Treat stands

This section discusses how management simulations for stands in an LMS portfolio may be accomplished. Frequently foresters must prepare different management alternatives for individual stands and then predict the potential outcomes over time. The treat stand function in LMS is designed to assist this endeavor so that foresters may better make management comparisons and subsequent management choices.
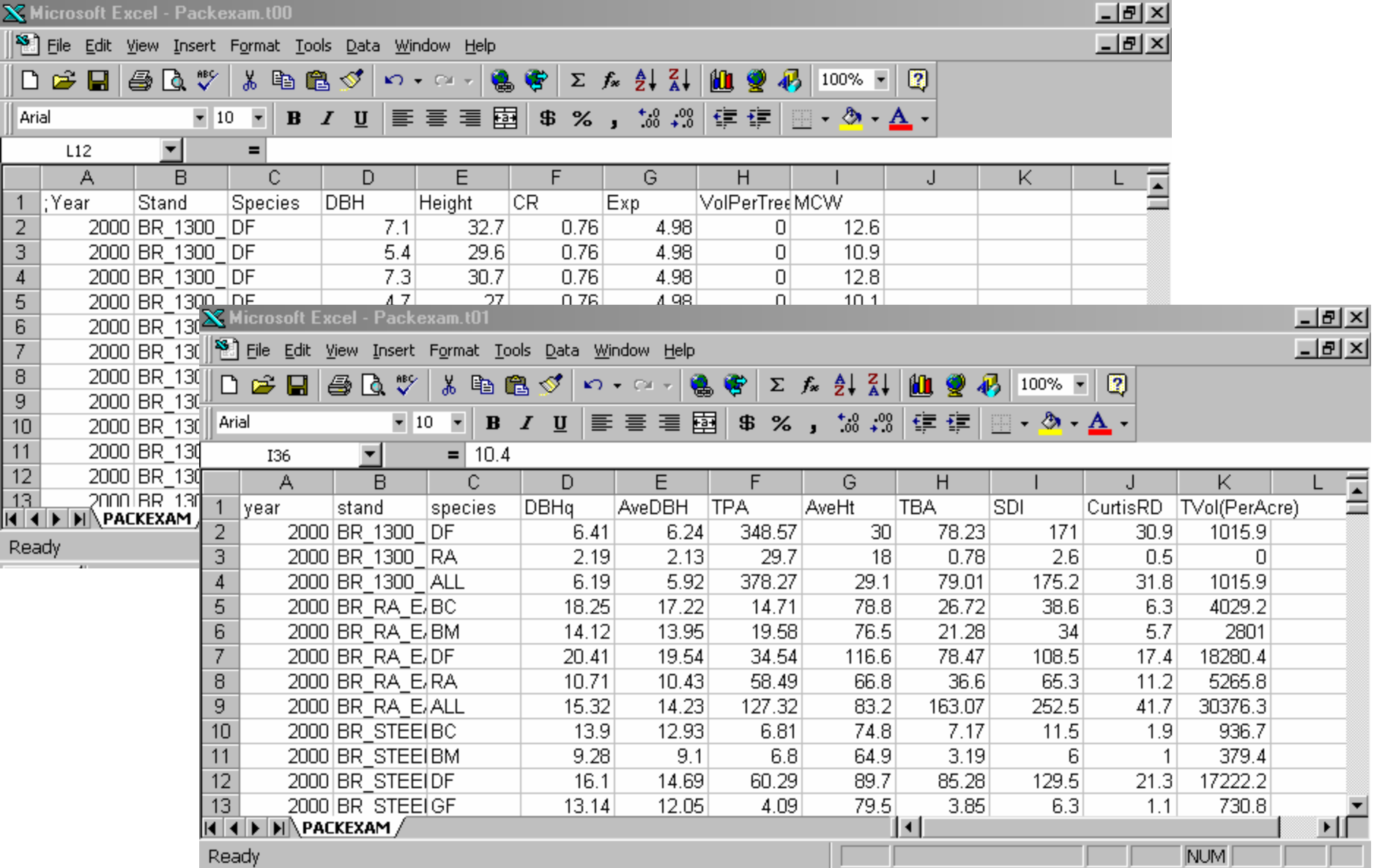
Microsoft Excel - Packexam.t00 — cell L12

	;Year	Stand	Species	DBH	Height	CR	Exp	VolPerTree	MCW
1	;Year	Stand	Species	DBH	Height	CR	Exp	VolPerTree	MCW
2	2000	BR_1300_	DF	7.1	32.7	0.76	4.98	0	12.6
3	2000	BR_1300_	DF	5.4	29.6	0.76	4.98	0	10.9
4	2000	BR_1300_	DF	7.3	30.7	0.76	4.98	0	12.8
5	2000	BR_1300_	DF	4.7	27	0.76	4.98	0	10.1
6	2000	BR_130							
7	2000	BR_130							
8	2000	BR_130							
9	2000	BR_130							
10	2000	BR_130							
11	2000	BR_130							
12	2000	BR_130							
13	2000	BR_130							

PACKEXAM — Ready

Microsoft Excel - Packexam.t01 — cell I36 = 10.4

	year	stand	species	DBHq	AveDBH	TPA	AveHt	TBA	SDI	CurtisRD	TVol(PerAcre)
1	year	stand	species	DBHq	AveDBH	TPA	AveHt	TBA	SDI	CurtisRD	TVol(PerAcre)
2	2000	BR_1300_	DF	6.41	6.24	348.57	30	78.23	171	30.9	1015.9
3	2000	BR_1300_	RA	2.19	2.13	29.7	18	0.78	2.6	0.5	0
4	2000	BR_1300_	ALL	6.19	5.92	378.27	29.1	79.01	175.2	31.8	1015.9
5	2000	BR_RA_E	BC	18.25	17.22	14.71	78.8	26.72	38.6	6.3	4029.2
6	2000	BR_RA_E	BM	14.12	13.95	19.58	76.5	21.28	34	5.7	2801
7	2000	BR_RA_E	DF	20.41	19.54	34.54	116.6	78.47	108.5	17.4	18280.4
8	2000	BR_RA_E	RA	10.71	10.43	58.49	66.8	36.6	65.3	11.2	5265.8
9	2000	BR_RA_E	ALL	15.32	14.23	127.32	83.2	163.07	252.5	41.7	30376.3
10	2000	BR_STEE	BC	13.9	12.93	6.81	74.8	7.17	11.5	1.9	936.7
11	2000	BR_STEE	BM	9.28	9.1	6.8	64.9	3.19	6	1	379.4
12	2000	BR_STEE	DF	16.1	14.69	60.29	89.7	85.28	129.5	21.3	17222.2
13	2000	BR_STEE	GF	13.14	12.05	4.09	79.5	3.85	6.3	1.1	730.8

