

## **Dwarf Mistletoe Impact Model Keywords:**

### **Program Execution Control:**

COMMENT  
END  
MISTABLE  
MISTFILE  
MISTOE  
MISTOFF  
MISTPRT

### **Inventory Data Entry:**

MISTPINF

### **Modification of Model Assumptions:**

MISTGMOD  
MISTMORT  
MISTMULT  
MISTPREF

## DWARF MISTLETOE IMPACT MODEL

### **COMMENT**

This keyword is used to enter a comment that will be reproduced in the keyword summary table. This keyword does not have any associated fields, but does require at least one supplemental record. Comments can be entered in columns 1 to 80 on as many supplemental records as desired. The comment is terminated with an END keyword; anything entered between the COMMENT and END keywords will not affect the operation of the model.

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**END** This keyword is used to signify the end of a keyword set or the end of a COMMENT block within a keyword set as shown in the example below.

Example:

MISTOE

Dwarf Mistletoe Impact Model keywords here.

.

.

.

COMMENT

any number of comment lines here

.

.

.

END

.

.

.

END

Fields 1-7

Not used.

DWARF MISTLETOE IMPACT MODEL

**MISTABLE** This keyword is used to produce the detailed species/DBH class statistical output tables. Multiple entries of this keyword may be supplied in a single Dwarf Mistletoe Model keyword set. Detail tables may be requested for any tree species, regardless as to whether it is affected by dwarf mistletoe.

Field 1 Date (calendar year or cycle number) in which a regional outbreak will occur.  
[Range: 4-digit calendar year or 0 to 40 for cycle number]

Field 2 Tree species number for which the DBH class detail table is desired. A "0" entry for species will produce tables for all dwarf mistletoe-affected species for the variant, but not those species unaffected by dwarf mistletoe. Tables for unaffected species must be individually requested.

Field 3 The tree species value must be a number between 1 and 39, inclusive, corresponding to the tree species index, or "0" for all dwarf mistletoe-affected species.

Fields 4-7 Not used.

**Field Default Values**

Field	1	2	3	4	5	6	7
All variants	1	0					

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Field 1 Date (calendar year or cycle number) in which a regional outbreak will occur. [Range: 4-digit calendar year or 0 to 40 for cycle number.]

Field 2 Tree species number for which the DBH class detail table is desired. A “0” entry for species will produce tables for all dwarf mistletoe-affected species for the variant, but not those species unaffected by dwarf mistletoe. Tables for unaffected species must be individually requested.

The tree species value must be a number between 1 and 39, inclusive, corresponding to the tree species index, or “0” for all dwarf mistletoe-affected species.

Fields 3-7 Not used.

**Field Default Values**

Field	1	2	3	4	5	6	7
All variants	1	0					

DWARF MISTLETOE IMPACT MODEL

**MISTFILE** This keyword is used to write dwarf mistletoe statistical output tables created by the use of the MISTABLE and MISTPRT keywords to files.

Field 1 Filename preference. "0" or a blank will use the default filenames; anything else means the user will supply four filenames in supplemental records following this keyword.

If Field 1 is "0" or blank then output is written to the following 4 files on the current directory:

- DM1.OUT (species-specific summary data)
- DM2.OUT (stand average summary data)
- DM3.OUT (DBH class summary data)
- DM4.OUT (species/DBH class detail data)

Other wise the user must supply filenames on supplemental records following this keyword where the filenames can be up to 80 characters in length, including a pathname, if desired.

Field 2 Table heading preference. "0" or blank will omit the heading from the tables; anything else will include the headings.

Fields 3-7 Not used.

**Field Default Values**

Field	1	2	3	4	5	6	7
All variants	0	0					

DWARF MISTLETOE IMPACT MODEL

**MISTGMOD** This keyword introduces a multiplier to alter dwarf mistletoe’s effects on diameter growth. The multiplier remains in effect until replaced by a subsequent multiplier. Multiple MISTGMOD keywords may be used in a single keyword set.

