

# AutoGrass 1.10

## User Guide



# Table of Contents

<b>Quick Start</b> .....	<b>4</b>
<b>Introduction - Why Autograss</b> .....	<b>5</b>
<b>Installation</b> .....	<b>6</b>
<b>Autograss For Workstations</b> .....	<b>6</b>
<b>Autograss For Render Nodes</b> .....	<b>9</b>
<b>Autograss Render License Server</b> .....	<b>11</b>
Uninstalling The Autograss License Service.....	13
Managing The Autograss License Service.....	14
Troubleshooting Firewalls.....	15
<b>Troubleshooting Network Installations</b> .....	<b>15</b>
<b>Using Autograss In Your Scene</b> .....	<b>16</b>
<b>Applying Autograss To An Object</b> .....	<b>16</b>
<b>The Autograss Panel</b> .....	<b>17</b>
<b>Viewport Display Rollout</b> .....	<b>17</b>
Preview In Viewport.....	17
Preview Density.....	17
Max Blades Seen.....	17
<b>Parameters Rollout</b> .....	<b>17</b>
Source Object.....	17
Presets.....	17
Grass Presets.....	18
Grass Material Presets.....	18
Earth Material Presets.....	18
Renderable.....	19
GI And Shadow .....	19
<b>Parameters</b> .....	<b>19</b>
Density.....	19
Length.....	20
Cutoff.....	20
Thatch.....	21
<b>Variation</b> .....	<b>21</b>
Length Var.....	21
Cutoff Var.....	22
Thatch Var.....	22
Direction Var.....	23
<b>Placement</b> .....	<b>23</b>

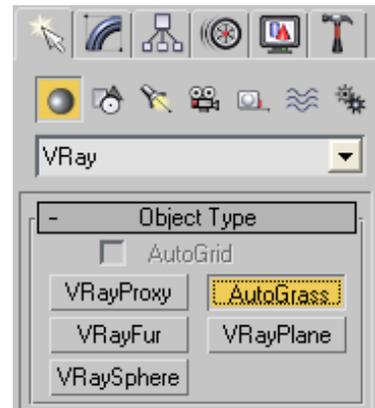
Entire Object.....	23
Selected Faces.....	23
Material ID.....	23
<b>Mapping Channels.....</b>	<b>24</b>
Blade UV.....	24
Root Position.....	24
Thatch.....	25
<b>Maps Rollout.....</b>	<b>25</b>
Density Map (mono).....	25
Length Map (mono).....	26
Cutoff Map (mono).....	26
Thatch Map (mono).....	27
<b>System Rollout.....</b>	<b>28</b>
Memory Limit.....	28
About Autograss.....	28
<b>Tutorials And Information.....</b>	<b>29</b>
<b>Tutorials.....</b>	<b>29</b>
<b>Product Information.....</b>	<b>29</b>
<b>Purchase Information.....</b>	<b>29</b>

# Quick Start

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- 1) Close any open copies of 3dsMax on your system.
- 2) Install Autograss on your workstation.  
Run AutograssInstaller\_VRay3\_X64.exe.  
Follow the instructions on the installer GUI.  
(The Autograss archive also includes legacy versions for V-Ray 2 and V-Ray 1.5.)
- 3) Open 3dsMax and load a scene with some terrain, or create a simple terrain. Be sure the terrain is actual size (1:1 scale). Autograss creates real-world sized grass.
- 4) Select the terrain object that you would like to cover with grass.

- 5) Create the Autograss object. This is done using the Create tab in 3dsMax (see screenshot). Click the Geometry button (the little ball). Then select the “V-Ray” category using the pop-up selector. Then click the AutoGrass button to create the Autograss object. The Autograss object will be attached to the terrain object you selected in step 4.



- 6) If you want something other than Kentucky Bluegrass, select the Autograss object and open the Modify tab. The Autograss modify panel has a button called “Grass Presets” (see screenshot). Click it and you can select different kinds of grass.



- 7) Render and enjoy.

## Introduction - *Why Autograss*

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Autograss is your one-click grass solution for V-Ray in 3dsMax.

Adding realistic grass to your scenes used to be a frustrating chore. Having to deal with textures, displacement maps, proxies, memory limitations ... Autograss saves you from all that hassle. Select the object to cover with grass, click Autograss, and you're done. You've got photorealistic grass that works with all of V-Ray's great features, like shadows, reflections, depth of field, and global illumination.

You don't need to model any grass. Autograss includes eleven preset grass types covering the most commonly used grasses. Autograss renders all the grass blades and thatch for you, automatically.

Autograss works in any size scene, from a cozy back yard to an entire eighteen-hole golf course with billions of grass blades. There's no need to divide your scenes into passes or layers. With Happy Digital's advanced memory management, running out of memory is never a problem.

Autograss is fast. Typical scenes takes only minutes to render at high quality. Setup is instant. Autograss it not a stand-alone program. It works right within 3dsMax, so it fits into your pipeline easily. There is no extra loading, exporting, or file format exchanging stuff.



*30 million blades of grass, set up with just a few clicks. With high quality lighting and motion blur, this image renders in under 11 minutes.*

# Installation

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## Autograss For Workstations

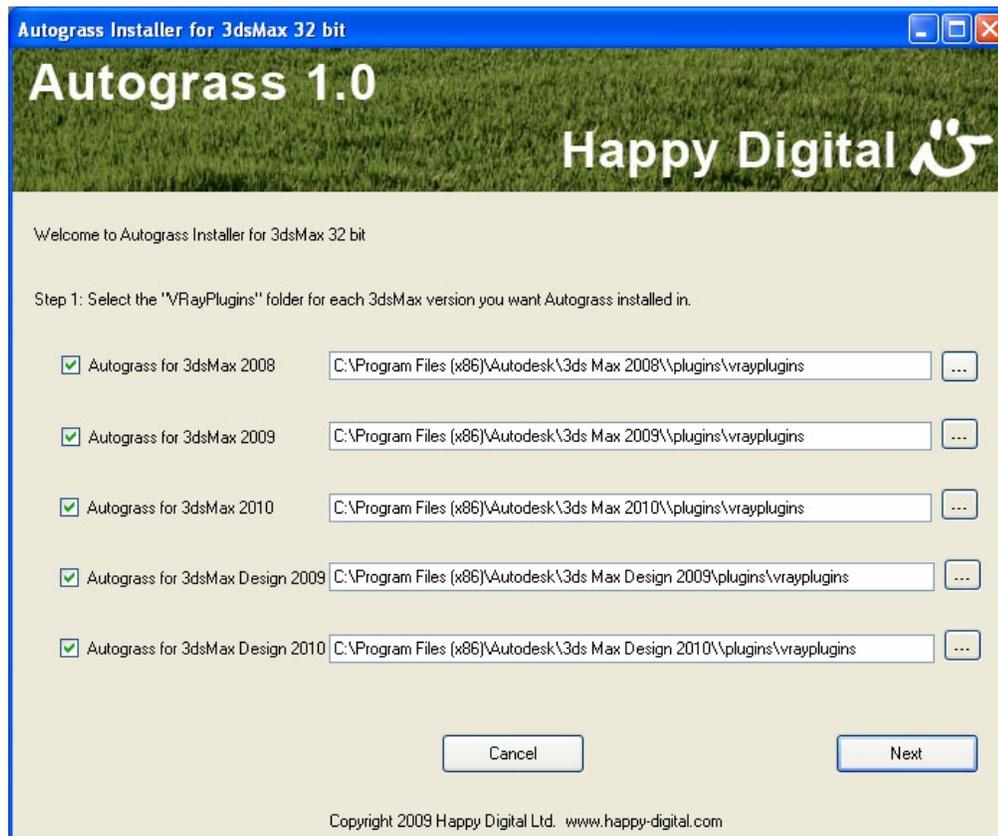
Close any open copies of 3dsMax on your system.