PACKEXAM — Ready — NUM

Figure 7.1 To help decide which stand to treat, create two tables (see Tables section). One table is the **Summary** and the other is the **Inventory**. These tables will enable the user to view stand composition and make stand comparisons that are helpful when making treatment decisions.
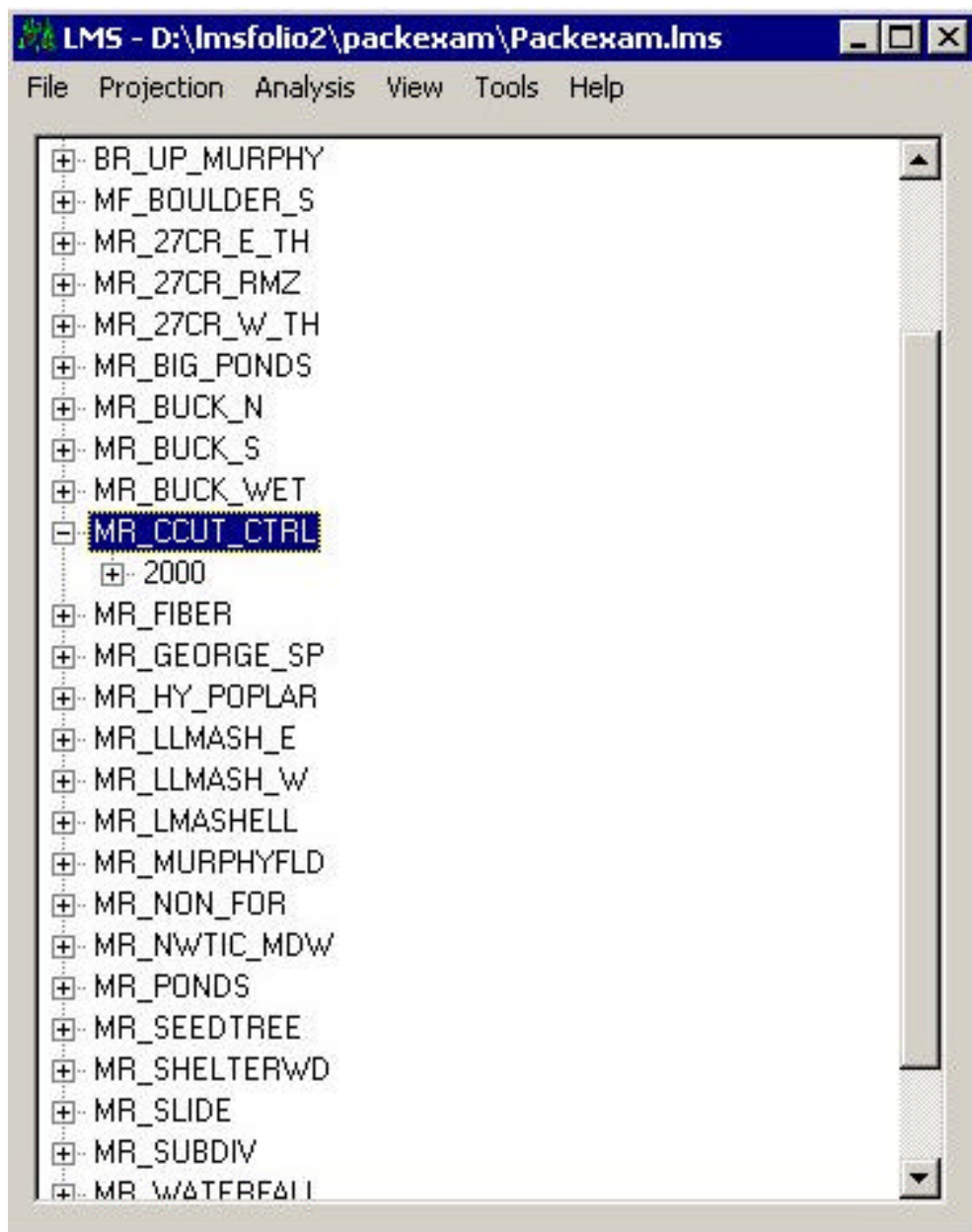
2

Figure 7.2. A stand may be treated during any growth period from the present to 150 years in the future. The stand need not be projected to the chosen treatment year since LMS will grow the stand forward to that year without treatment. For this example we will treat **MR_CCUT_CTRL** in 2030. **Note**: PCT may be an appropriate initial treatment but has not been used for this example.
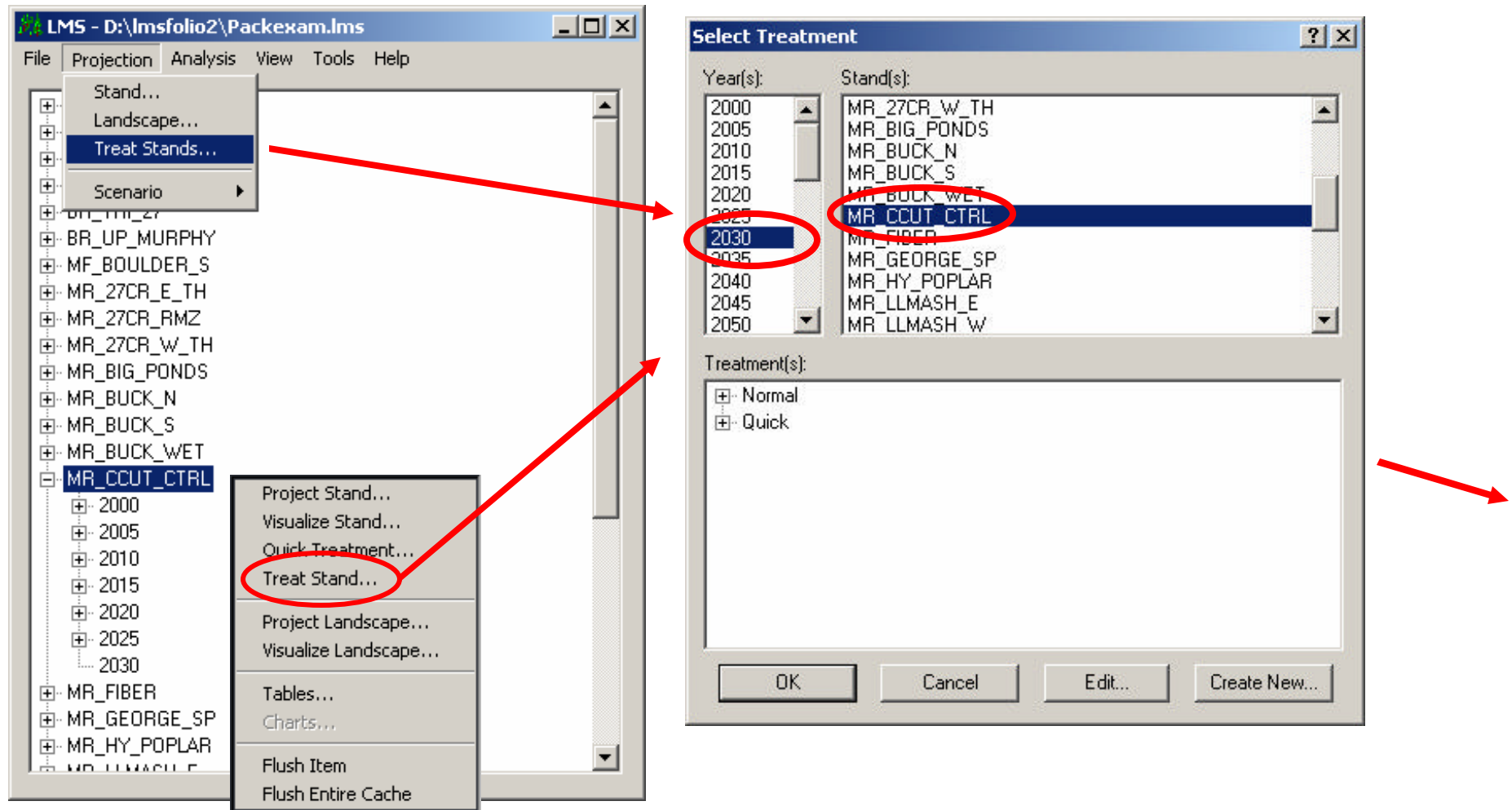
3