Field 1 Date (calendar year or cycle number) in which a regional outbreak will occur.  
[Range: 4-digit calendar year or 0 to 40 for cycle number]

Field 2 Tree species number or character code eligible for attack by the bark beetle.  
[Range: Number or character code selected from the Variants and Associated Species Table]

Field 3 Multiplier for changing dwarf mistletoe diameter growth potential from normal (normal being 100%); a multiplier greater than 1 will increase diameter growth (i.e. decrease effects of dwarf mistletoe), and a multiplier less than 1 will decrease diameter growth (i.e. increase effects of dwarf mistletoe). Entries for this field must be greater than or equal to 0.

Fields 4-7 Not used.

**Field Default Values**

Field	1	2	3	4	5	6	7
All variants	1	0	1.00				

DWARF MISTLETOE IMPACT MODEL

**MISTMORT** This keyword introduces a multiplier to alter dwarf mistletoe's effects on mortality. A multiplier remains in effect until replaced by a subsequent multiplier. Multiple MISTMORT keywords may be used in a single keyword set.

Field 1 Date (calendar year or cycle number) in which a regional outbreak will occur.  
[Range: 4-digit calendar year or 0 to 40 for cycle number]

Field 2 Tree species number or character code eligible for attack by the bark beetle.  
[Range: Number or character code selected from the Variants and Associated Species Table]

Field 3 Multiplier for changing dwarf mistletoe effects on mortality; a multiplier greater than 1 will increase mortality rate and a multiplier less than 1 will decrease mortality rate. Entries for this field must be greater than or equal to 0.

Fields 4-7 Not used.

**Field Default Values**

Field	1	2	3	4	5	6	7
All variants	1	0	1.00				

DWARF MISTLETOE IMPACT MODEL

**MISTMULT** This keyword provides multipliers used to alter the existing rate of dwarf mistletoe spread and intensification through a stand. A multiplier remains in effect until replaced by a subsequent multiplier. Multiple MISTMULT keywords may be used in a single keyword set.

- Field 1 Date (calendar year or cycle number) in which a regional outbreak will occur. [Range: 4-digit calendar year or 0 to 40 for cycle number]
- Field 2 Tree species number or character code eligible for attack by the bark beetle. [Range: Number or character code selected from the Variants and Associated Species Table]
- Field 3 Multiplier for changing probability of increasing DMR. A multiplier greater than 1 will increase the probability, and a multiplier less than 1 will decrease the probability. Entries for this field must be greater than or equal to 0.
- Field 4 Multiplier for changing probability of increasing DMR. A multiplier greater than 1 will increase the probability, and a multiplier less than 1 will decrease the probability. Entries for this field must be greater than or equal to 0.
- Fields 5-7 Not used.

**Field Default Values**

Field	1	2	3	4	5	6	7
All variants	1	0	1.00	1.00			

## DWARF MISTLETOE IMPACT MODEL

### **MISTOE**

The MISTOE keyword is actually an FVS Model keyword signifying that the Dwarf Mistletoe Model is to be called. All following keywords, up to the associated END keyword, must be Dwarf Mistletoe Model keywords.

There are no fields associated with this keyword.

## DWARF MISTLETOE IMPACT MODEL

### **MISTOFF**

This keyword is used to instruct FVS and the Dwarf Mistletoe Model to ignore all effects of dwarf mistletoe, whether or not any are present in the stand.

There are no fields associated with this field.

DWARF MISTLETOE IMPACT MODEL

- MISTPINF** This keyword is used to automatically introduce dwarf mistletoe infections to a portion of trees in the stand that were not already infected. Multiple MISTPINF keywords may be used in a single keyword set.
- Field 1 Date (calendar year or cycle number) in which a regional outbreak will occur. [Range: 4-digit calendar year or 0 to 40 for cycle number]
- Field 2 Tree species number or character code eligible for attack by the bark beetle. [Range: Number or character code selected from the Variants and Associated Species Table]
- Field 3 Proportion of the uninfected trees of that species to be infected. The value entered in this file must be between 0 and 1, inclusive.
- Field 4 Level of infection for that species:  
 1 = all trees will start with DMR 1.  
 2 = all trees will start with DMR 1 or 2.  
 3 = all trees will start with DMR 1, 2, or 3.  
 4 = all trees will start with DMR 1, 2, 3, or 4.  
 5 = all trees will start with DMR 1, 2, 3, 4, 5, or 6.
- Field 5 Method of infection for the stand:  
 0 = random infection throughout the species  
 1 = infection moves from tallest trees to shortest trees  
 2 = infection moves from shortest trees to tallest trees
- Fields 6-7 Not used.