Install Autograss on your workstation:

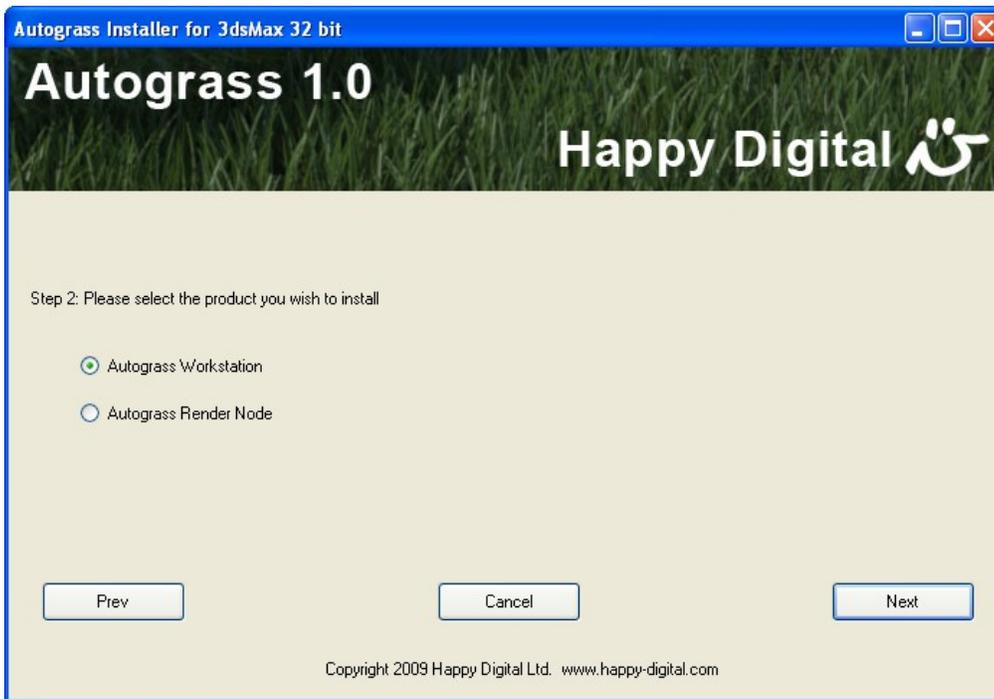
Run AutograssInstaller\_VRay3\_X64.exe.

(The Autograss archive also includes legacy versions for V-Ray 2 and V-Ray 1.5.)

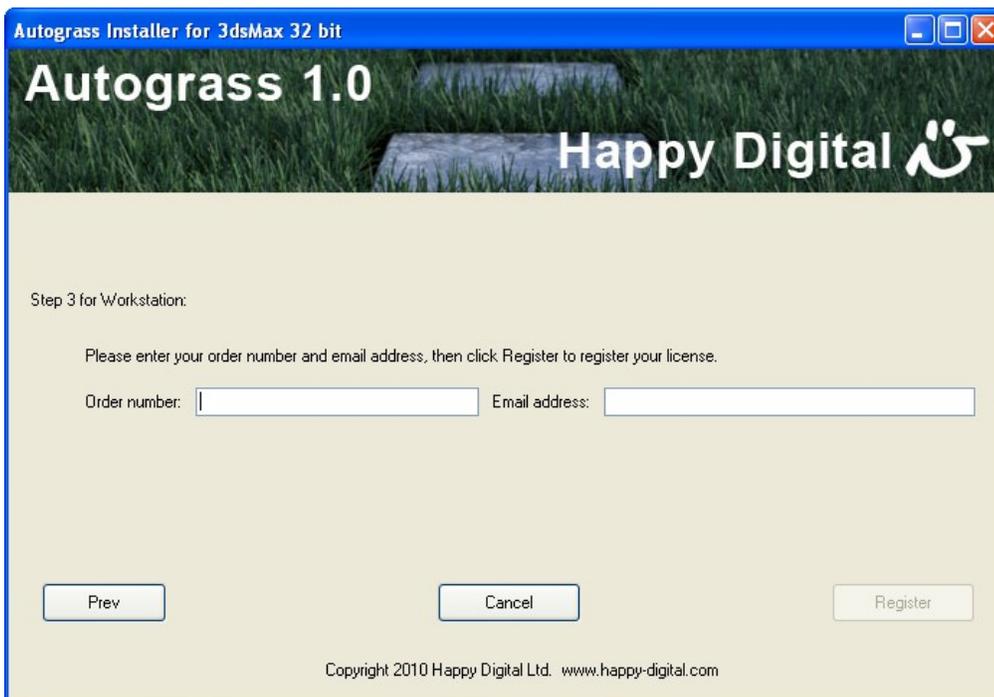
The installer automatically locates all the versions of 3dsMax on your machine. Each version of 3dsMax has a different build of Autograss that will be installed for you. If you do not wish to install Autograss for a particular version of 3dsMax, you can uncheck the checkbox for that version. Also, if the installer failed to automatically find the V-RayPlugins folder for some versions that you have installed, you can click the browse button beside that version to browse to the correct folder. Then click Next.



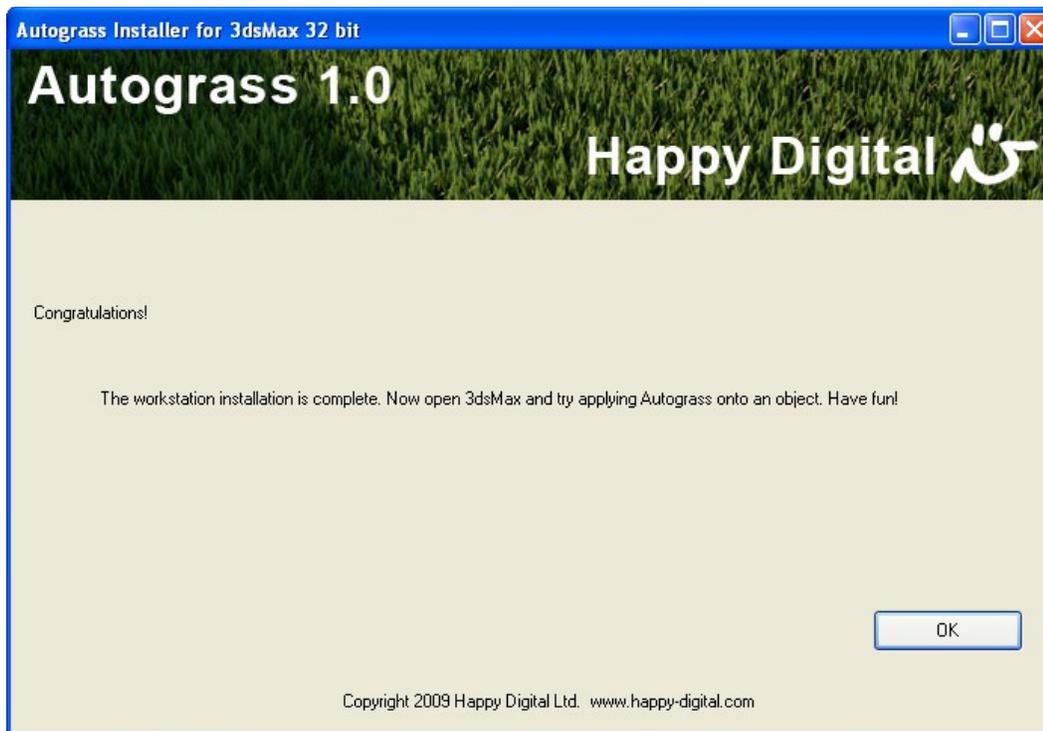
On the next screen, choose Autograss Workstation and click Next.



Next you will be prompted for your order number and email address that you used to order Autograss. Your order number is included in the receipt email you received when you ordered Autograss. Your workstation needs to be connected to the internet for this step. Enter these values and click Register. The installer will contact happy-digital.com once during installation.



The Autograss Installer will complete the installation.



