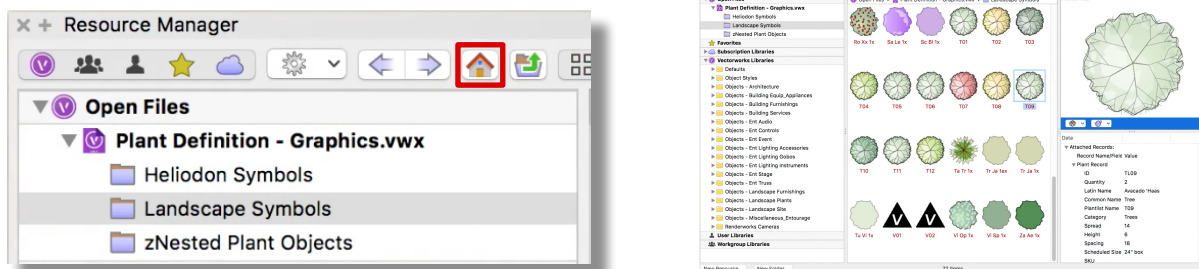


# SITE DESIGN

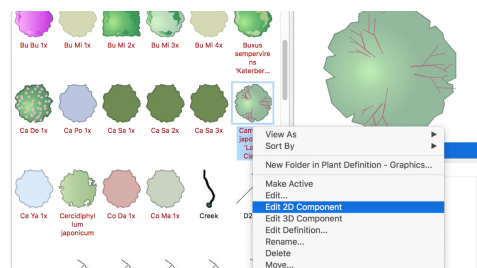
## PLANT DEFINITION: GRAPHICS

Plant Definitions are stored as Symbol resources that can be accessed through the Resource Selector of the Plant Tool or directly through the Resource Manager. These Symbols store both the 2D and 3D graphics of the plant, as well as insertion options, schedule information, render settings and botanical information about the plant. In this chapter, we will take a look at both the 2D and 3D graphics of a Plant Definition. If you have not already viewed the chapters on the Resource Manager and Object Types, check out The Basics Guide and watch these chapters first. These chapters will help you understand Symbols and the use of the Resource Manager.

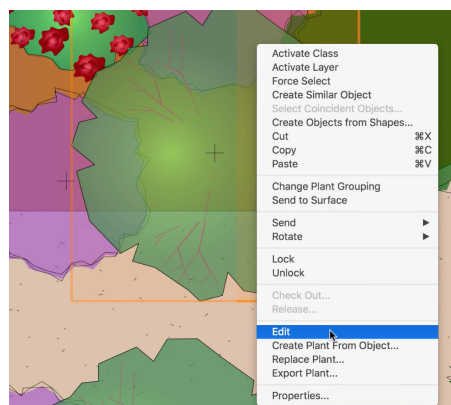
Let's start by taking a look at one of the plants placed in this file. We can access the graphics of this Plant object in two ways. One way is through the Resource Manager. To do this, Open the Resource Manager and Navigate to the Active File. Click the Home Button to show the Active document.



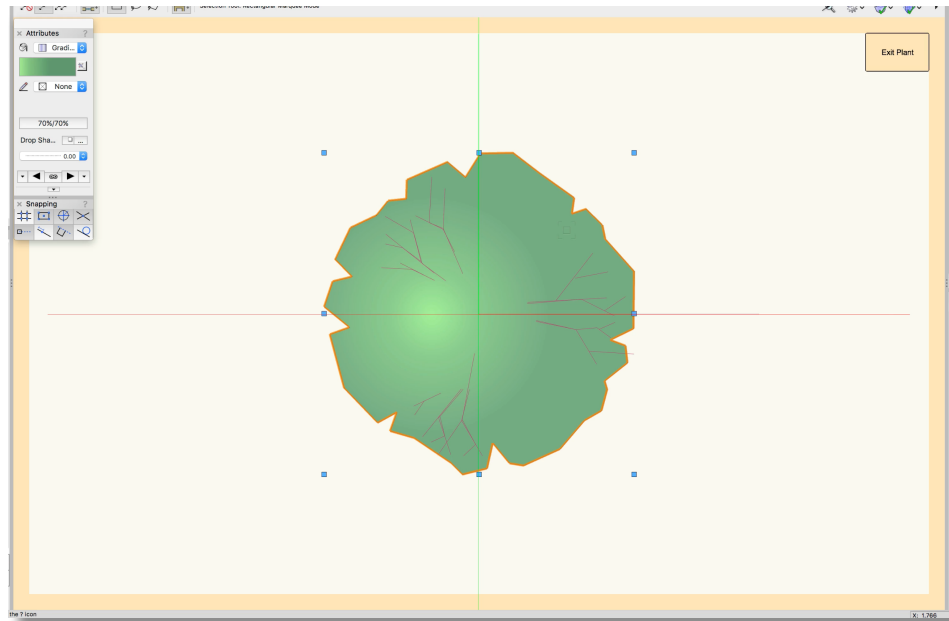
Find the plant symbol and right-click on the symbol resource. Here, we can edit the 2D component or 3D component.



