

Nursery and Landscape Pest Scouting - Growing Degree-day Ranges						(0-250 GDD50)
Crop type	Common name	Latin name	GDD50 Range		GDD50 Reference	Developmental / Target Stage
			MIN min: 50 °F	MAX max: 95 °F		
Conifer	Conifer rust mites	Eriophyidae	7	22	4	Overwintering eggs hatch
Pomes, Stone fruit	European red mite	Panonychus ulmi	7	58	2	1st adults active
Conifer	White pine weevil	Pissodes strobi	7	58	RU	Overwintering adults become active / prevent egg laying
Deciduous	Oystershell scale	Lepidosaphes ulmi	7	91	2	Spring control of overwintering stage
Deciduous, Yew	Cottony camellia / taxus scale	Pulvinaria floccifera	7	91	5	Spring control of overwintering stage
Many	Southern red mite	Oligonychus ilicis	7	91	5	Overwintering eggs hatch
Conifer	Taxus mealybug	Dysmicoccus wistariae	7	91	2	Spring control of overwintering stage
Oaks	Kermes oak scales	Kermes spp.	7	91	2	Spring control of overwintering stage
Conifer	Elongate hemlock scale	Florinia externa	7	120	2	Spring control of overwintering stage
Many	Aphids	Aphidoidea	7	120	2	Spring control of overwintering stage
Conifer	Spruce spider mite	Oligonychus ununguis	7	121	RU	Overwintering eggs hatch
Oaks	Golden oak scale	Asterolecanium variolosum	7	121	5	Spring control of overwintering stage
Conifer	Pales weevil	Hylobius pales	7	121	RU	Overwintering adults become active / prevent egg laying
Magnoliaceae	Tuliptree scale	Toumeyella liriiodendri	12	121	2	Spring control of overwintering stage
Rhododendron, Azalea	Azalea lacebug	Stephanitis pyrioides	18	372	RU	Spring control of overwintering stage
White and Scotch Pine	White pine aphid	Cinara strobi	22	91	RU	Spring control of overwintering stage
Conifer	Pine bark adelgid	Pineus strobi	22	58	2	Spring control of overwintering stage
Magnoliaceae	Magnolia scale	Neolecanium cornuparvum	22	91	2	Spring control of overwintering stage
Conifer	Spruce bud scale	Physokermes piceae	22	120	2	Spring control of overwintering stage
Conifer	Juniper scale	Carulaspis juniperi	22	148	2	Spring control of overwintering stage
Conifer	Eastern spruce gall adelgid	Adelges abietis	25	100	3	Spring control of overwintering stage
Conifer	Northern pine weevil	Pissodes approximatus	25	100	4	1st adults active
Conifer	Zimmerman pine moth	Dioryctria zimmermani	25	100	3	1st larvae active
Conifer	Cooley spruce gall adelgid	Adelges cooleyi	25	120	3	Spring control of overwintering stage
Conifer	White pine weevil	Pissodes strobi	25	220	4	1st adults active
Shade trees	European fruit lecanium	Parthenolecanium corni	35	145	2	Spring control of overwintering stage
Many, evergreen	Euonymus scale	Unaspis euonymi	35	120	2	Spring control of overwintering stage
Conifer	European pine sawfly	Neodiprion sertifer	35	145	1	Hatched larvae
Conifer	Fletcher scale	Parthenolecanium fletcheri	35	148	2	Spring control of overwintering stage
Conifer	European pine shoot moth / borer	Rhyacionia buoiana	50	220	4	1st larvae active
Maples	Maple bladdergall mite	Vasates quadripedes	58	148	2	Spring control of overwintering stage
Honeylocust	Honeylocust plant bug	Diaphnocoris chlorionis	58	246	2	Nymphs / adults active
Conifer	Pine tortoise scale	Toumeyella parvicornis	58	148	2	Crawler activity
Conifer	Pine bark adelgid	Pineus strobi	58	618	2	Spring control of overwintering stage
Conifer	Balsam twig aphid	Mindarus abietinus	60	100	4	Egg hatch
Many	Southern red mite	Oligonychus ilicis	69	157	RU	Spring hatch
Conifer	Eastern pine shoot borer	Eucosma gloriola	75	200	4	1st adults active
Malus, Prunus, many	Eastern tent caterpillar	Malacosoma americanum	90	190	2	Larvae treatment before tents apparent
Many	Gypsy moth	Lymantria dispar	90	448	RU	Larvae treatment (early instars)
Conifer	Cooley spruce gall adelgid	Adelges cooleyi	90	180	4	1st adults active - Douglas fir
Conifer	Balsam twig aphid	Mindarus abietinus	100	150	4	Stem mothers present (control target)
Conifer	Pine engraver (Ips bark beetle)	Ips spp.	100	150	4	1st adults active
Conifer	European pine sawfly	Neodiprion sertifer	100	195	4	1st larvae active
Pieris	Andromeda lace bug	Stephanitis takeyai	115	279	RU	Nymphs (1st generation)
Azalea	Azalea lace bug	Stephanitis pyrioides	118	372	RU	Nymphs (1st generation)
Conifer	Larch casebearer	Coleophora laricella	120	150	4	Egg hatch
Conifer	Nantucket pine tip moth	Rhyacionia frustrana	121	448	RU	1st generation egg hatch
Birch	Birch leafminer	Fenusia pusilla	123	290	RU	Adults - egg laying
Many	Gypsy moth	Lymantria dispar	145	200	4	Egg hatch, 1st larvae