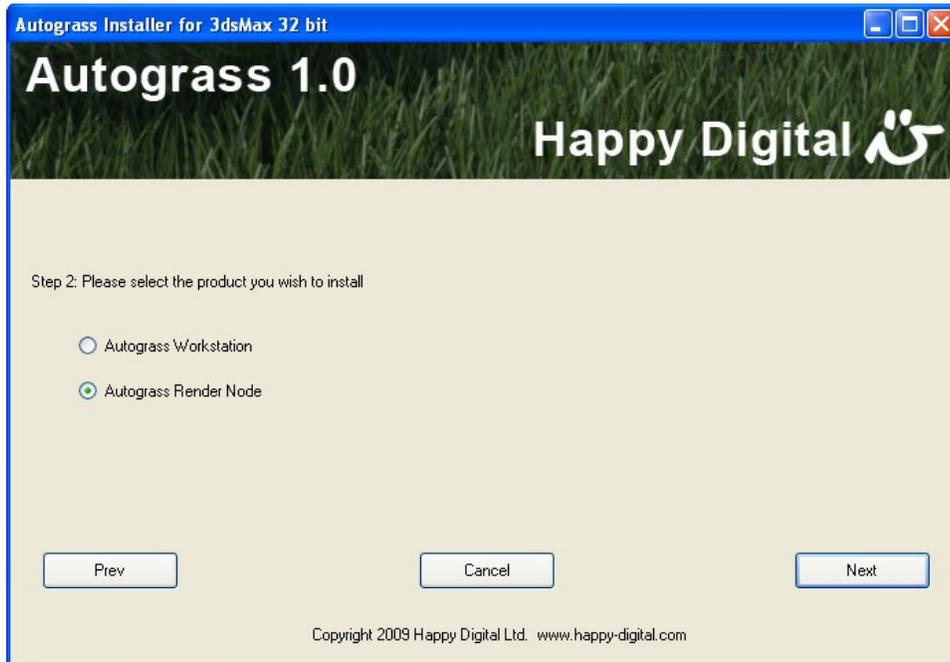
Autograss is locked to your workstation using the “autograss\_key.txt” file, which resides in your V-RayPlugins folder. The Autograss Installer creates this file for you automatically.

If you purchased multiple licenses of Autograss and you wish to run 3dsMax from a shared network drive, you can paste all the keys for all your licensed workstations into a single “autograss\_key.txt” file in the V-RayPlugins folder. Paste each key on a separate line.

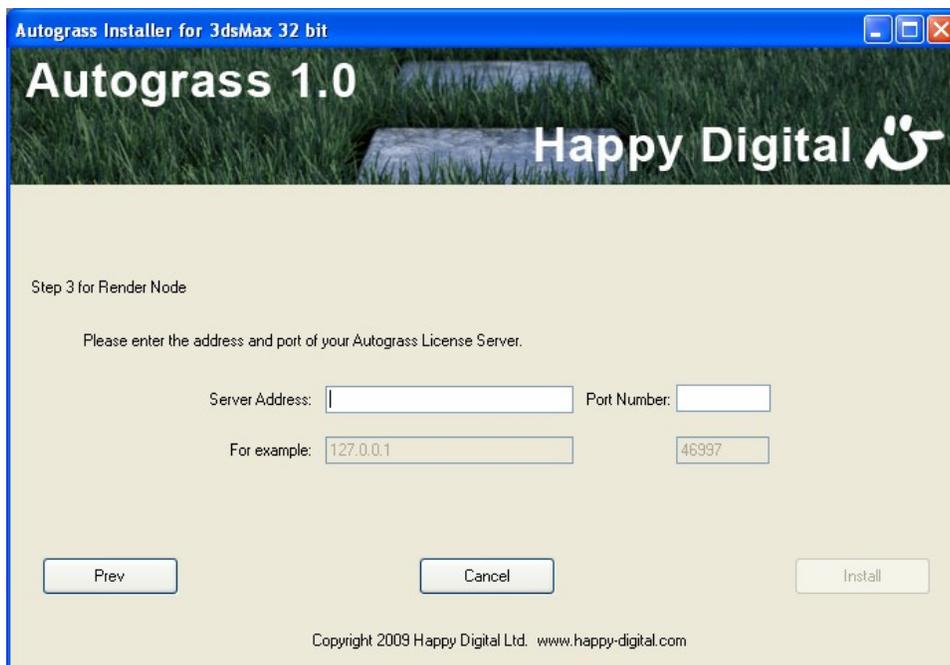
Congratulations! You can now open 3dsMax and start using Autograss in your projects!

## Autograss For Render Nodes

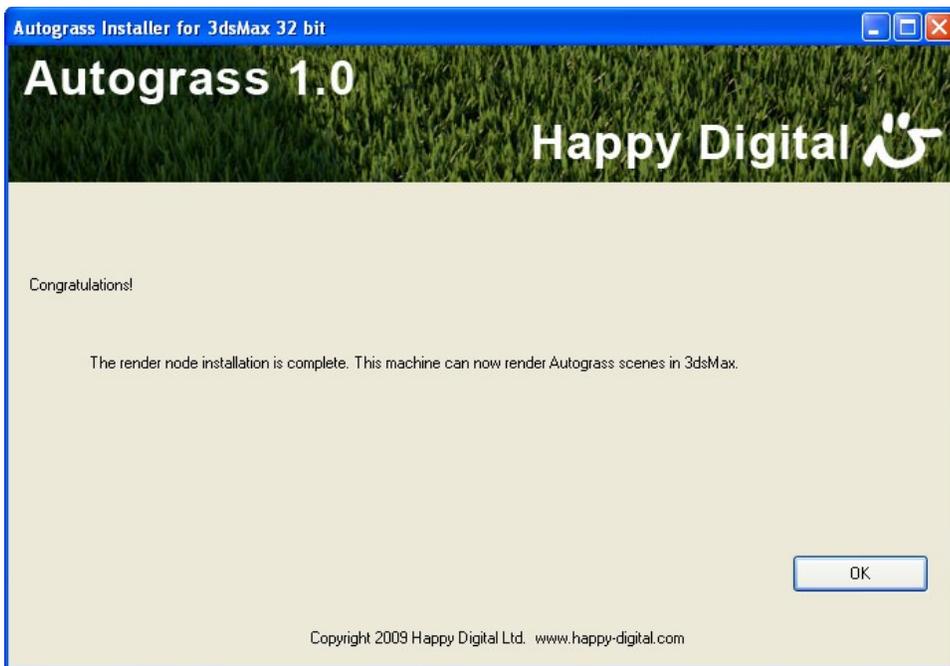
On machines that are set up to render on your network, but do not require the capability to edit scenes in 3DSMax, you can install Autograss for render nodes. Render node licenses cost less than workstation licenses, and they use floating licenses from the Autograss Render License Server, which you set up on your own server. Installation begins just like the workstation installation, but you select Autograss Render Node on the second screen.



Next enter the server address and port number of your Autograss Render License Server.



The Autograss Installer will complete the installation.

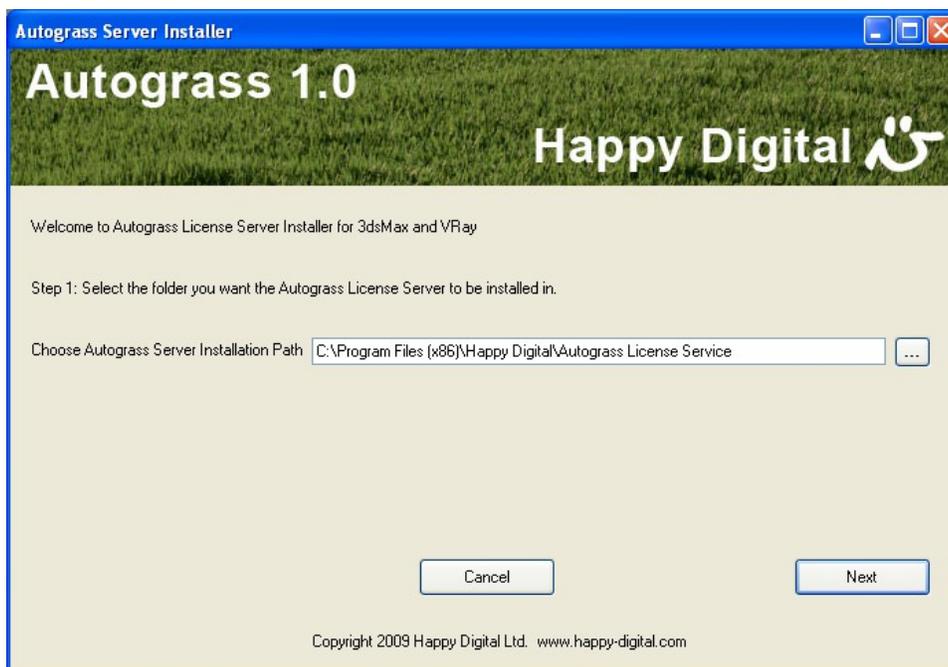


Next you will need to install the Autograss Render License Server, so that your render nodes can get floating licenses. Please see the section titled Autograss Render License Server.