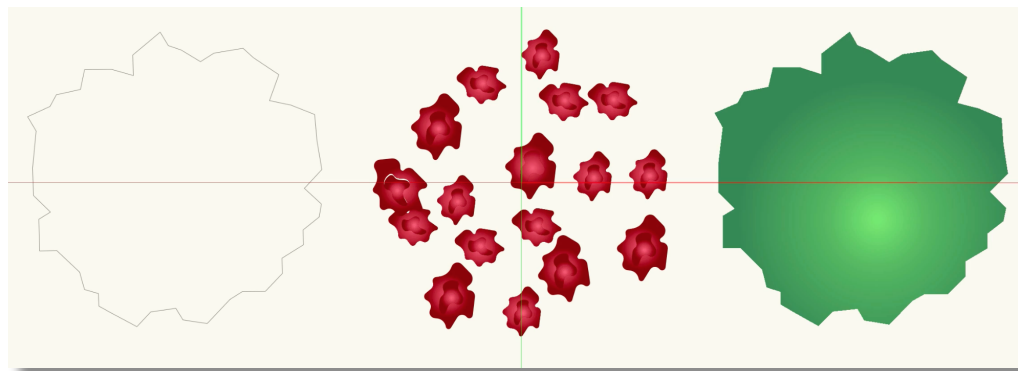
The other way to edit the graphics is by right-clicking or double-clicking on a placed Plant object. Choose to Edit the 2D or 3D Graphics. Let's take a look at the 2D Graphics for this plant.



After clicking OK in the Edit dialogue, we are brought into the Edit Mode for this Plant Definition. Edit Modes are indicated by a colored border around the drawing and an exit button in the upper right corner. The same Edit mode can be accessed by right clicking on the the Symbol in the Resource Manager and choosing, Edit 2D Component.



In this edit mode, we can directly edit the 2D geometry of the plant. The 2D graphics for plants are typically made up of several parts. If we separate these objects, you can see that this particular plant consists of a base outline object, a color fill object, and objects that represent the interior line work. Other plants may also have objects that represent the bloom or canopy of the plant.

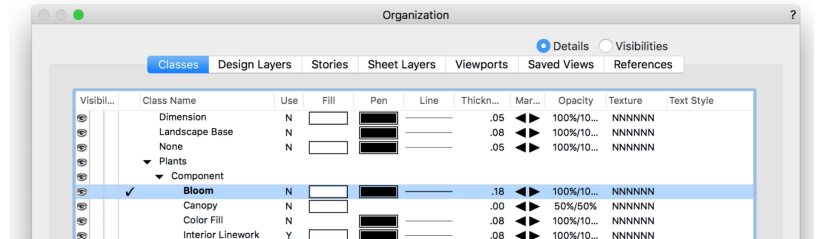
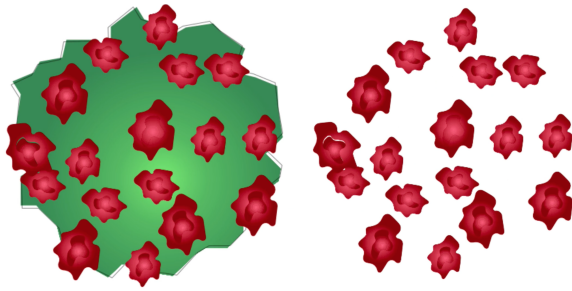


Separating these objects is important. First, if we take a look in the Object Info Palette, we'll notice that each of these objects is in a different class. There are separate classes for each part of the 2D graphics. If you are not familiar with classes and their uses, please take a few minutes to review the Introduction to Class chapter.

