

A meta-analysis of the effects of global environmental change on plant-herbivore interactions

Arthropod-Plant Interactions

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CITATION AUTHOR

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142 Williams RS, Lincoln DE, Thomas RB  
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145 Zavala JA, Scopel AL, Ballare CL

## TITLE

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Effects of manipulation of plant carbon nutrient balance on tall goldenrod resistance to a gallmaking herbivore

CO<sub>2</sub> and O<sub>3</sub> effects on host plant preferences of the forest tent caterpillar (*Malacosoma disstria*)

Effects of CO<sub>2</sub> and light on tree phytochemistry and insect performance

Herbivore damage along a latitudinal gradient: relative impacts of different feeding guilds

Effect of plant density and light availability on leaf damage in *Manilkara bidentata* (Sapotaceae)

Growth and reproduction of the alpine grasshopper *Miramella alpina* feeding on CO<sub>2</sub>-enriched dwarf shrubs at treeline

The effects of slope orientation on plant growth, developmental instability and susceptibility to herbivores

Performance of a generalist grasshopper on a C<sub>3</sub> and a C<sub>4</sub> grass: compensation for the effects of elevated CO<sub>2</sub> on plant nutritional quality

Effects of elevated atmospheric CO<sub>2</sub> on the nutritional ecology of C<sub>3</sub> and C<sub>4</sub> grass-feeding caterpillars

Influence of atmospheric carbon dioxide enrichment on induced response and growth compensation after herbivore damage in *Lotus corniculatus*

Litter cover variability affects seedling performance and herbivory

The seedling community of tropical rainforest edges and its interaction with herbivores and pathogens

Responses of seedling transplants to environmental variations in contrasting habitats of Central Amazonia

Shading induced variability in azalea mediates its suitability as a host for the azalea lace bug

Herbivore attack in *Casuarina nitida* influenced by plant ontogenetic variation in foliage quality and plant architecture

Intraspecific variation in growth, defense, and herbivory in *Dialium guianense* (Caesalpiniaceae) mediated by edaphic heterogeneity

Effects of Nutrient Supply on Citrus Resistance to Root Herbivory by *Diaprepes abbreviatus* L. (Coleoptera: Curculionidae)

Effect of elevated CO<sub>2</sub> on the demography of a leaf-sucking mite feeding on bean

Relation of *Spodoptera eridania* choice to tannins and protein of *Lotus corniculatus*

Effects of mineral nutrition on delayed inducible resistance in Alaska paper birch

Effects of endophytic fungus, nutrient level, and plant damage on performance of fall armyworm (Lepidoptera: Noctuidae)

Effects of elevated temperature and carbon dioxide on the nutritional quality of leaves of oak (*Quercus robur* L.) as food for the winter moth (*Operophtera brumata* L.)

Leaf quality and herbivory responses to soil nutrient addition in secondary tropical dry forests of Yucatan, Mexico

Impact of Elevated CO<sub>2</sub> on Tri-Trophic Interaction of *Gossypium hirsutum*, *Aphis gossypii*, and *Leis axyridis*

Effects of elevated carbon dioxide levels and temperature on the life history of the Madeira mealy bug (Hemiptera: Pseudococcidae)

Interspecific competition affects growth and herbivore damage of *Brassica napus* in the field

Midseason Pest Status of the Cotton Aphid (Homoptera: Aphididae) in California Cotton: Is Nitrogen a Key Factor?

Elevated CO<sub>2</sub> decreases leaf fluctuating asymmetry and herbivory by leaf miners on two oak species

Plant allocation to defensive compounds: interactions between elevated CO<sub>2</sub> and nitrogen in transgenic cotton plants

The dynamics of carbon-nutrient balance: Effects of cottonwood acclimation to short and long-term shade on beetle feeding preferences

Fertility affects susceptibility of chrysanthemum to cotton aphids: Influence on plant growth, photosynthesis, ethylene evolution, and herbivore abundance

Nutrient stress, host plant quality and herbivore performance of a leaf-mining fly on grass

The influence of light and nutrients on foliar phenolics and insect herbivory

Effect of soil-applied complex fertiliser on an insect–host plant relationship: *Liriomyza trifolii* on *Solanum tuberosum*

