

## 17-PRESCRIBED FIRE SCHEDULER

The scheduling of prescribed fires with or without a harvest is determined by this module. Note that this process takes place outside the LANDCARB model, and although this model does have this capability, a simpler system is used for the Forest Sector Carbon Calculator.

**Stand Level.** At the stand level, all the grid cells are burned in years with prescribed fires. For the past the user supplies the year that past prescribed fire events impacted the stand. For future prescribed fires the user supplies the interval between prescribed fire events. This information is used by a scheduler program to determine the years in which prescribed fires occur. Prescribed fires always occur exactly on the specified year, but within a year the percent of the stand disturbed (i.e., percent disturbed parameter) may be adjusted among cells to achieve an approximation of the target disturbance. For example, when the parameter Percent Disturbed is set at 100%, then the interval is not affected by the value of Percent Disturbed. Moreover, all the stand grid cells will be simultaneously impacted. This is also true when this parameter is set to a value that can sum to 100% (e.g., 10, 20, and 50%). This is because each grid cell can be divided up into a number of parts that eventually will cover the entire grid cell exactly. However, when the parameter Percent Disturbed is set to a number that will not sum exactly to 100% (e.g., 45%) then the grid cells will receive variable amounts of prescribed fire to achieve the desired value of Percent Disturbed.

**Landscape Level.** At the landscape level not all stands will have prescribed fires the same year. It is assumed that there are sufficient stands to maintain a regular spacing between prescribed fires. However, when prescribed fire intervals are extremely long (i.e., longer than the number of grid cells in a landscape), then in some years prescribed fires will not be possible. To determine the cells to be burned, the program first determines the average number of entire cells that need to be burned to achieve the desired regular interval of prescribed fires. When the total number of stand grid cells being simulated cannot be divided evenly by this number of stands then the number of stands burned each year varies. However, the program tries to keep this as close to the target as possible. Stands are burned sequentially in the overall grid work of stands, but this has little practical impact because stands are independent of each other. To achieve the values specified in the Percent Disturbed parameter, the landscape level uses the same procedure as at the stand level. That is, it allocates prescribed fires to stands so as to achieve as close to the desired percent as possible. **Note that at the landscape level, Percent Disturbed is implemented within stand grid cells. It does not remove that proportion of stand grid cells from disturbance.** Therefore all cells will eventually be disturbed. If one wishes to have a landscape in which there are different prescribed fire regimes in different locations, then the best way to achieve this is to run a simulation for each management system and then to combine them after the fact using an area weighted average.

Harvests and prescribed fires can be linked by the user by selecting a Harvest and Burn disturbance regime. In this case the prescribed fire will follow the harvest. If a harvest

and burn treatment has occurred, then a subsequent prescribed fire may not occur if the interval is less than 90% of the planned interval.

**Checking the Realized Regime.** The degree to which the target intervals and Percent Disturbed are achieved at either the stand or landscape level can be checked by looking at the Prescribed Fire Events graph or by Run Output file under Output Files-Log Files window.

Notes: Do we link prescribed fires to harvests? Is there a minimum age for prescribed fires?