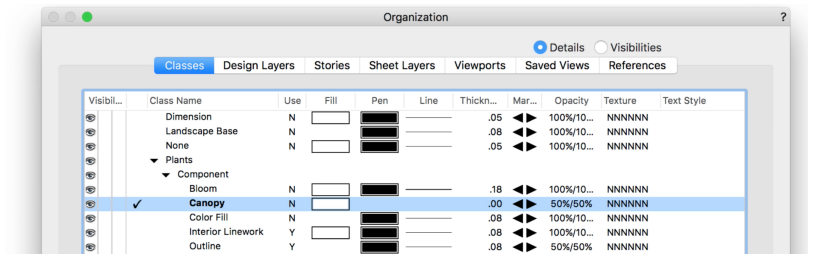
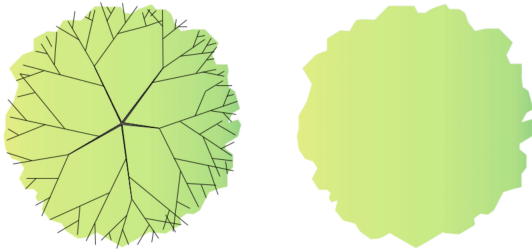


The following classes are used by the 2D graphics of the default plants in Vectorworks Libraries:

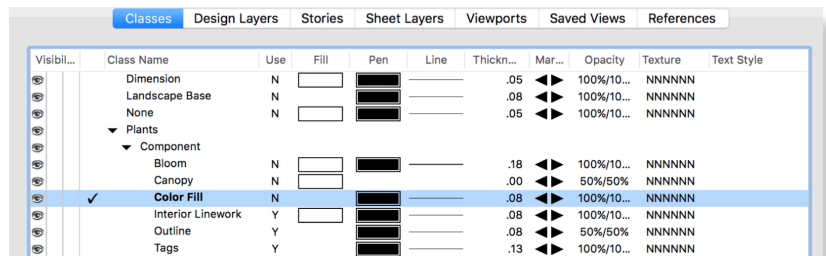
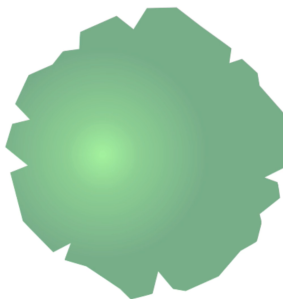
**Plant Component Bloom:** Objects that represent the bloom, like flowers, will be placed in this class.



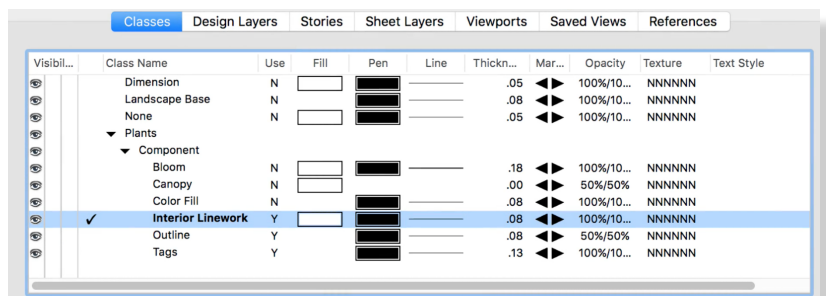
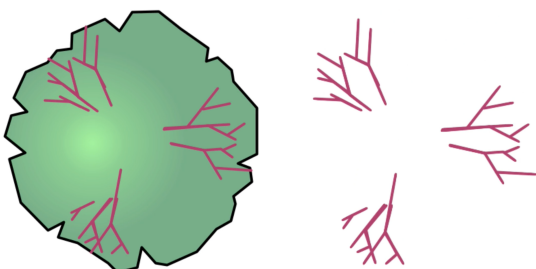
**Plant Component Canopy:** Objects that represent the canopy of trees are placed in this class. Objects in this class will have an opacity of 50% by default. This opacity is controlled by the class attribute settings. With this opacity, lower story planting can be seen through the plant's canopy representation.