Figure 7.3. Next click **Projection** and then **Treat Stands** or right click beside a highlighted stand and select Treat Stands. The **Select Treatment** window will open. Select the **stand** for treatment and the **year** of treatment.

4
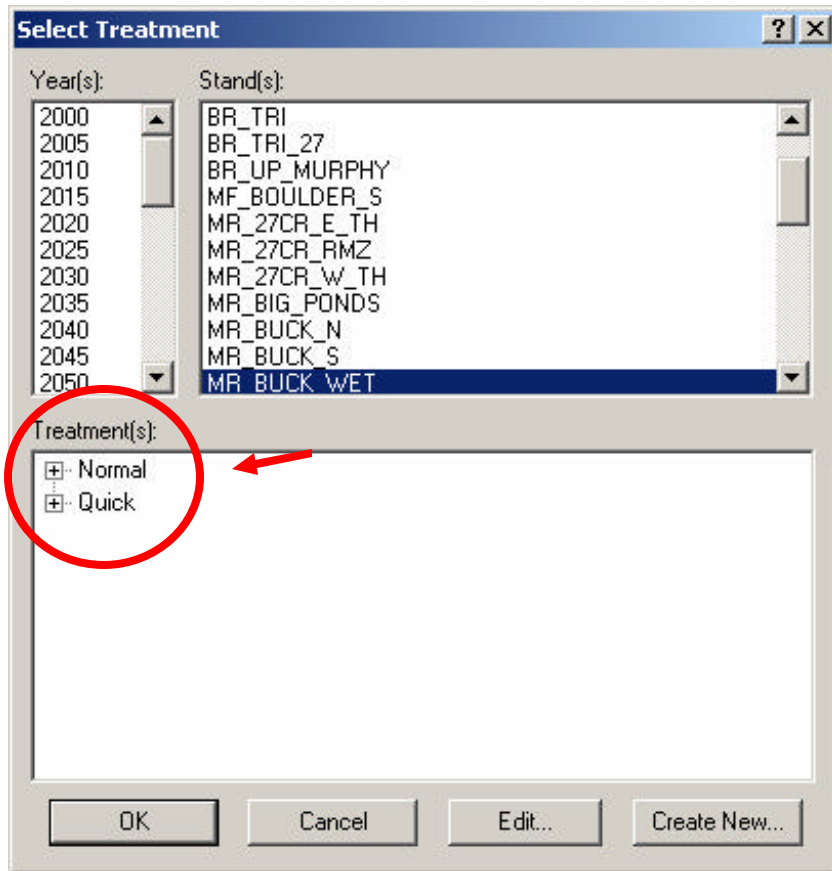
Figure 7.4. Two paths are available from which to select or create a desired stand treatment. The Normal Treatments are canned standard treatments such as clear-cuts and thins that come with the LMS installation program. The Quick Treatments are user created and remain available within the opened portfolio. Both may also be accessed by right clicking in the LMS main window and then left clicking Quick Treatment… or Treat Stands...

5
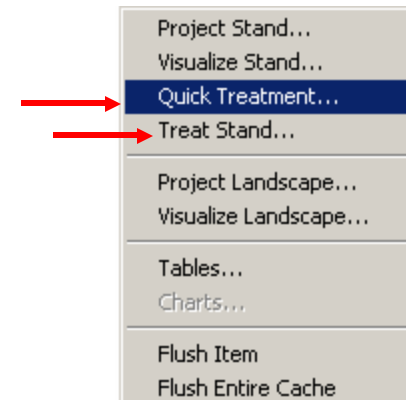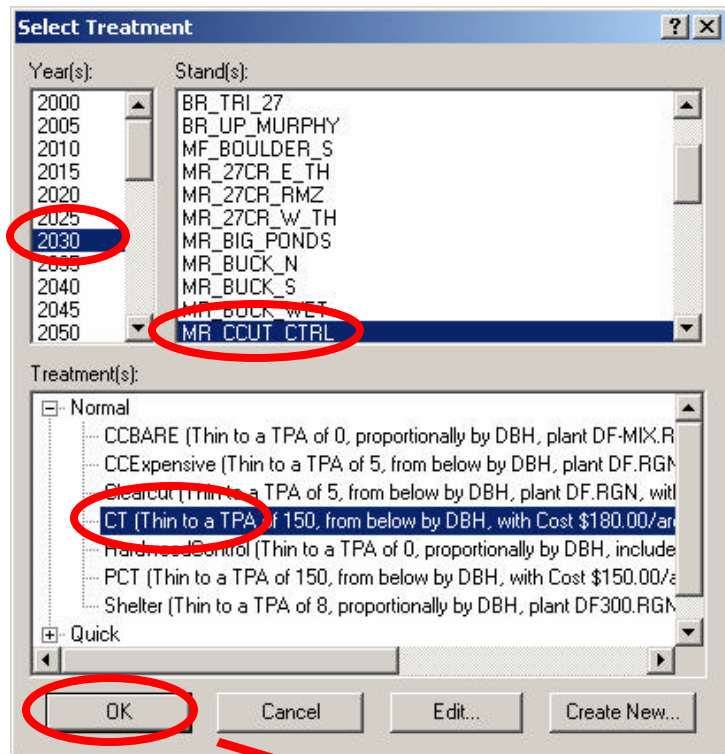
Figure 7.5. Click on the plus sign next to Normal, ⊞ . A list of canned treatments will be displayed. Each line contains the treatment name and text description Once a treatment is selected click **OK**. The log in the LMS main window will now record the treatment and year (in this example we chose CT in 2030 for stand MR_CCUT_CTRL). When we bring up the Stand Summary Table for MR_CCUT_CTRL, the trees/acre decrease from 457 to150 for 2025 and 2030 respectively. The target TPA in the CT treatment was 150. All other tables and visualizations for this stand will also reflect these harvest changes.