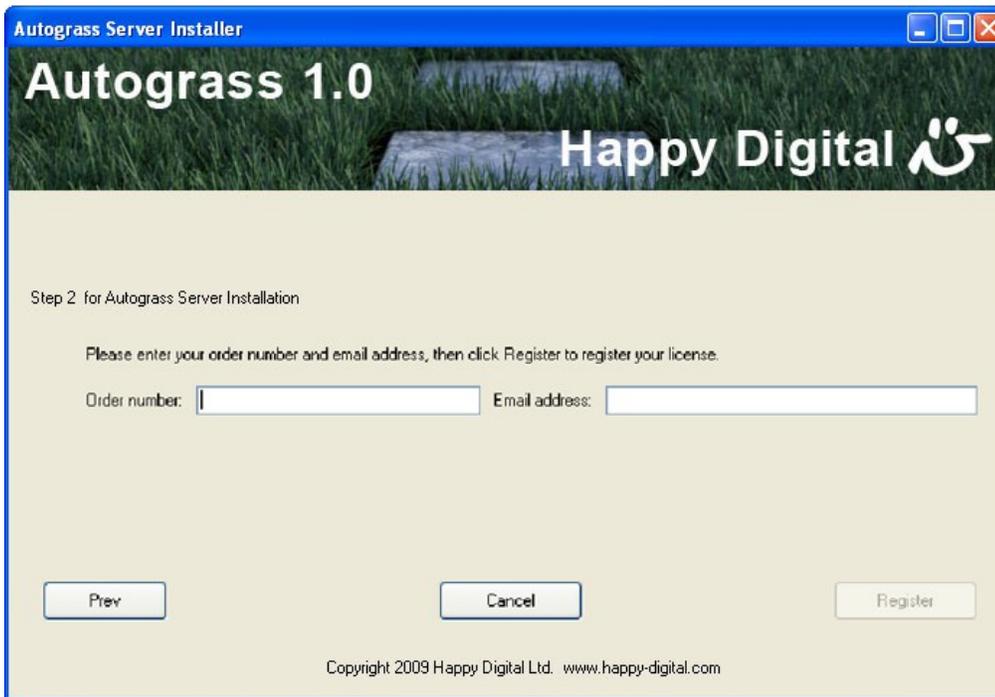
## Autograss Render License Server

Autograss render nodes use a floating license service that runs on a server on your own network. So the first thing you need to do is choose a machine on your network to be the license server. You might already have a machine set up to serve licenses for other software. This would be suitable. But any machine that you are going to keep on your network permanently will work. The Autograss Render License Server will be locked to this particular machine, so be sure to choose one that you are going to keep on your network.

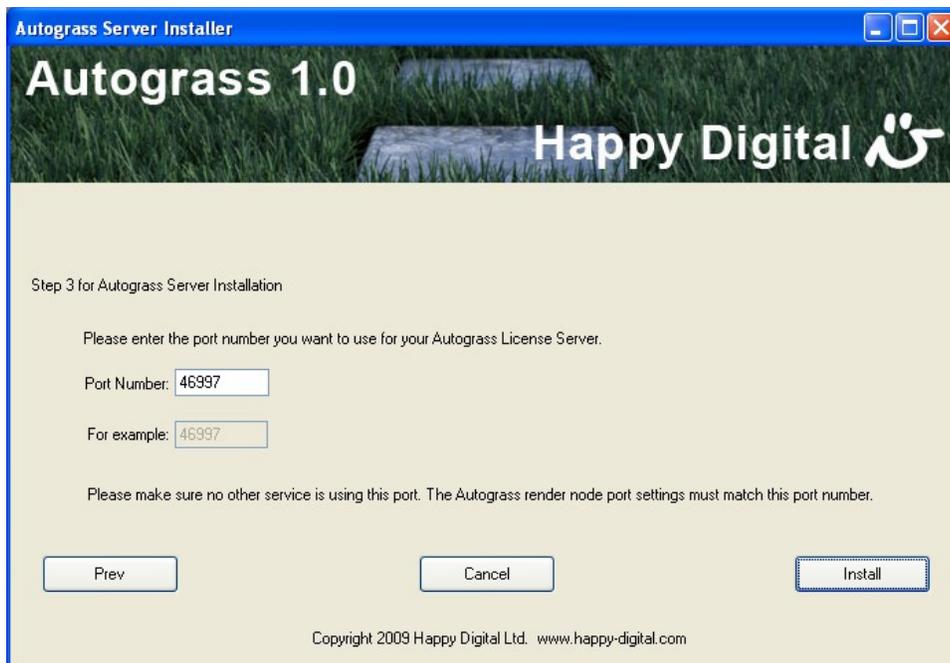
Once you have chosen the machine that you want the Autograss Render License Server to be installed on, run **AutograssServerInstaller.exe**. By default, the license server will be installed in the “Program Files\Happy Digital\Autograss License Service” folder. If you want to install to a different folder, click the browse button to select a different folder. Then click Next.



Next you will be prompted for your order number and email address that you used to order Autograss. Your order number is included in the receipt email you received when you ordered Autograss. Your computer needs to be connected to the internet for this step. Enter these values and click Register. The installer will contact happy-digital.com once during installation.

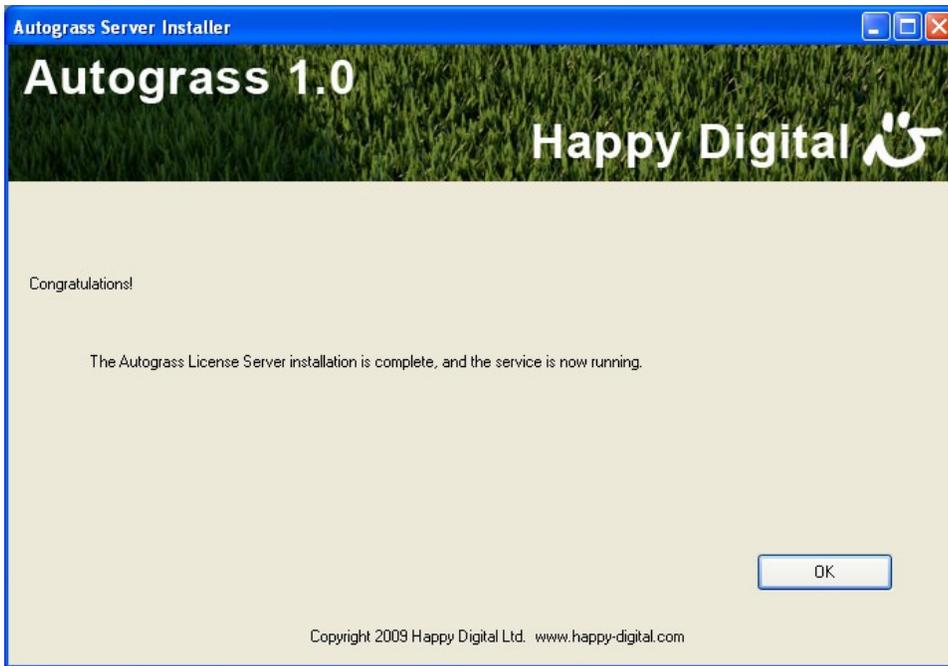


Next, type in a port number that is **not used** by any other services. If you have a firewall, please make sure this port is open. You will also need to make sure the port settings on the render nodes **match** this port number. Then click Install.