**Field Default Values**

Field	1	2	3	4	5	6	7
All variants	1	0	0.00	1	0		

DWARF MISTLETOE IMPACT MODEL

**MISTPREF** This keyword is used to alter the cutting preference of dwarf mistletoe-infected trees. This change remains in effect until it is replaced by a subsequent cutting preference change. Multiple MISTPREF keywords may be used in a single keyword set.

Field 1 Phase of the outbreak when chemical control will be applied.  
[Range: 1-4]

Field 2 Tree species number or character code eligible for attack by the bark beetle.  
[Range: Number or character code selected from the Variants and Associated Species Table]

Fields 3-7 Not used.

Supplemental Record The supplemental record is used to specify cutting preferences by DMR, for the cycle and species listed above. Six fields are required starting in column any column, the first for DMR = 1, the second for DMR = 2, and so on. In the following example:

000400050006000

trees with DMR = 6 have the highest cutting preference added to their existing species and tree condition cutting preference, trees with DMR = 5 will be cut next, and trees with DMR = 4 next. Because the first three fields are zero, trees with DMR's of 1, 2, or 3 are treated the same as uninfected trees.  
[Range: none]

**Field Default Values**

Field	1	2	3	4	5	6	7
All variants	1	0					

DWARF MISTLETOE IMPACT MODEL

**MISTPRT** This keyword is used to instruct the Dwarf Mistletoe Model to print the statistical summary tables. If the keyword is present three summary tables (stand totals, species specific, and DBH class) will be printed. If it is not present, the tables will not be printed.

Field 1 The MISTABLE keyword is used to produce a separate detail table (species/DBH class). The MISTFILE keyword writes files requested by MISTPRT and MISTABLE to system files.

Field 2 Threshold DBH in inches for trees to be counted in DMI/DMR statistics. Trees with a smaller DBH will be treated as if they contain no mistletoe. The value in this field must be greater than or equal to 0.

Fields 3-7 Not used.

**Field Default Values**

Field	1	2	3	4	5	6	7
All variants	0						

DWARF MISTLETOE IMPACT MODEL

Species Abbrev.	Species Name	Species Abbrev.	Species Name
AF	Alpine Fir	NF	Noble Fir
AS	Quaking Aspen	OH	Other hardwood
BC	Black Cherry	OS	Other softwood
BM	Bigleaf Maple	OT	Other species
BO	Black Oak	PB	Paper Birch
BS	Blue Spruce	PJ	Pinyon/Juniper
C	Western Redcedar	PP	Ponderosa Pine
CB	Corkbark Fir	PY	Pacific Yew
CO	Black Cottonwood	RA	Red Alder
CW	Cottonwood	RC	Western Redcedar
DF	Douglas-fir	RF	Red Fir
DG	Pacific Dogwood	RW	Redwood
ES	Engelmann Spruce	S	Spruce
GC	Golden Chinkapin	SF	Pacific Silver Fir
GF	Grand Fir	SP	Sugar Pine
HW	Hawthorn	TO	Tanoak/Chinkapin
IC	Incense-cedar	WA	White Alder
J	Juniper	WB	Whitebark Pine
JP	Jeffrey Pine	WF	White Fir
KP	Knobcone	WH	Western Hemlock
L	Larch	WI	Willow
LL	Subalpine Larch	WL	Western Larch
LM	Limber Pine	WO	Oregon White Oak
LP	Lodgepole Pine	WP	Western White Pine
M	Madrone	WS	White Spruce
MH	Mountain Hemlock	YC	Alaska Yellow Cedar