6

Figure 7.6. The user can also edit a treatment prescription by clicking **Edit** after clicking the treatment. The **Treatment Definition** window will open. Once new treatment parameters have been entered click **OK** and the edited text of the treatment with appear beside the normal treatment name that had been selected in the treatments window.
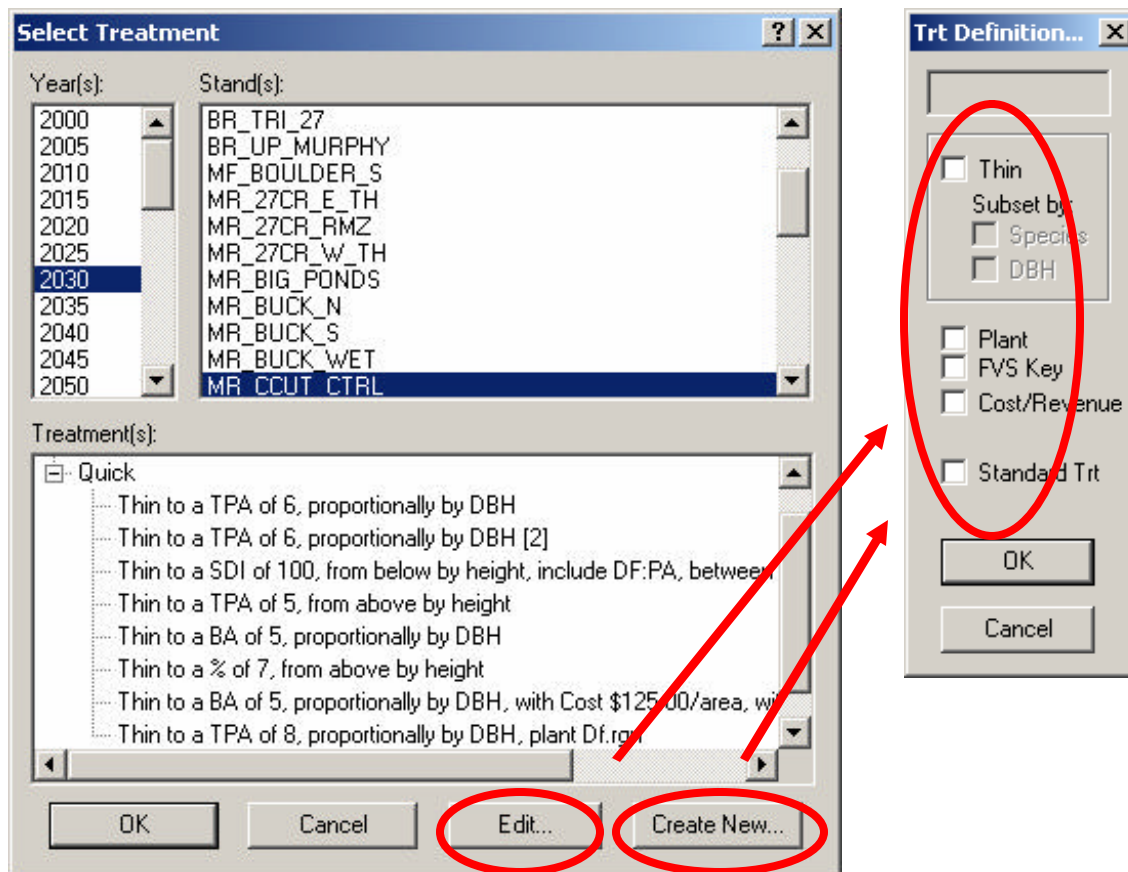
Figure 7.7. "Quick" treatments are treatments created 'on the fly' for specific stands that are unlikely to be used repeatedly. Quick treatments log keeps a record of treatment creations. Existing quick treatments may be edited along the same lines as normal treatments (click **Edit…**) or created as new (click **Create New…**). As the user clicks the different treatment attributes criteria windows will open to receive instructions…

8

Harvesting trees in LMS is accomplished by thinning. All thinnings are defined by what will be left after the harvest. This can be a percent (%) of the pre-harvest trees, trees per acre (TPA), basal area (BA), or stand density index (SDI). Reaching this target can be done by removing trees from above, beginning with the largest and working toward the smallest, proportionally with some trees from each height or diameter class being removes, or from below beginning with the smallest tree and working toward the largest. When treating the stand tree size can be determined by diameter (DBH) or height. There is not an explicit "clearcut" option in the Treatment Definition dialogue. This can simply be performed by retaining 0 TPA or 0 BA after treatment.

9

When defining treatments subsetting can be done by species and DBH. This allows simulation of treatments such as diameter limit thinning and hardwood control. With **Species** selected species codes of those species that are to be included or excluded from treatment can be entered. With **DBH** selected minimum and maximum DBH limits for the treatment can be entered. When the treatment is executed it will be performed on **only** those trees that are within the diameter limits and/or species that are included in the **Include** or not in the **Exclude** lists.

Selecting the **Plant** option allows the simulation of planting after harvest or natural regeneration. Clicking **Browse** allows the user to navigate to an existing regeneration file while clicking **Edit** runs the Regeneration Editor. The Regeneration Editor will be covered in Section 8. Regeneration is added at the end of the growth period. Essentially it is what is expected to be found by a regeneration or free-to-grow exam.

Selecting the **FVS Key** option allows the used to include an FVS keyword file with the treatment. This allows the user to "tweak" the FVS growth model so it will better estimate growth and volume given local conditions. By clicking **Browse** the user can navigate to an existing FVS keyword file.

For economic analysis treatment costs and revenues can be entered by selecting **Cost/Revenue**. Clicking the **Edit** button brings up the **Define Cost/Revenue** dialogue. Here the user can set appropriate costs and revenues for the treatment.

When the treatment has been defined it can be saved as a Quick treatment or a Normal treatment. For a Quick treatment simply click **OK**. The treatment will the be under **Quick** in the **Select Treatment** window. To define the treatment as a Normal treatment select **Standard Trt** and enter a name for the treatment in the box in the upper left corner of the dialogue box. The treatment will then be added under **Normal** in the **Select Treatment** window.