You will see a window pop up which is starting the service, then the final step window for Autograss Server Installer will congratulate you on successfully finishing the installation.

Congratulations! The license server is now up and running!



## Uninstalling The Autograss License Service

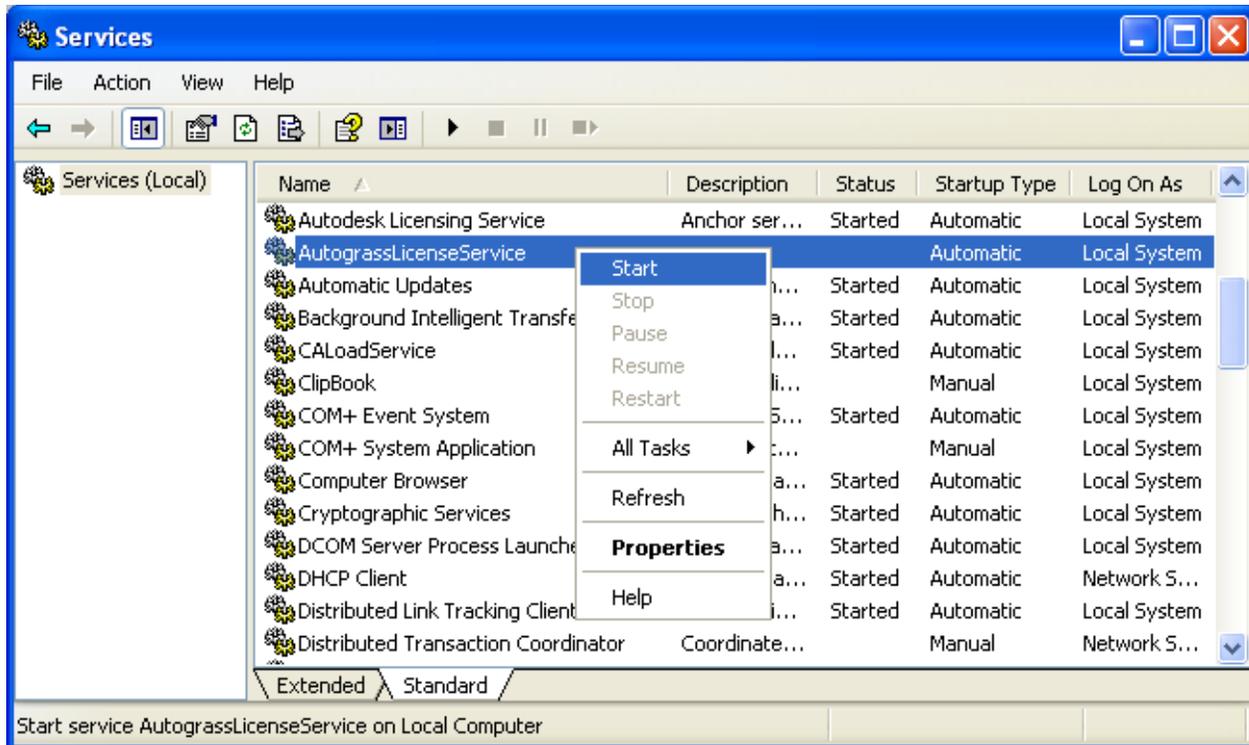
The Autograss Server Installer copies the following files to your installation path:

**AutograssLicenseService.exe**  
**install.bat**  
**uninstall.bat**  
**autograss\_license\_server\_config.txt**  
**autograss\_license\_server\_keys.txt**

If you wish to uninstall the Autograss License Service, simply double click the "uninstall.bat" file. This will remove the service from Windows. Note that the Autograss License Service files will not be removed. If you want to remove the files after uninstalling the service, simply delete the folder. You can also reinstall the service using the "install.bat" file.

## Managing The Autograss License Service

To start/stop the service, open the Windows Control Panel. Go to Administrative Tools. Double click on Services. Find AutograssLicenseService in the list of services. Right-click it, and select "Start / Stop".



When started, the service generates a log file called "autograss\_license\_server\_log.txt" so you can monitor its status. It contains information about the machine ID, Autograss License Server version, the number of licenses available, the port that the license server is listening on, and the status of the service. For example, the following log shows 20 render node licenses available:

```
Your machine ID is : 3760368271
```

```
Autograss License Server 1.0  
License Server started  
Found 20 licenses  
Port is 46997  
Listening for clients...
```

You can change the server port to whichever port you want by modifying the text file called “autograss\_license\_server\_config.txt”. It contains a line like this:

```
port: 46997
```

Set the port to the number you want and save the file. You will need to restart the Autograss License Service in order for the new port to take effect.

**IMPORTANT:**

The port number in “autograss\_license\_server\_config.txt” on the server machine **MUST MATCH** the port number in “autograss\_license\_config.txt” on the render node client machines. Be sure to set the port number in both locations when you choose your port number.

### Troubleshooting Firewalls

If a firewall is installed, you will need to allow the port you specified for the Autograss License Server to be accessible on your server machine.

For example, if you are using Windows Firewall, you will need to add an Exception for the port. Open the Windows Control Panel and choose Windows Firewall. Under the Exceptions tab, click Add Port. Type a name such as AutograssLicenseServer, and enter the port number you used in the “autograss\_license\_server\_config.txt” file. Finally, click the TCP button, and click Ok.

### Troubleshooting Network Installations

If you run any of the Autograss installers from a network drive, you may get an error message stating that the file could not be loaded. If this happens, simply copy the installer file to a local drive and run it again.

# Using Autograss In Your Scene

## Applying Autograss To An Object

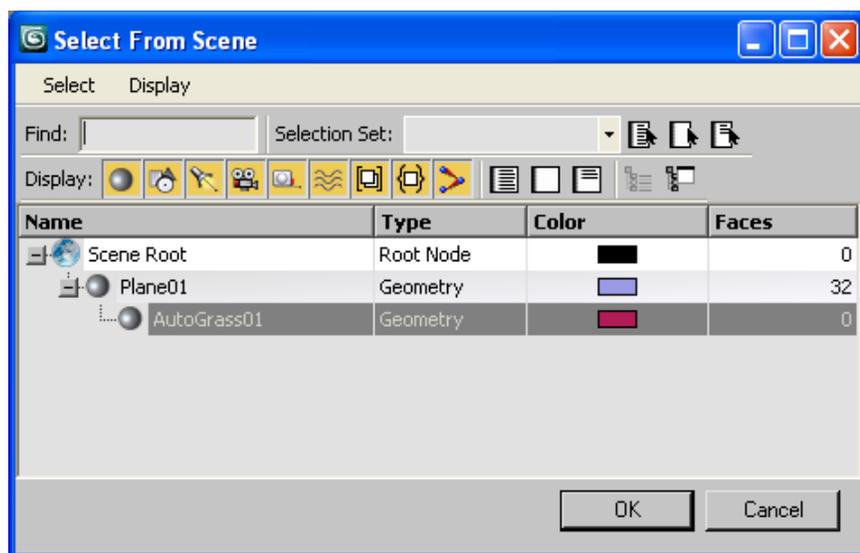
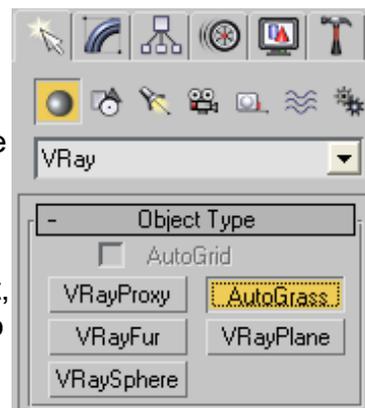
Autograss works by adding grass to an object that is already in your scene. This could be as simple as a plane on the ground, or a detailed polygon mesh. Let's try it.

Open 3dsMax and load a scene with some terrain, or create a new terrain. Be sure the terrain is actual size (1:1 scale). Autograss creates real-world sized grass. For example, you could create a plane that is 20 meters by 20 meters, which is a good sized residential lawn.

