

Publication WSFNR-22-78C

November 2022

Assessing Tree Damage Exposure On Development Sites Using Number of Tree Growth Seasons Impacted

Dr. Kim D. Coder, Professor of Tree Biology & Health Care / University Hill Fellow University of Georgia Warnell School of Forestry & Natural Resources

Tree Growth Periods / Seasons			
YEAR #1: dormancy	first portion of growing season	second portion of growing season	senescence
DORM	GS1	GS2	SENC
YEAR #2: dormancy	first portion of growing season	second portion of growing season	senescence
DORM	GS1	GS2	SENC
YEAR #3: dormancy	first portion of growing season	second portion of growing season	senescence
DORM	GS1	GS2	SENC
YEAR #4:	(etc.)		



TREE	DAMAGE EXPOSURE VALUE COMPONENTS
1)	SEASONS INFLUENCED (tree growth periods impacted by site development activities)
	full year (GS1 + GS2 + SENC + DORM) = 25 dormant season (DORM) = 1 full growing season (GS1 + GS2 + SENC) = 24 first portion growing season (GS1) = 12 second portion growing season (GS2) = 9 senescence season (SENC) = 3
2)	SEASONAL STARTING PENALTY (tree growrth period when construction began)
	dormant season (DORM)= 0first portion growing season (GS1)= 6second portion growing season (GS2)= 4senescence season (SENC)= 2
3)	SEASONAL ENDING PENALTY (tree growth period when construction ended)
	dormant season (DORM)= 0first portion growing season (GS1)= 6second portion growing season (GS2)= 0senescence season (SENC)= 0
4)	MULTIPLE-YEAR PENALTY (number of dormant period lay-overs)
	multiply the summed results of preceding three steps by (1.05 ^{years})
	examples: 2 years = 1.05 ² = 1.10X; 3 years = 1.05 ³ = 1.16X.
5)	YOU HAVE NOW COMPLETED THE FOLLOWING FORMULA:
	TREE DAMAGE EXPOSURE VALUE (points) = (SEASONS INFLUENCED NUMBER + SEASONAL STARTING PENALTY NUMBER + SEASONAL ENDING PENALTY NUMBER) X MULTIPLE-YEAR PENALTY FACTOR.



TREE DAMAGE EXPOSURE VALUE

(TOTAL NUMBER OF SEASONS INFLUENCED + SEASON STARTED + SEASON ENDED) X MULTIPLE YEARS

Minimum Tree Recovery Time For Each Season Impacted

(time duration runs concurrently)

-- Dormant Season (DORM)

= 1 year

-- Senescence Season (SENC) = 2 years

-- Second Portion of Growing Season (GS2) = 3 years plus time to end of current growing season

-- First Portion of Growing Season (GS1) = 3 years plus time to end of current growing season for diffuse porous trees OR

= 4 years plus time to end of current growing season for ring porous / gymnosperm trees



Example 1:

Construction began in GS1, ended in GS1 the following year (1 year duration), and impacted 5 tree growth periods.

Tree Damage Exposure Value = 49.

Example 2:

Construction began in DORM, ended in DORM the following year (1 year duration), and impacted 5 tree growth periods. **Tree Damage Exposure Value = 26.**

Result:

Beginning and ending site development activities one tree growth period earlier saved major potential damage impacts on trees, althought the duration of construction on-site was the same. Minimum recovery times are estimated for oaks as 5+ years in example 1 and 4+ years in example 2. Note example 1 activities have much more tree / site damage potential (~1.9 times greater) than example 2.

Citation:

Coder, Kim D. 2022. Assessing Tree Damage Exposure On Development Sites Using Number of Tree Growth Seasons Impacted. University of Georgia, Warnell School of Forestry & Natural Resources Outreach Worksheet WSFNR22-78C. Pp.4.

The University of Georgia Warnell School of Forestry and Natural Resources offers educational programs, assistance, and materials to all people without regard to race, color, national origin, age, gender, or disability.

The University of Georgia is committed to principles of equal opportunity and affirmative action.