Exercise

- **Treat stand MR_CCUT_CNTRL with canned commercial thin in 2030, project to 2050**

- **Create the following powerpoint. Choose treated option for stand visualization for year of treatment. (copy & modify old powerpoint)**

- **Save as trt_std.ppt in Exercise_Files subdirectory**

MR_CCUT-CNTRL, no treatment, FVSPN

2000
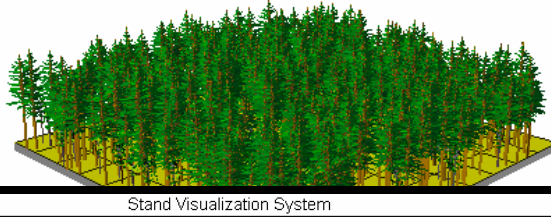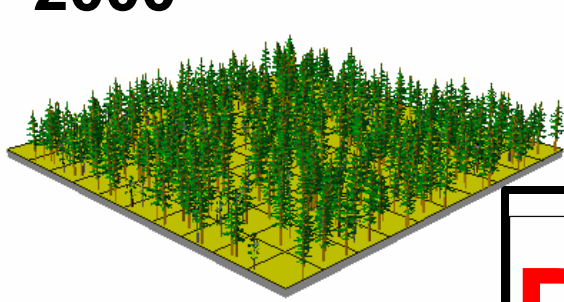
REPLACE
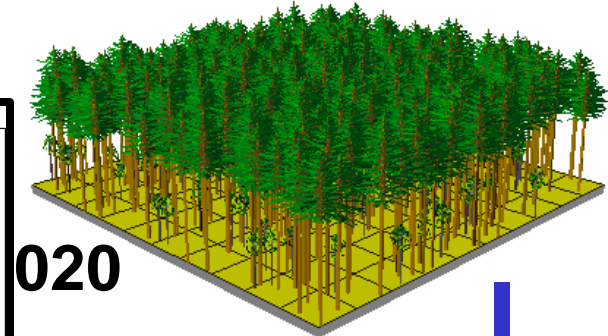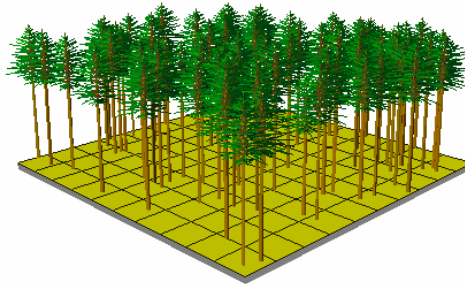
020
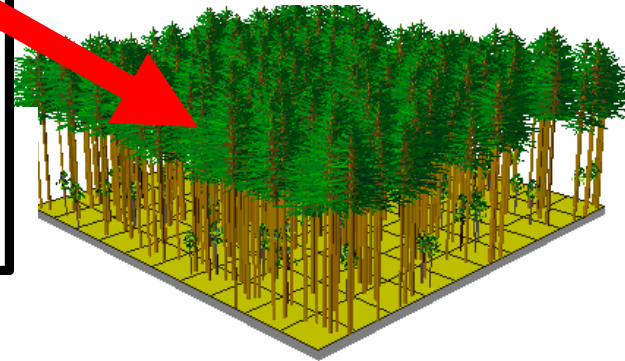
2030
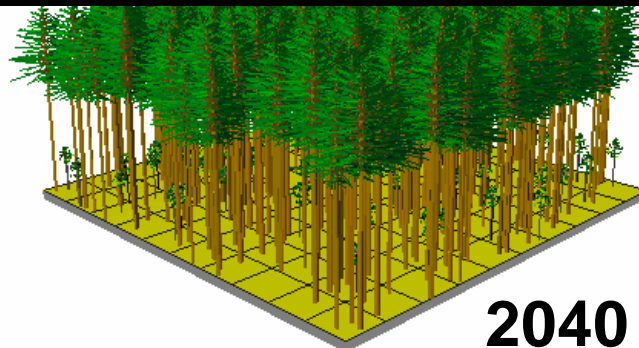
2040
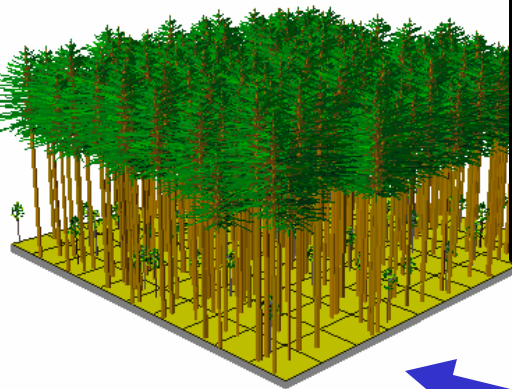
2050