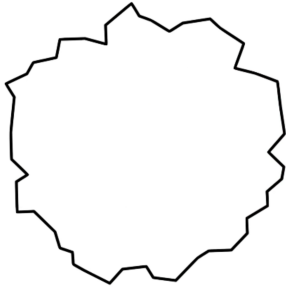
**Plant Component Color Fill:** Objects that represent the color of the plant are placed in this class. These objects typically have their pen style set to None. Unlike objects in the Canopy class, this class is set to 100% opacity. Objects in this class are fully visible, as they usually represent proposed understory plants, which do not need to show what features may be underneath.



**Plant Component Interior Linework:** Any objects needed to represent detail linework are placed into this class.



**Plant Component Outline:** The outline object is a simple shape to represent the plant. Typically, it is the same shape as the Color Fill object, but has the Pen Style set to Solid and the Fill Style set to None.

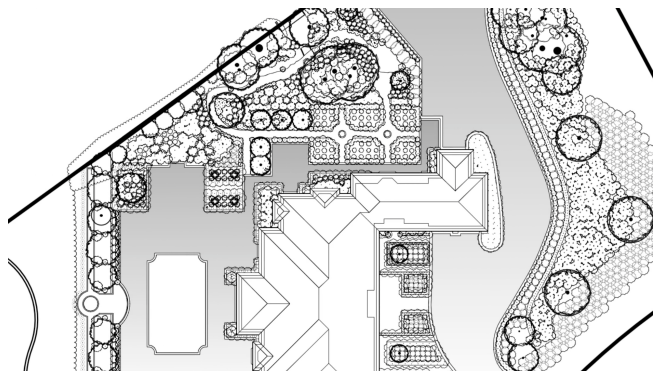


Classes										
Visibil...	Class Name	Use	Fill	Pen	Line	Thickn...	Mar...	Opacity	Texture	Text Style
	Dimension	N				.05		100%/10...	NNNNNN	
	Landscape Base	N				.08		100%/10...	NNNNNN	
	None	N				.05		100%/10...	NNNNNN	
	▼ Plants									
	▼ Component									
	Bloom	N				.18		100%/10...	NNNNNN	
	Canopy	N				.00		50%/50%	NNNNNN	
	Color Fill	N				.08		100%/10...	NNNNNN	
	Interior Linework	Y				.08		100%/10...	NNNNNN	
	Outline	Y				.08		50%/50%	NNNNNN	
	Tags	Y				.13		100%/10...	NNNNNN	

Classing these different parts allows the plant to be displayed in different ways. With all classes visible, the design is illustrative and great for a prospective client.