Why are leaf-cutting ants more common in early secondary forests than in old-growth tropical forests? An evaluation of the palatable forage hypothesis

What goes up must come down? Nutrient addition and predation pressure on oak herbivores

Feeny revisited: condensed tannins as anti-herbivore defences in leaf-chewing herbivore communities of *Quercus*

Forest edge effects on the biological performance of the forest tent caterpillar (Lepidoptera: Lasiocampidae) in sugar maple stands

Interacting effects of herbivory and fertility on a synthesized plant community

Influence of air pollution on leaf chemistry, herbivore feeding and gall frequency on *Tibouchina pulchra* leaves in Curitiba, Brazil

Effect of litter on the incidence of leaf-fungal pathogens and herbivory in seedlings of the tropical tree *Nectandra ambigens*  
Plasticity of leaf traits and insect herbivory in *Solanum incarum* L. (Solanaceae) in Nguruman, SW Kenya  
Effects of nutrient availability on biomass allocation as well as constitutive and rapid induced herbivore resistance in poplar  
Willow genotype, but not drought treatment, affects foliar phenolic concentrations and leaf-beetle resistance  
Effects of elevated CO<sub>2</sub> on development and larval food-plant preference in the butterfly *coenonympha pamphilus* (Lepidoptera, Satyridae)  
Influence of leaf chemistry of *Lotus corniculatus* (Fabaceae) on larval development of *Polyommatus icarus* (Lepidoptera, Lycaenidae): effects of elevated CO<sub>2</sub> and plant genotype  
In situ development of a satyrid butterfly on calcareous grassland exposed to elevated carbon dioxide  
Herbivore damage, resource richness, and putative defences in juvenile versus adult *Eucalyptus* leaves  
Effects of elevated CO<sub>2</sub> on foliar quality and herbivore damage in a scrub oak ecosystem  
Insect herbivory in an intact forest understory under experimental CO<sub>2</sub> enrichment  
Herbivory response to vegetational diversity: spatial interaction of resources and natural enemies  
The response of *Philaenus spumarius* (Homoptera: Cercopidae) to fertilizing and shading its moorland host-plant (*Calluna vulgaris*)  
Gypsy moth feeding in the canopy of a CO<sub>2</sub>-enriched mature forest  
Opposing effects of elevated CO<sub>2</sub> and N deposition on *Lymantria monacha* larvae feeding on spruce trees  
Effects of light and nutrient availability on aspen: Growth, phytochemistry, and insect performance  
Response of beech (*Fagus sylvatica*) to elevated CO<sub>2</sub> and N: Influence on larval performance of the gypsy moth *Lymantria dispar* (Lep., Lymantriidae)  
Effects of host shading on consumption and growth of the geometrid *Epirrita autumnata*: interactive roles of water, primary and secondary compounds  
Resource Partitioning to Growth, Storage and Defence in Nitrogen-Fertilized Scots Pine and Susceptibility of the Seedlings to the Tarnished Plant Bug *Lygus rugulipennins*  
Foliar quality influences tree-herbivore-parasitoid interactions: effects of elevated CO<sub>2</sub>, O<sub>3</sub>, and plant genotype  
Interspecific variation of plant traits associated with resistance to herbivory among four species of *Ficus* (Moraceae)  
HURRICANE DAMAGE INFLUENCES FOLIAR POLYPHENOLICS AND SUBSEQUENT HERBIVORY ON SURVIVING TREES  
Suitability of stressed and vigorous plants to various insect herbivores  
Convergent Responses to Stress. Solar Ultraviolet-B Radiation and *Manduca sexta* Herbivory Elicit Overlapping Transcriptional Responses in Field-Grown Plants of *Nicotiana longiflora*  
Survival and development of tobacco hornworm larvae on tobacco plants grown under elevated levels of ozone  
Effects of elevated CO<sub>2</sub> and temperature on development and consumption rates of *Octotoma championi* and *O. Scabripennis* feeding on *Lantana camara*  
Interactive effects of CO<sub>2</sub> and temperature on the leaf-miner *Dialectica scariella* Zeller (Lepidoptera: Gracillariidae) in Paterson's Curse, *Echium plantagineum* (Boraginaceae)  
