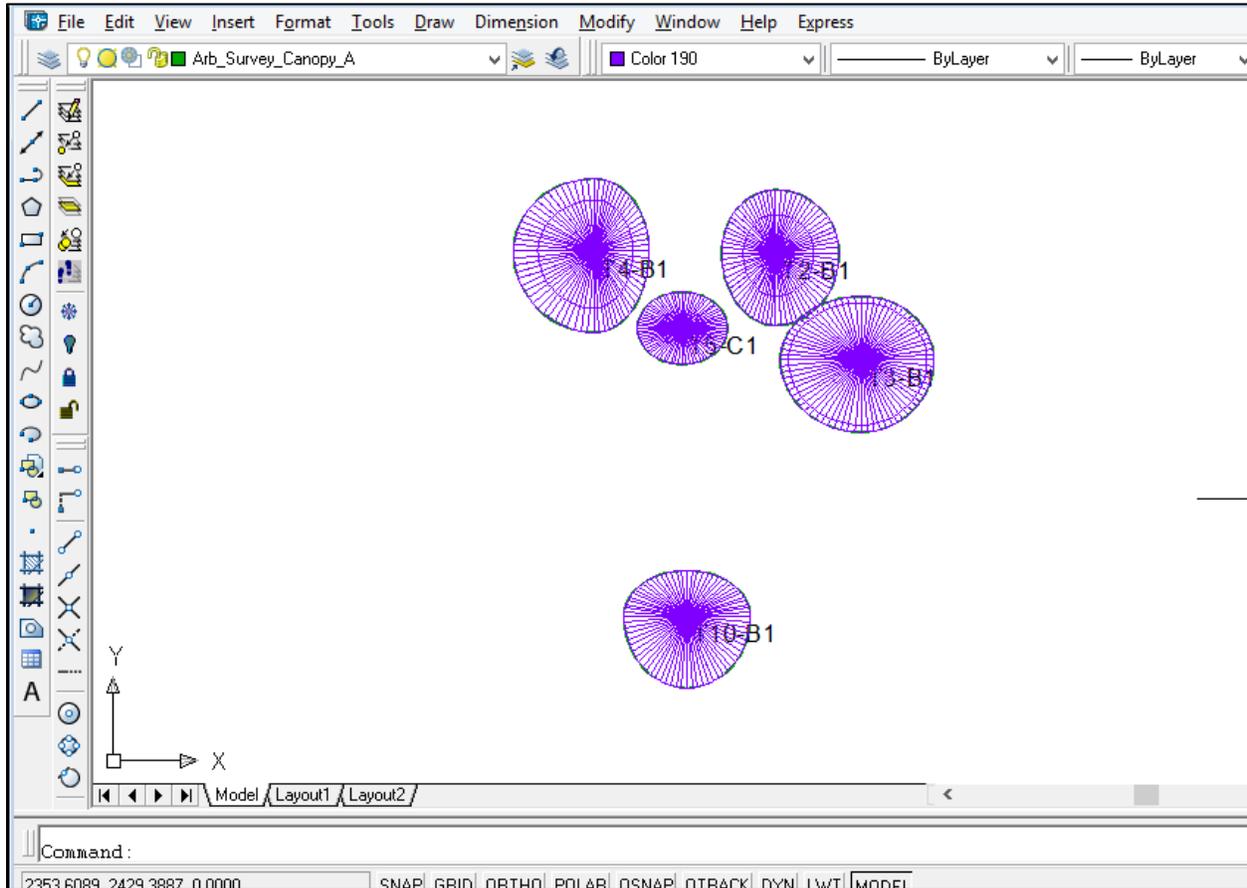
We now need to go into the drawing functions window and add a new entity for the 3D Tree. I have set its dimensions as below. I am using the first layer of the demo with a colour override. Note the crown shape has been set to our new field.



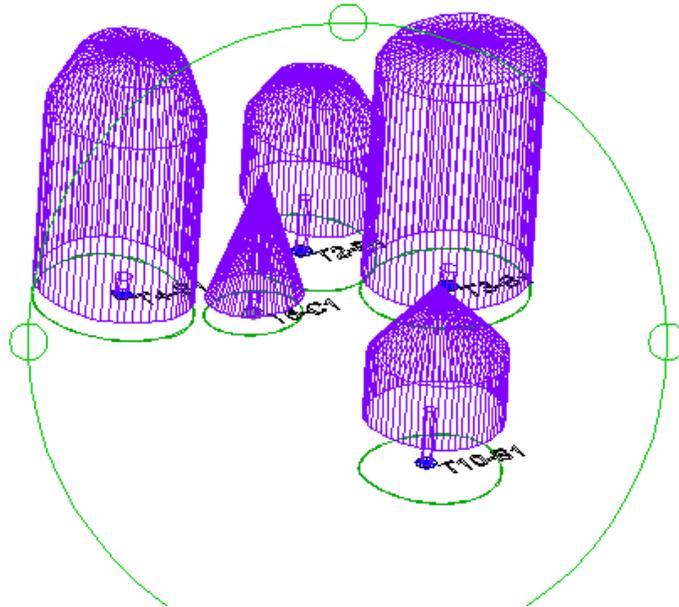
The resulting map display showing that the 3D trees exist with their purple colour.

Axciscape can't actually show them in 3D so represents them with the spoke lines.

As mentioned before, you need a CAD program such as AutoCAD full version to draw the 3D trees. Once exported from Axciscape as a script file and drawn using the 'Run Script' function within AutoCAD, the trees are shown as below. We are of course currently looking down vertically at the trees.



If I now use the AutoCAD Orbit control to manipulate the display, we can see the results and the different crown shapes. Note how the original canopy, category and text are also drawn, as I kept these switched on. They have no height so are drawn at ground level.



I have rotated the display further and carried out a quick render. Green would have been better!