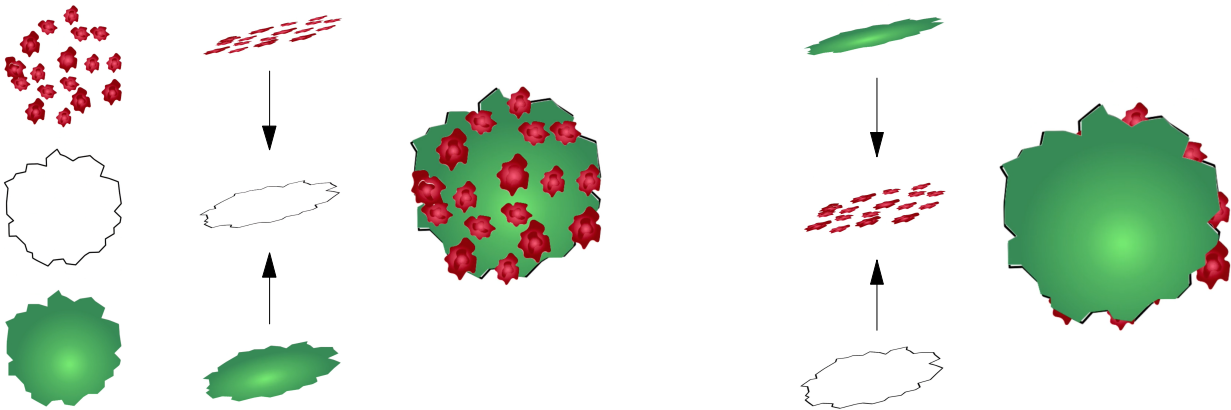


Setting the Linework, Bloom, Canopy, and Color Fill classes to invisible will show simple outlines for the Architect. Not all plants will use all of these classes. For example, a shrub will likely not need to use the Canopy class where a tree typically will.

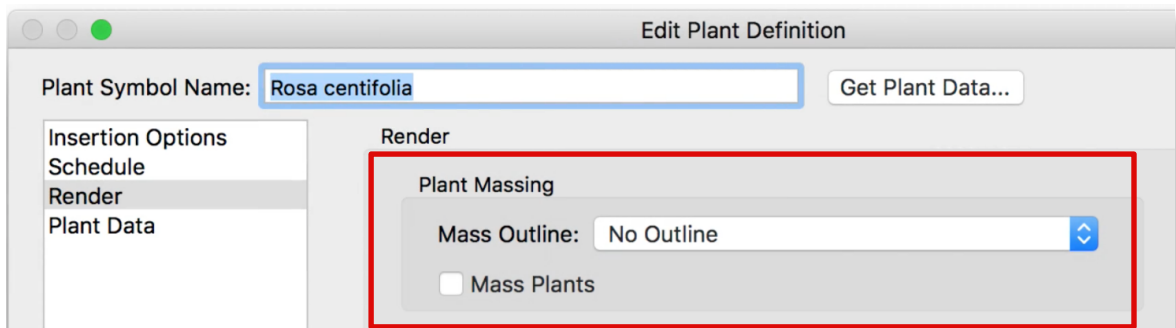


It is also possible to have multiple objects using the same class. A plant could have several objects in the Bloom class representing the bloom of the plant or you may have multiple objects in the Color Fill class. In another case, the bloom of a plant may consist of multiple objects stacked on top of each other with different fills and opacity settings.

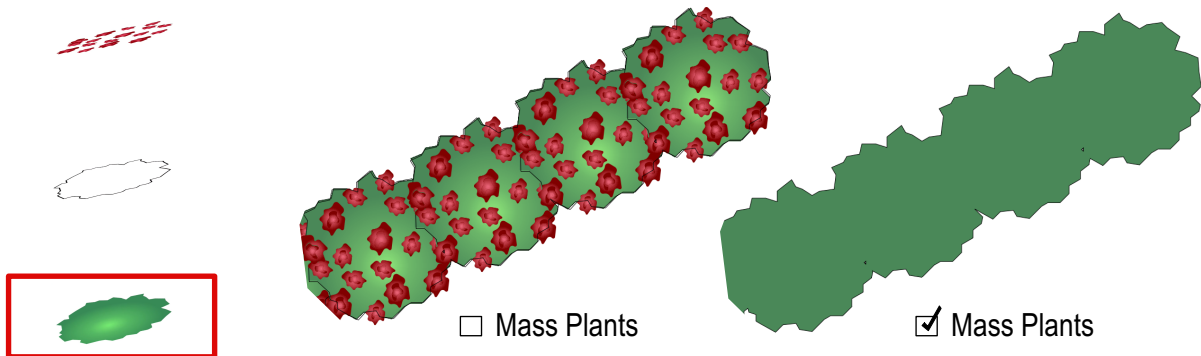
The stacking order of these objects matter. Not only does the stacking order help acheive the desired 2D representation of the plant, but it also sets which object will be used to generate plant massing and shadow effects.