Next, select the terrain object.

Now create the Autograss object. This is done using the Create tab in 3dsMax (see screenshot). Click the Geometry button (the little ball). Then select the "V-Ray" category using the pop-up selector. Then click the AutoGrass button to create the Autograss object. The Autograss object will be attached to the terrain object you selected in the previous step.

That's all there is to it. Your scene now contains an Autograss object, linked to your terrain object. By default, the grass settings are set to Kentucky Bluegrass. Read on to the next section to see how to customize the look of your grass.



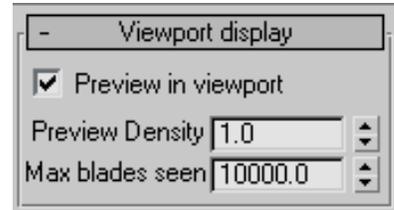
# The Autograss Panel

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To modify the Autograss settings, select the Autograss object by clicking on it in the viewport (or using the select by name button ) and then click the Modify button .

## Viewport Display Rollout

The Viewport Display rollout has options for controlling how the grass will appear in the 3DSMax viewport.



### Preview In Viewport

The Preview in Viewport checkbox determines whether Autograss will show a preview of the grass in the 3DSMax viewport. It is unchecked by default. The grass preview does not look exactly like the rendered grass, but it is close enough to give you some idea about the size and shape of the grass. It also shows the difference between live grass and thatch.

### Preview Density

The Preview Density sets the percentage of grass you want to see in preview mode. Its range is 0.0 (no grass) to 1.0 (all of the grass). This setting only affects the preview, and does not affect the rendered grass.

### Max Blades Seen

The Max Blades Seen parameter sets a limit on how many grass blades will be drawn in the viewport. This lets you get a preview of a large area without slowing down your viewport speed, by limiting the density of the grass in the preview when there are more blades than this value. This setting only affects the preview, and does not affect the rendered grass.

## Parameters Rollout

The Parameters rollout is the main rollout for controlling the appearance of the grass.

### Source Object

The Source Object button shows the name of the object that Autograss is applied to. It defaults to whatever object was selected when you created the Autograss object. To change the object that Autograss is applied to, click the button and select a different object.

### Presets

Autograss includes presets for grass types, grass materials, and earth materials. You can quickly apply these by clicking the preset button and selecting a preset.

## Grass Presets

By default, Autograss applies Kentucky Bluegrass to your object. But Autograss includes a total of eleven different types of the most commonly seen grasses, and you can apply any of these common types of grass to your object with just two mouse clicks.

Click the Presets button to open the Grass Presets window. Each type of grass has a large icon showing the look of the grass. Mouse over the icons to see more information about the grass, including the Latin name, season, texture, and common uses. We did the research for you. Click the grass icon for the type of grass you want. The viewport preview will change to reflect your choice. When you are satisfied, close the Grass Presets window to go back to your scene. Clicking on a preset icon will also apply a default grass material to your Autograss object, so it's ready to render.

## Grass Material Presets

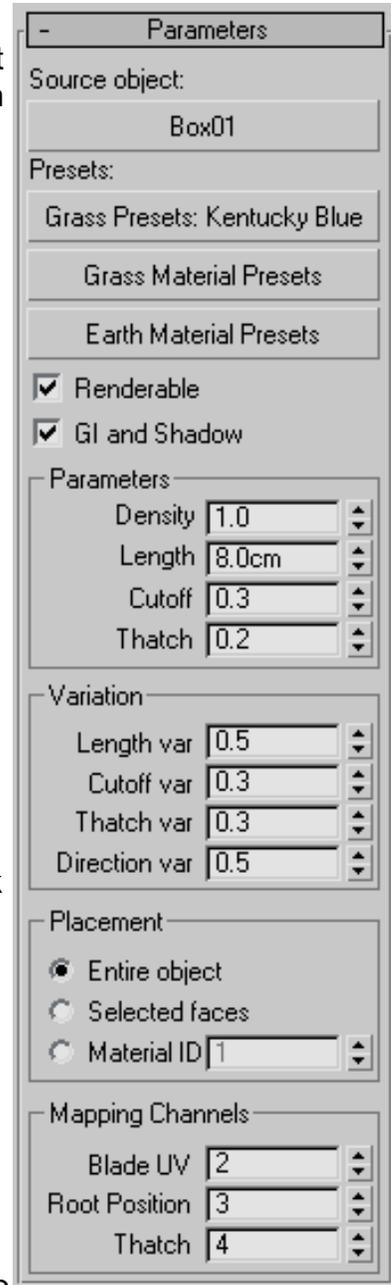
Autograss includes twelve grass material presets. We studied radiometrically calibrated photographs to ensure the grass material presets have true-to-life shape and color when used with V-Ray's physical cameras and sun / sky system.

Click the Grass Material Presets button. It will bring up a window with twelve predefined grass materials you can choose from. Click on a button to apply the desired grass material to Autograss. There are blue, green, and apple green presets, with fast versions and high quality versions, with and without yellow tips. By default, a fast material is applied, the color being determined by the grass preset. For example, Kentucky Bluegrass applies the fast blue grass material preset. The high quality presets use a two-sided material to allow light to shine through the grass, which is important in scenes with back lighting.

You also have the option of applying your own materials to Autograss. Simply drag your material from the material editor onto the Autograss object, or select your material in the material editor and click the "Assign material to object" button. Please take care when using your own materials, that if you click on a grass preset or a grass material preset, your material will be replaced with the default grass material. To avoid problems with this, please keep your material active in one of the material editor slots so that you can re-apply it if needed.

## Earth Material Presets

Autograss includes four earth material presets: dry fine earth, dry coarse earth, wet fine earth, and wet coarse earth. If you wish to apply an earth material preset to your ground or terrain



object, click the Earth Material Presets button and choose one from the window. The chosen earth material will be applied to your object.

### Renderable

The Renderable checkbox is a convenient way to enable or disable rendering of the Autograss object. This is wired to the Renderable checkbox in the Object Properties panel in the 3DSMax right-click menu.

### GI And Shadow

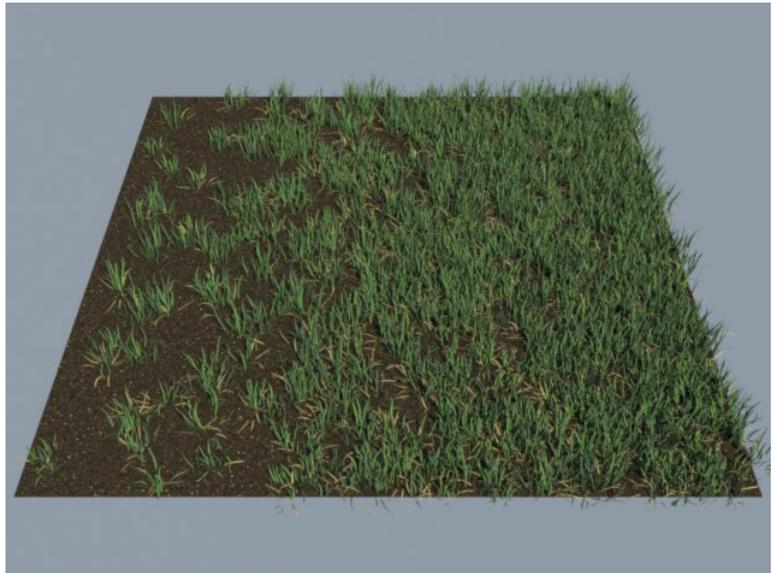
The GI and Shadow checkbox is a convenient way to enable or disable Global Illumination and Shadow on the Autograss object. Sometimes this can speed up rendering if you are working on quick draft renders. This is wired to the GI and Shadow checkboxes in the V-Ray Object Properties panel in the 3DSMax right-click menu.

### Parameters

The Parameters group defines some general parameters for Autograss that gives you the flexibility to adjust the look of the grass.