Holly	Holly leaf miner	Phytomyza ilicis	147	265	RU	Adults - egg laying
Many	Cankerworms, inch-worms, loopers	(many)	148	290	2	Larvae treatment
Lilac, ash, privet, many	Lilac / Ash Borer	Podosesia syringae	148	299	2	Adult flight
Yews, Rhododendrons, many	Black Vine Weevil	Otiorhynchus sulcatus	148	400	2	Pupation / Adult emergence
Dogwood, many	Dogwood Borer	Synanthedon scitula	148	700	2	Adult activity
Conifer	Spruce spider mite	Oligonychus ununguis	150	175	4	1st egg hatch
Conifer	Spruce needleminer	Endothenia albolineana	150	200	4	1st larvae active
Conifer	Balsam gall midge	Paradiplosis tumifex	150	300	4	Adults laying eggs
Malus, Prunus, many	Eastern tent caterpillar	Malacosoma americanum	90	190	2	Larvae treatment before tents apparent (near 150-GDD50)
Elm, Service berry	Woolly elm aphid	Eriosoma americana	121	246	2 (6)	Control target
Conifer	Hemlock woolly adelgid	Adelges tsugae	150	150	RU	Eggs and 10% hatch

Conifer	Spruce spider mite	<i>Oligonychus ununguis</i>	150	175	4	1st egg hatch
Conifer	Spruce needleminer	<i>Endothenia albolineana</i>	150	200	4	1st larvae active
Conifer	Balsam gall midge	<i>Paradiplosis tumifex</i>	150	300	4	Adults laying eggs
Witchhazel, River birch	Spiny witchhazel gall aphid	<i>Hamamelistes spinosus</i>	171	-	6	Control target
Birch	Birch leafminer	<i>Fenusa pusilla</i>	190	290	RU	Larvae (1st generation)
Conifer	Spruce spider mite	<i>Oligonychus ununguis</i>	190	363	RU	Immatures/Adults
Honeylocust	Honeylocust pod gall midge	<i>Dasineura gleditchiae</i>	192	229	RU	Larvae
Holly	Holly leafminer	<i>Phytomyza ilicis</i>	192	290	RU	Egg hatch
Holly	*Native holly leafminer	<i>Phytomyza ilicicola</i>	192	298	2	Egg hatch
Rhododendron	Rhododendron borer	<i>Synanthedon rhododendri</i>	192	298	2	Typical treatment window
Larch	Larch sawfly	<i>Pristophora erichsonii</i>	192	299	2	Typical treatment window
Andromeda	Andromeda lacebug	<i>Stephanitis takeyai</i>	192	303	RU	Adults
Rhododendron	Rhododendron gall midge	<i>Clinodiplosis rhododendri</i>	192	363	RU	Larvae
Willows, Cottonwood, Poplar	Imported willow leaf beetle	<i>Plagiodera versicolora</i>	192	448	RU	Larvae/Adults
Privet	Privet thrips	<i>Dendrothrips ornatus</i>	192	618	2	Typical treatment window
Lilac, ash, privet, many	Lilac / Ash Borer	<i>Podosesia syringae</i>	200	299	RU	Adults - 1st Treatment
Spruce	Spruce budworm	<i>Choristoneura fumiferana</i>	200	300	5	Larvae
Elm	Elm leafminer	<i>Fenusa ulmi</i>	215	240	5	Adult emergence
Wild and cultivated roses	Roseslug sawfly	<i>Endelomyia aethiops</i>	230	-	6	Egg hatch / early instars
Deciduous, many	Hawthorn lacebug	<i>Corythucha cydoniae</i>	239	363	RU	Nymphs/Adults
Conifer	Arborvitae leafminer	<i>Argyresthia thuiella</i>	245	360	RU	Larvae Treatments
Prunus	American plum borer	<i>Euzophera semifuneralis</i>	245	440	5	Adult flight, egg laying
Boxwood	Boxwood mites	<i>Eurytetranychus buxi</i>	245	600	RU	All Stages
Lilac	Lilac leafminer	<i>Caloptilia syringella</i>	246	363	5	Larvae Treatments
Holly	Holly leafminer	<i>Phytomyza ilicis</i>	246	448	RU	Larvae Treatment
Yew	Taxus mealybug	<i>Dysmicoccus wistariae</i>	246	618	RU	Adults/Crawlers
Conifer	Pine sawflies (Red-headed)	<i>Neodiprion lecontei</i>	246	1388	RU	Larvae (1st generation)
Boxwood	Boxwood leafminer	<i>Monarthropalpus flavus</i>	249	-	6	Adult emergence
Conifer	Eastern spruce gall adelgid	<i>Adelges abietis</i>	250	310	5	egg hatch, galls begin forming (not a control target)
<p>Note: Growing degree-day values utilize daily average air temperatures with a minimum temperature threshold (a.k.a. 'base') of 50F = GDD50 (max. temp. threshold set at 95F). These values are accumulated from a biofix date, such as January or March 1st in the NE USA. Provided GDD50 are scouting ranges and should be truthed.</p> <p>Daily GDD50 = (Max + Min temp.) / 2 - 50 (min temp. threshold)</p>		<h2>References</h2>		RU	Rutgers Cooperative Extension - IPM Notes	
2	http://ccetompkins.org/resources/using-growing-degree-days-for-insect-management					
3	https://extension.psu.edu/ipm-basics-for-christmas-trees#section-2					
4	https://www.canr.msu.edu/ipm/agriculture/christmas_trees/gdd_of_conifer_insects					
5	https://www.agriculture.nh.gov/publications-forms/documents/landscape-pests.pdf					
6	https://extension.umd.edu/ipm/pest-predictive-calendar-landscapenursery					
7	https://www.canr.msu.edu/ipm/agriculture/christmas_trees/gdd_of_landscape_insects					
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