Plant Massing is used to either create additional outlines and give the 2D representation of the plant a more organic look, or to create a continuous outline around overlapping plants. It can also be used to hide interior line work. However, it is typically a better idea to use the class visibility settings to hide line work when needed.

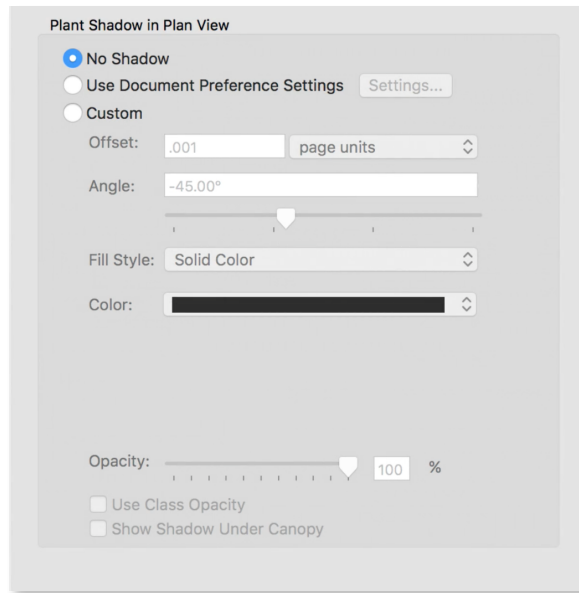


The backmost stacked object in the 2D graphics is used for Plant Massing and Plant Shadows. Typically, the backmost object is the Color Fill object. The plant mass will use the same fill as the color fill object. If the backmost object is the outline object, the plant mass will not have a fill.

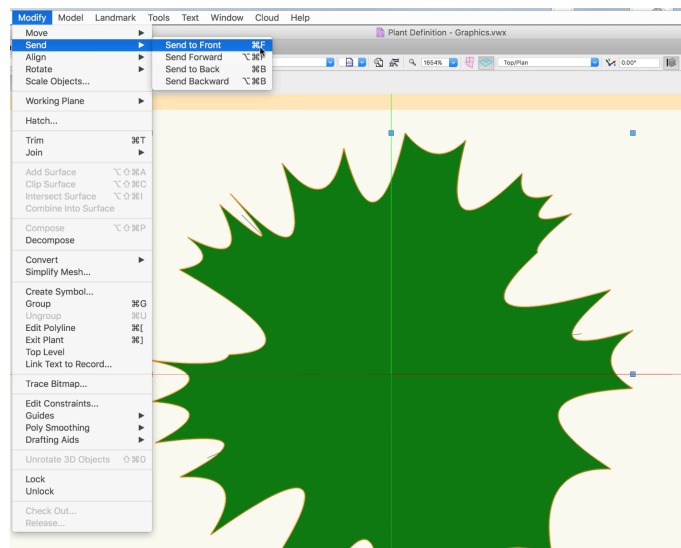


The shape of the backmost object is also used for the Plan Shadow of a plant, if the shadow is enabled.

The shadow only uses the shape of the backmost object. It's important to make sure this object does not have any cut-outs or openings, as the plan shadow will be created with those openings as well. The shadow color is chosen through the Plant Definition or Instance settings.

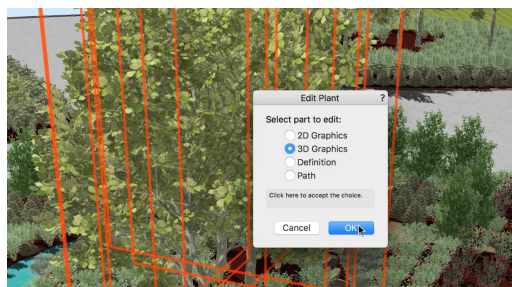


To change the stacking order of objects, simply select the object and go to Modify > Send.