#### Density

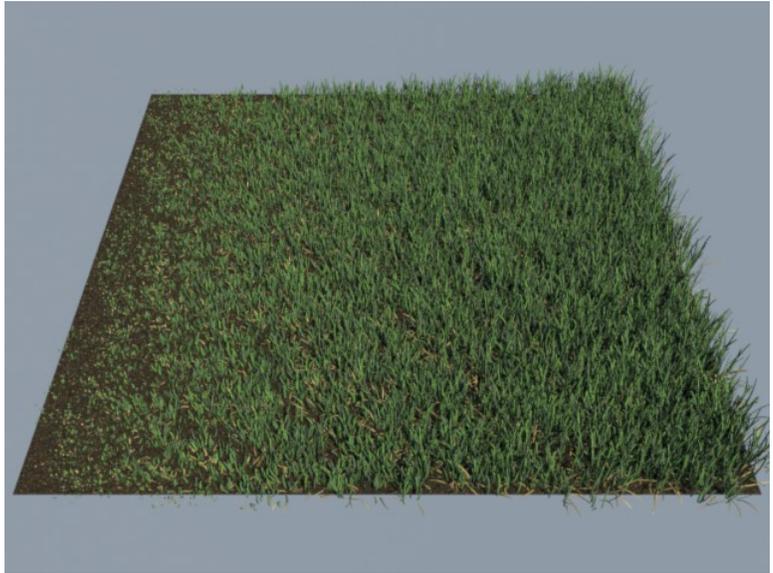
Density controls how dense the grass will be. Its default value is 1.0. You can get less dense grass by setting the Density value to be less than 1.0, or denser grass by setting the value to be bigger than 1.0. When the Density value is 0.0, no grass will be rendered. The maximum value is 5.0, which is super dense grass. Density is also affected by Density var and Density map. See the Variation and Maps Rollout sections below for details.



*A gradient map applied to density, increasing from left to right*

## Length

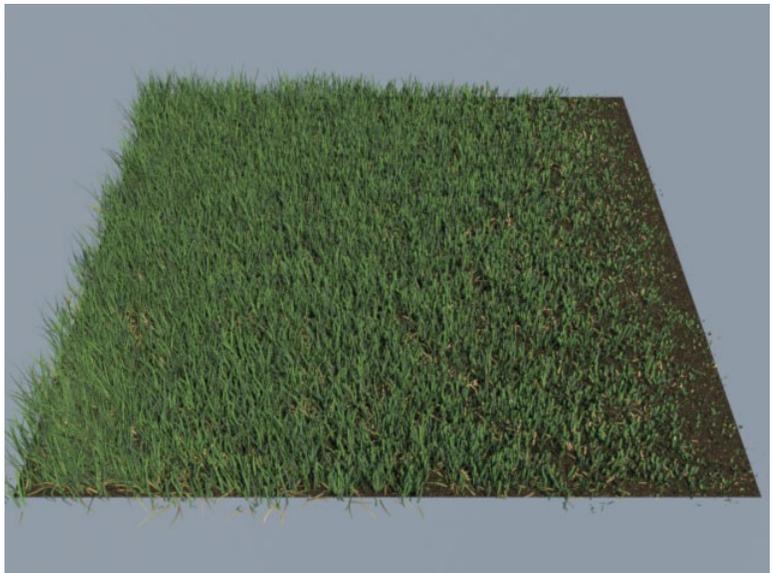
Length controls how long the grass blades will be. Its default value depends on the chosen preset. Usually grass length ranges from about 2 cm to 10 cm (1 inch to 4 inches). Longer grass takes a little longer to render, but don't be afraid to experiment. Length is also affected by Length var and Length map. See the Variation and Maps Rollout sections below for details.



*A length map applied to density, increasing from left to right*

## Cutoff

Cutoff simulates lawn mowing to cut off the tip of the grass blades. Its default value depends on the chosen preset. When the Cutoff value is 1.0, the whole grass blade is chopped; when the Cutoff value is 0.0, no mowing happened. Cutoff is also affected by Cutoff var and Cutoff map. See the Variation and Maps Rollout sections below for details.



*A gradient map applied to cutoff, increasing from left to right*

## Thatch

Thatch controls how much of the grass is dried out, to give the grass a realistic look. Its default value depends on the chosen preset. You can get totally green live grass by setting the Thatch value to 0.0, or totally dried out grass by setting the Thatch value to 1.0. Thatch is also affected by Thatch var and Thatch map. See the Variation and Maps Rollout sections below for details.



*A gradient map applied to thatch, increasing from left to right*

## Variation

The Variation group controls the randomness of grass Length, Cutoff, Thatch, and Direction values. The randomness gives the grass a true sense of reality.

### Length Var

Length var controls how much the grass length will be randomized. Its default value depends on the chosen preset. When Length var is 0.0, all the grass blades will be the same length. When Length var is 1.0, the length of each grass blade will be randomized from 0% to 100% of the Length value. Smaller values of Length var will produce less randomness.



*No variation, no thatch, and no cutoff*



*With length variation*

## Cutoff Var

Cutoff var controls how much the grass cutoff will be randomized. Its default value depends on the chosen preset. When Cutoff var is 0.0, every grass blade is chopped down the same amount based on the Cutoff value. This can be used to simulate a freshly mowed lawn. When Cutoff var is 1.0, each grass blade will be chopped randomly from 0% to 100% of the Cutoff value. This can be used to simulate a lawn that was mowed several days ago, with some grass blades growing back faster than others. Smaller values of Cutoff var will produce less randomness.



*Cutoff = 0.5; no variation*



*Cutoff = 1; Cutoff Var = 1; no other variation*

## Thatch Var

Thatch var controls how much the dryness of the grass will be randomized. Its default value depends on the chosen preset. When Thatch var is 0.0, the dryness is not randomized. When Thatch var is 1.0, the dryness of the grass will be randomized from 0% to 100% of the Thatch value. Smaller values of Thatch var will produce less randomness.



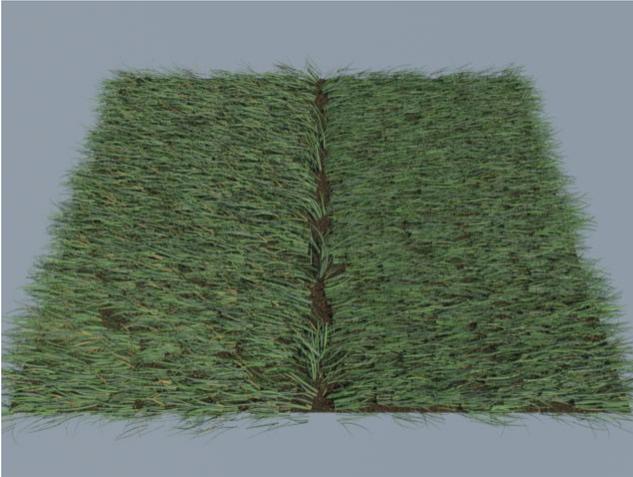
*Thatch = 1; no cutoff, no variation*



*Thatch = 1; Thatch Var = 1; no other variation*

## Direction Var

Direction var controls how much the Direction Map direction will be randomized (see Maps Rollout section below). Its default value is 0.0, which means the Direction Map value will be used directly. When Direction var is 1.0, it randomly blends the Direction Map direction towards the normal of the surface that the grass is growing on. Smaller values of Direction var will produce less randomness.



*A direction gradient map is applied. No variation.*



*With direction var = 1*

## Placement

The Placement setting controls what part of the source object will be covered with grass.

### Entire Object

If Entire Object is selected, the entire source object will be covered with grass. This is the default setting.

### Selected Faces

If Selected Faces is selected, only the selected faces of the source object will be covered with grass. You can change which faces are selected by placing an Edit Mesh or Edit Poly modifier on the source object.