MR_CCUT-CNTRL, commercial thin, FVSPN

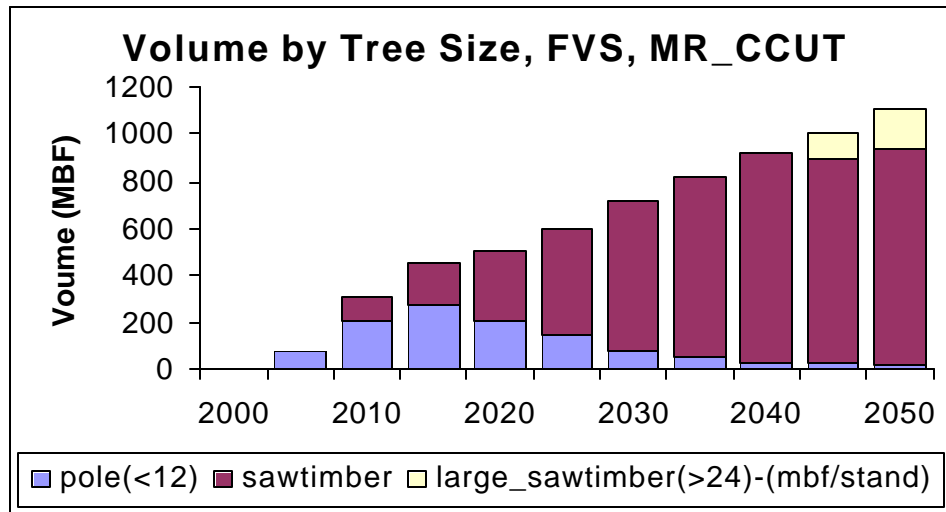**2000**

2010

2020

2030

2040

2050
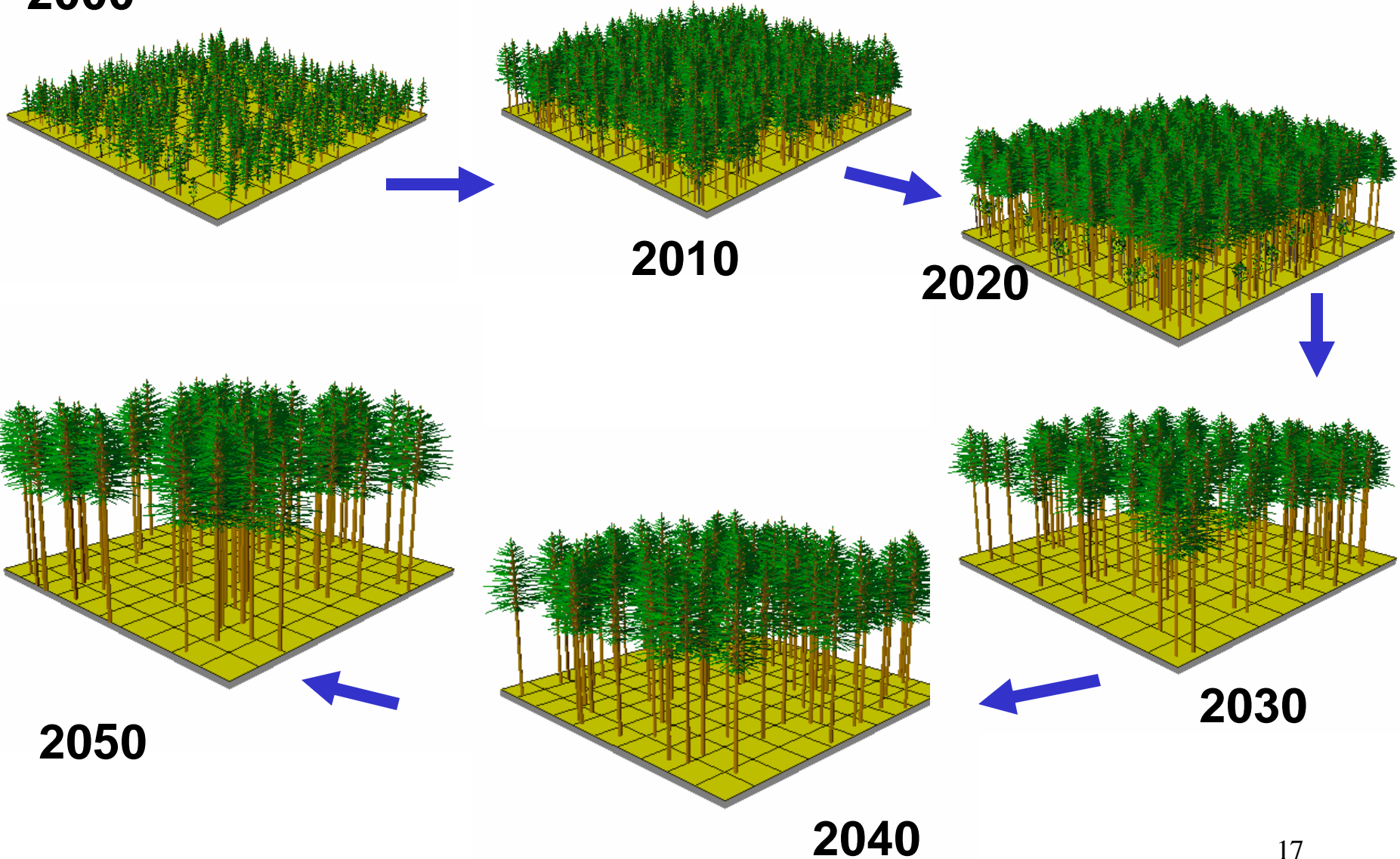
Exercise

- **Use your saved templates to make these modified charts**

- **Make powerpoints as shown below**

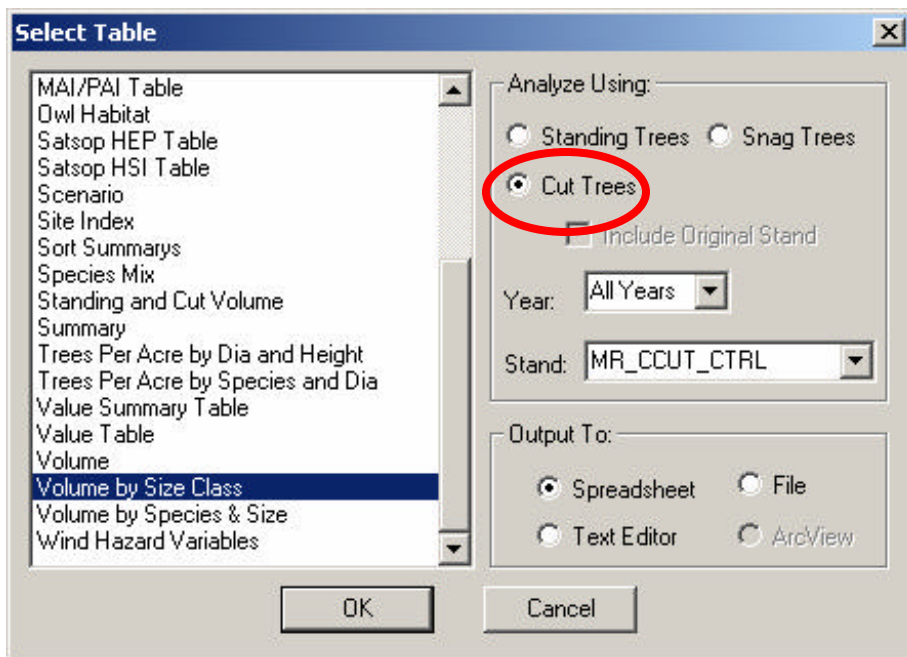# From templates make these Excel files to show with and without treatment comparisons