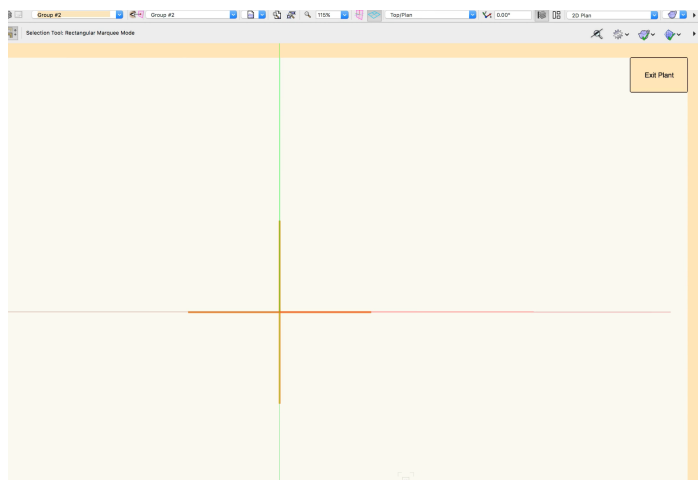


We will go over applying Plant Massing in more detail in another chapter. We will also go over the creation of plant graphics in another chapter. The key thing to remember is any changes made to the graphics of the Plant Definition will affect all instances of the plant in the active document. All of these objects make up the 2D representation of the plant. Now, let's take a look at the 3D representation.

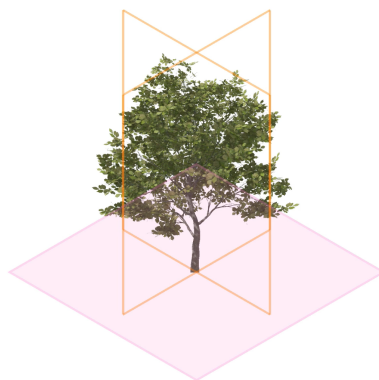
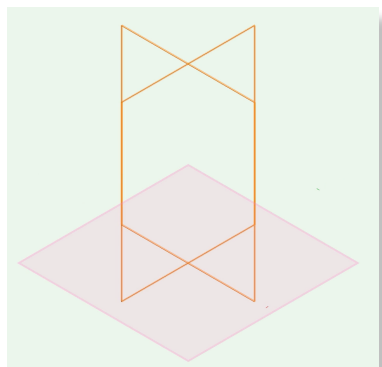
Following the same procedure as earlier, we can choose to edit the 3D Graphics or Component by Editing a Plant Instance or going directly to the Plant Definition Symbol in the Resource Manager.



The first thing you will notice when entering the edit mode for the 3D graphics is what appears to be two crossed lines. These are not actually lines, but just the Top view of the Image Prop object that represents this plant in 3D.



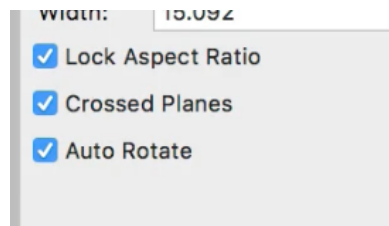
In order to see the 3D representation, we need to render the view. When rendered in a render mode that supports textures, we see a photo realistic representation of the plant.



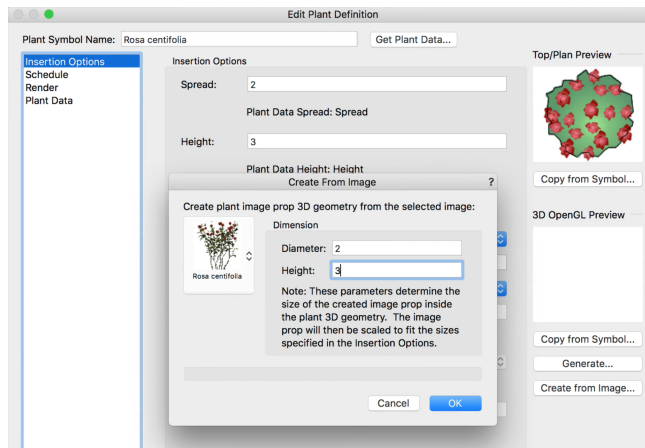
This object is called an Image Prop. Image Props use imported images to generate a representation of an object. They provide a quick and efficient way of creating the 3D representation for plants.