### Material ID

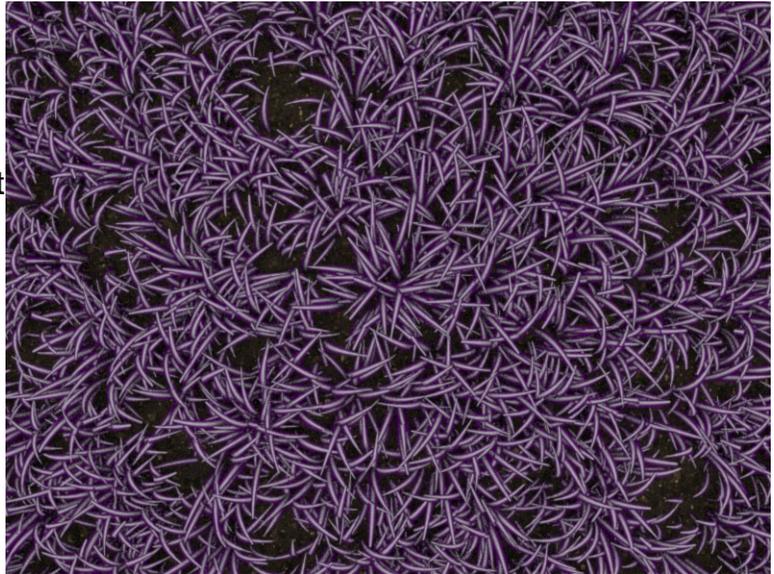
If Material ID is selected, only the faces of the source object with the specified material ID will be covered with grass.

## Mapping Channels

Autograss creates three UV maps on the grass blades. You can use these UV maps when adding textures to the grass materials. The mapping channels settings tell Autograss which mapping channels to use for the UV maps. The default values work with the preset grass materials included in Autograss. Please note that for every other channel besides these three, Autograss will inherit the base geometry's mapping.

### Blade UV

This controls which mapping channel gets the Blade UV map. The default is 2. The Blade UV map sets U from 0.0 to 1.0 across each grass blade from left to right, and sets V from 0.0 to 1.0 across each grass blade from bottom to top. You can use this to apply a bitmap or procedural texture to each grass blade. The Autograss preset materials have procedural textures using this UV map to add small grooves along the blades.



*Violet white striped dwarf grass using Blade UV channel.  
See the tutorial in the product package.*

### Root Position

This controls which mapping channel gets the Root Position. The default is 3. The Root Position UV map value is the world position of the root of each grass blade. The Autograss preset materials have procedural textures using this UV map to add variation to the color of the grass blades.



*Paint a picture on your grass using Root Position channel.  
See the tutorial in the product package.*

## Thatch

This controls which mapping channel gets the Thatch UV map. The default is 4. The Thatch UV map sets U to 0.0 for green grass, and U to 1.0 for dry grass. For example you can apply a gradient from green to yellow. The Autograss preset materials have a gradient like this.



*Change the color of the thatch using the Thatch channel.  
See the tutorial in the product package.*

## Maps Rollout

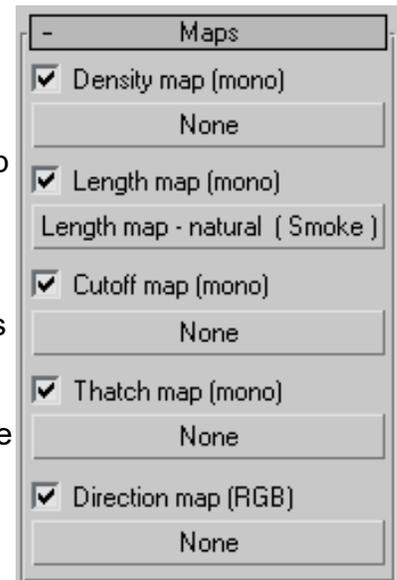
Maps allow you to add even more realism or special effects on Autograss. Click on a map button to apply a 3DSMax texture to the map slot. You can also enable or disable the map using the checkbox beside the map button. Autograss has the following map slots:

### Density Map (mono)

This map modulates the grass density. Darker areas will have less grass. Brighter areas will have the normal amount of grass, based on the Density parameter. You could use this to cut a road out of the grass, for example, by applying a map with a black area for the road.



*A procedural density map takes Autograss off-road.  
See the included Max scene file samples.*



You could also use this to make some areas less grown-in than others for a more rough natural look, by using a noise map with darker values in some areas.

### Length Map (mono)

This map modulates the grass length. Darker areas will have shorter grass. Brighter areas will have the normal length of grass, based on the Length parameter. You can use a noisy map to give the grass natural variation. Lawns usually have some areas where the grass grows faster than others. If you want mother nature involved, a varied length lawn is the way to go. By default, a smoke map is applied for this purpose.

### Cutoff Map (mono)

This map modulates the grass cutoff. Darker areas will be cut off less. Brighter areas will be cut off the normal amount, based on the Cutoff parameter. If you would like some areas to be mowed and some other areas not mowed, use a Cutoff Map. To make mowed grass look even more realistic, combine the Cutoff controls with a “with tips” grass material preset. The tips of the cut blades will be yellowish while the rest of the blades are vivid green.



*Length map wears a path through Autograss.  
See the included Max scene file samples.*



*Mowing an Autograss lawn using a cutoff map.  
See the included Max scene file samples.*

### Thatch Map (mono)

This map modulates how much of the grass is thatch. Darker areas will have less thatch. Brighter areas will have the normal amount of thatch, based on the Thatch parameter. You can use this to add dried out patches to a lawn for a grass that is out of season, or to make the grass dry out near the edge of a road.



*Checker board thatch map. See the included Max scene file samples.*

### Direction Map (RGB)

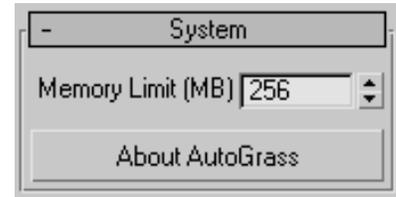
This map controls the direction that the grass sticks out of the ground. With no direction map, the grass will stick out along the normal of the surface it is growing on. With a direction map applied, the grass direction is determined by the color of the map. Red controls how much the grass points along X, Green controls Y, and Blue controls Z. RGB values from 0 to 1 become XYZ values from -1 to 1. For example, when  $RGB = (0.5, 0.5, 1.0)$ , the grass grows straight up. When  $RGB = (1.0, 0.5, 0.5)$ , the grass will stick out along the X axis. When  $RGB = (0.0, 0.5, 0.5)$ , the grass will stick out along the *negative* X axis. Realistic values are usually not so extreme, and are closer to  $(0.5, 0.5, 1.0)$ . A Direction Map can be used to simulate the passage of wind over a lawn. Another example is to create lawn mowing patterns, like the stripes that appear in a sports field. With Direction Maps you can get these fancy looks in a blink. Consider using Length Maps and Direction Maps together to wear a out a trail in high-traffic areas on the grass.



*Wind blows a path through Autograss using a direction map. See the included Max scene file examples.*

## System Rollout

The System rollout allows advanced users to adjust the dynamic memory usage for Autograss and display information about Autograss.



### Memory Limit

The memory limit is the amount of memory Autograss is allowed to use during rendering. The default value is 1024 MB. You can specify more memory to speed up the render. Autograss will not use more memory than the amount you specify. However, the total memory used by 3dsMax and V-Ray during rendering will add to this amount, so Autograss automatically monitors the available memory on the system and adjusts its own usage if the memory is running low, ensuring a stable performance. With Happy Digital's advanced dynamic memory management, your hardware resources are fully utilized, but never used up.

### About Autograss

Click this button to pop up a window with the Autograss version number, build date, and copyright information.

# Tutorials And Information

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## Tutorials

Visit Happy Digital's web page for a variety of tutorial videos with voice-over instructions and step-by-step tutorials in HTML:

<http://www.happy-digital.com/autograss>

Your product purchase also includes several exclusive tutorials. Access them using your order number and email address here:

<http://www.happy-digital.com/revisit.php>

## Product Information

You can send any comments, feature requests or bug reports via E-Mail:

[happy@happy-digital.com](mailto:happy@happy-digital.com)

Or visit our website:

<http://www.happy-digital.com>

## Purchase Information

Autograss for workstations and Autograss render node licenses are available for secure purchase online with electronic delivery. Visit:

<http://www.happy-digital.com/purchase>