Volume by Tree Size, FVS, MR_CCUT

Standing Volume by Tree Size, FVS, MR_CCUT with Thin 2030

19
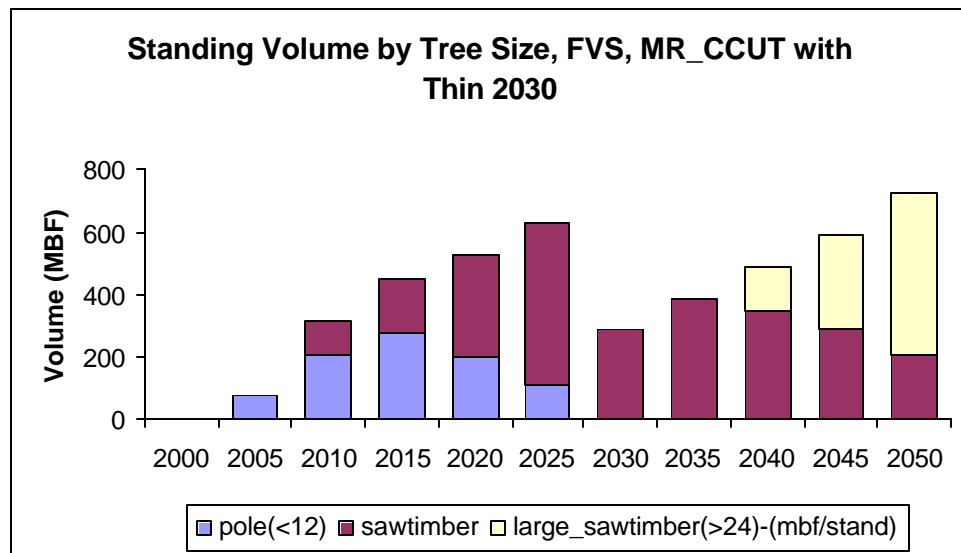
Figure 7.7. If **Cut Trees** are selected for analysis instead of Standing Trees for the **Volume by Size Class** table then the harvest volumes over time are displayed. In this case since, MR_CCUT_CTRL was thinned in 2030, cut volume by size class is displayed only for that year. The Volume by Size Class/ Cut Trees data may be pasted into the Volume by Tree Size template to produce the chart below.
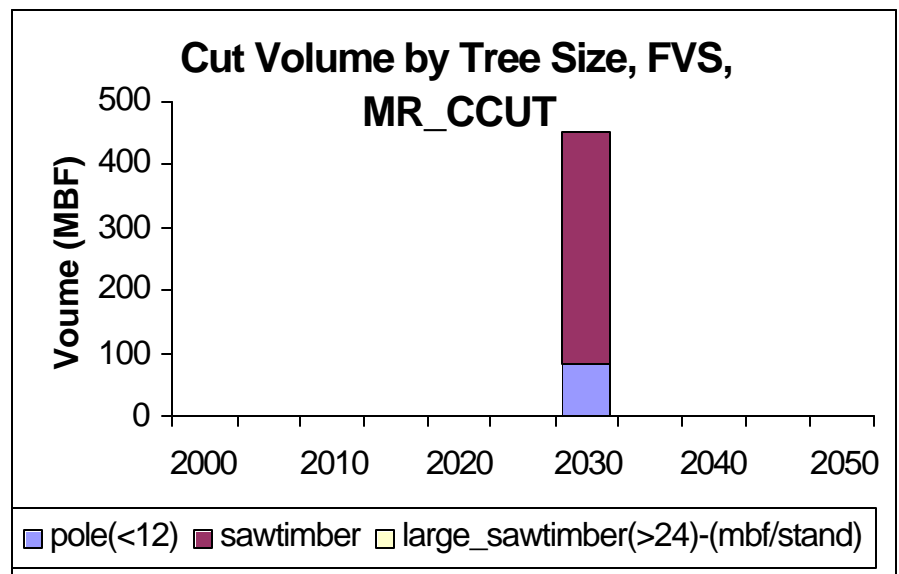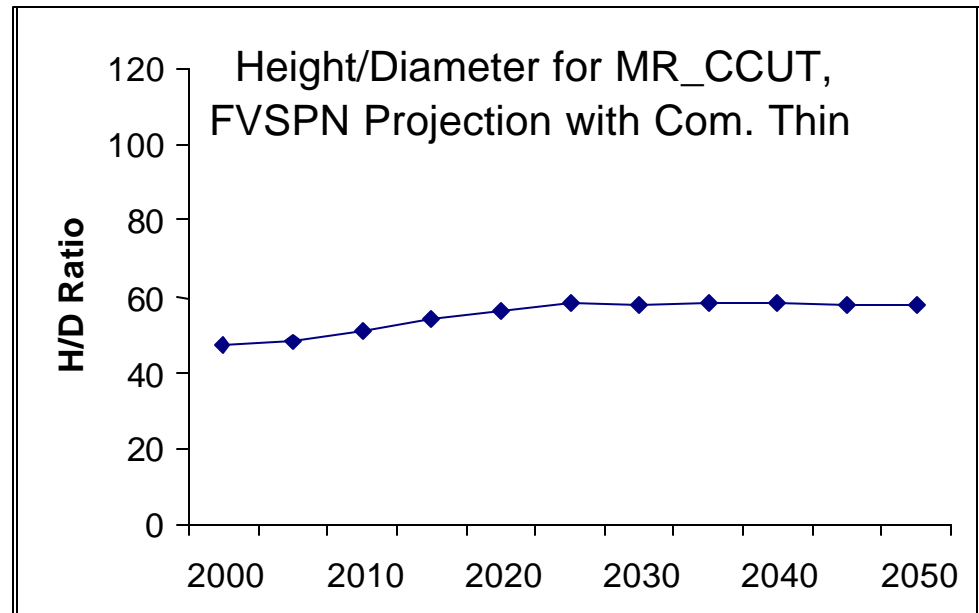
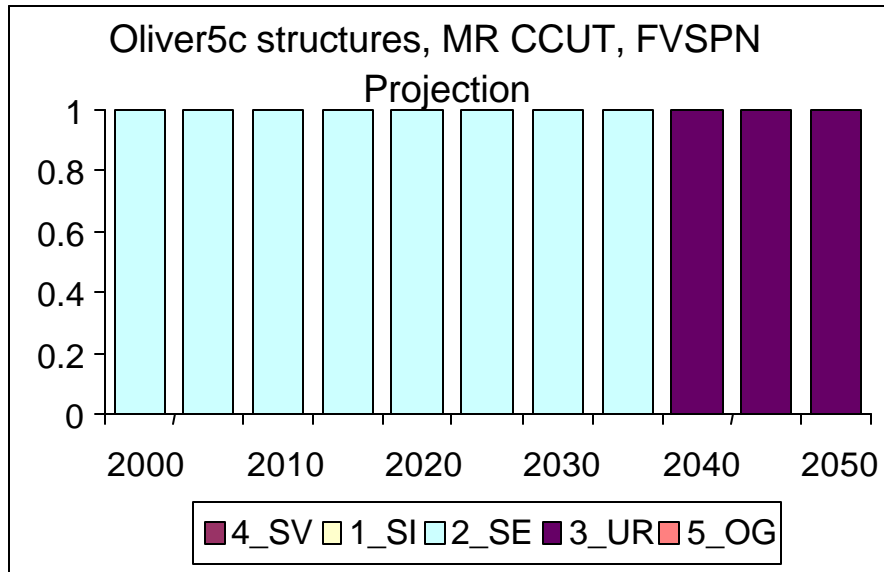# From templates make these Excel files
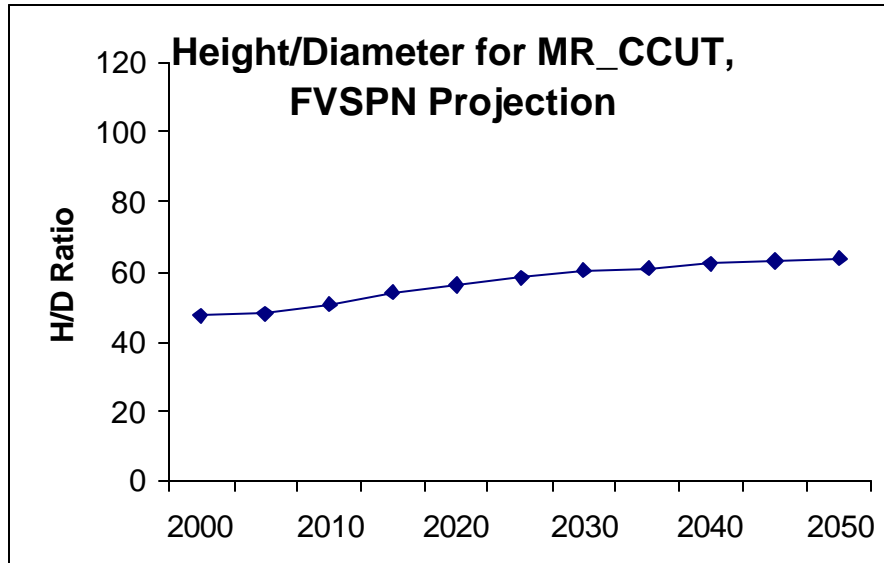
Projection with no treatment.
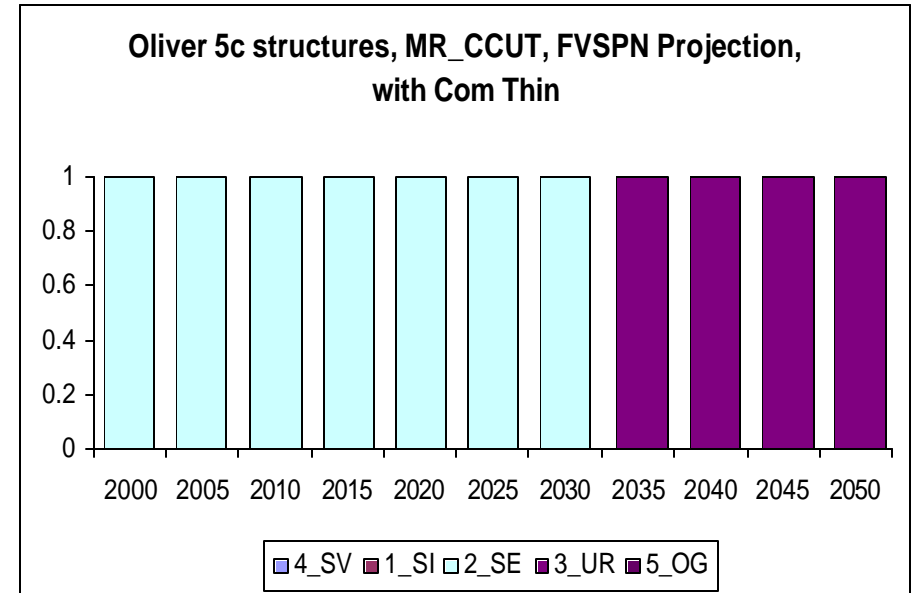
Projection with commercial thin.