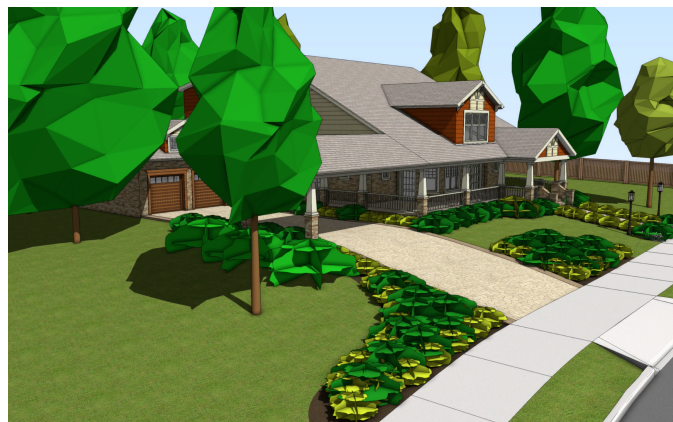
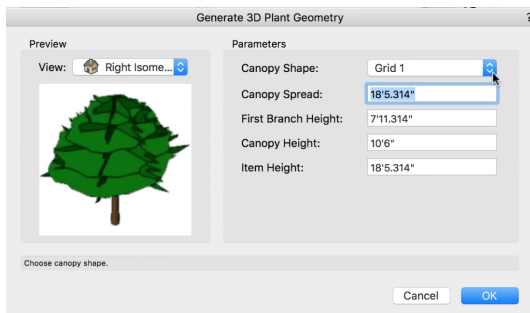
Since these objects are essentially flat images, they can be configured to auto rotate. This keeps the image aligned to your current view. This creates a visual effect which makes the object appear to be 3D geometry.



An Image Prop can be created using the Create from Image option found in the Edit Plant Definition dialogue box. We will go through the process of creating a plant image prop for a plant in a later chapter. For more information on Image Props and their creation, in general, please see the Image Props chapter in the Rendering in Vectorworks Guide.



In addition to Image Props, a 3D model can also be used for a plant's 3D representation. Initially, a 3D model can be created using the Generate option found in the Edit Plant Definition dialogue. This option creates a basic model of the plant.



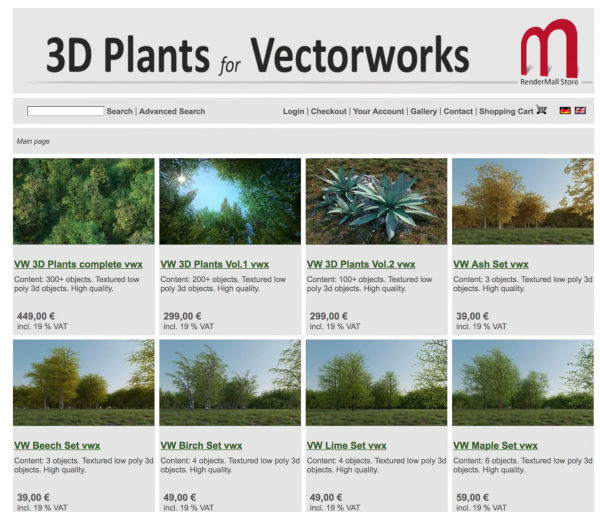
We will discuss how to use the Generate option and it's various settings in another chapter, but this is commonly used to create an initial or schematic representation of the plant until an actual plant species is assigned.



Once a plant species is chosen, you can place full 3D models of species specific plants using the VBvisual Plant tool in the Visualization Tool Set. Vectorworks provides a sampling of various plants. VBvisual Plant objects have Height, Resolution, and Season options allowing you to customize the look to your needs.



Additional VBvisual plants are available as well. Just click the More Plants button at the bottom of the VBvisual plant list.



Keep in mind that VBVisual plants are more complex than Image Prop representations. In most cases, an Image Prop representation is best for plants that will be displayed in large numbers. Image props are very efficient and provide a great representation of a plant. Now that we have taken a look at 2D and 3D graphics of the Plant Definition, we will go over the data and settings of Plant Definition in the next chapter.