From templates make these Excel files

Dual Charts for no treatment and commercial thin comparisons.

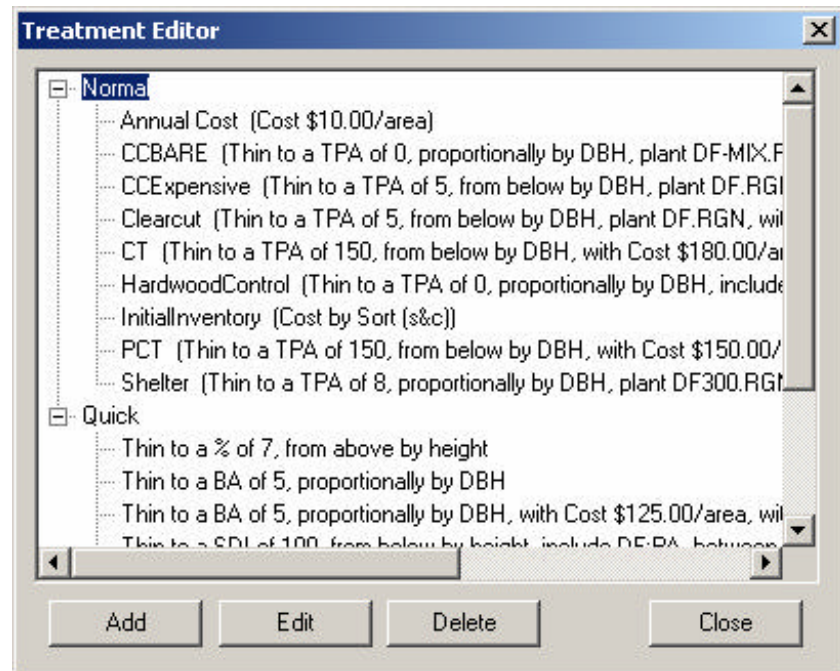Projection with no treatment
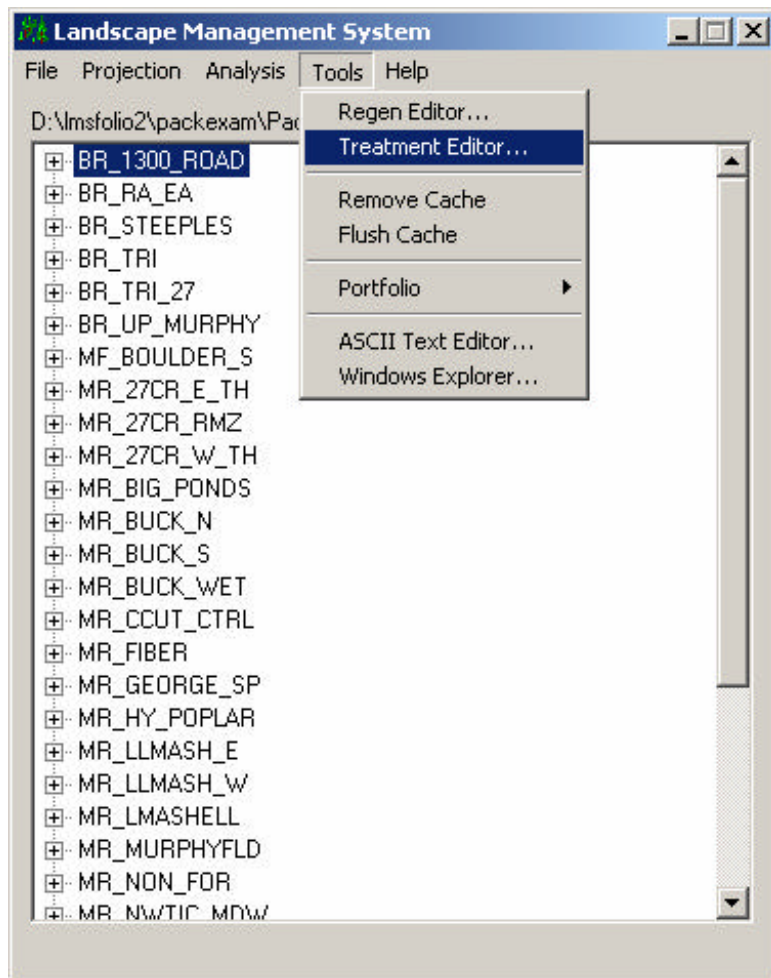
Projection with commercial thin.

Figure 7.8. To **delete a treatment**, click **Tools/Treatment Editor**. The Treatment Editor dialogue window will open. Highlight the treatment to be deleted and click **Delete**. Treatments may also be added and edited from the Treatment Editor.

Exercise

- **Create a treatment thinning the stand to 50 trees/acre in 2020**

- **Apply it and create the same pictures and charts as previously created**
- **Save in Exercise_files subdirectory**