Effects of Carbon Dioxide and Nitrogen Enrichment on a Plant-Insect Interaction: The Quality of *Calluna vulgaris* as a Host for *Operophtera brumata*  
Succession and Micro-elevation Effects on Seedling Establishment of *Calophyllum brasiliense* Camb. (Clusiaceae) in an Amazonian River Meander Forest  
Effects of CO<sub>2</sub> and NO<sub>3</sub>-availability on deciduous trees: phytochemistry and insect performance  
Effect of nitrogen availability on the growth and phytochemistry of hybrid poplar and the efficacy of the *Bacillus thuringiensis* cry1A(a) d-endotoxin on gypsy moth  
Elevated CO<sub>2</sub> reduces leaf damage by insect herbivores in a forest community  
Effects of elevated carbon dioxide and ozone on the phytochemistry of aspen and performance of an herbivore  
Responses of trembling aspen (*Populus tremuloides*) phytochemistry and aspen blotch leafminer (*Phyllonorycter tremuloidiella*) performance to elevated levels of atmospheric CO<sub>2</sub> and O<sub>3</sub>  
Effects of elevated carbon dioxide and ozone on the phytochemistry of aspen and performance of an herbivore  
Effects of elevated CO<sub>2</sub> and temperature on the leaf chemistry of birch *Betula pendula* (Roth) and the feeding behaviour of the weevil *Phyllobius maculicornis*  
Tests of hypotheses on patterns of gall distribution along an altitudinal gradient  
Grazing damage to plants and gastropod and grasshopper densities in a CO<sub>2</sub>-enrichment experiment on calcareous grassland  
Temperature and food quality effects on growth, consumption, and post-utilization efficiencies of the forest tent caterpillar *Malacosoma disstria* (Lepidoptera: Lasiocampidae)  
Consequences of enriched atmospheric CO<sub>2</sub> and defoliation for foliar chemistry and gypsy moth performance  
Responses of deciduous trees to elevated atmospheric CO<sub>2</sub>: productivity, phytochemistry, and insect performance  
CO<sub>2</sub>-Mediated changes in Aspen chemistry: effects on gypsy moth performance and susceptibility to virus  
Preference and performance of a willow-feeding leaf beetle: soil nutrient and flooding effects on host quality  
The role of low-level ozone exposure and mycorrhizas in chemical quality and insect herbivore performance on Scots pine seedlings  
Genotypic Variation for Condensed Tannin Production in Trembling Aspen (*Populus tremuloides*, Salicaceae) Under Elevated CO<sub>2</sub> and in High- and Low-Fertility Soil  
Effects of microsite disturbances and herbivory on seedling performance in the perennial herb *Helleborus foetidus* (Ranunculaceae)  
Patterns and correlates of interspecific variation in foliar insect herbivory and pathogen attack in Brazilian cerrado

Perception of solar UVB radiation by phytophagous insects: Behavioral responses and ecosystem consequences  
Influence of previous herbivory on behavior and development of *Spodoptera exigua* larvae on glanded and glandless cotton  
Effects of enhanced UV-B radiation on a weedy forb (*Plantago lanceolata*) and its interactions with a generalist and specialist herbivore  
CO<sub>2</sub> and light effects on deciduous trees: growth, foliar chemistry, and insect performance  
Influence of tree growth rate, shoot size and foliar chemistry on the abundance and performance of a galling adelgid  
Ant protection against herbivory in three species of *Tococa* (Melastomataceae) occupying different environments  
The influence of a salinity and nutrient gradient on coastal vs. upland tritrophic complexes  
Relative importance of fertiliser addition to plants and exclusion of predators for aphid growth in the field  
Herbivore resistance in *Betula pendula*: Effect of fertilization, defoliation, and plant genotype  
Effects of elevated ultraviolet radiation on *Quercus robur* and its insect and ectomycorrhizal associates  
Environmentally induced differences in plant traits: consequences for susceptibility to a leaf-cutter ant  
The effects of light on foliar chemistry, growth and susceptibility of seedlings of a canopy tree to an attine ant  
Perception of aspen and sun/shade sugar maple leaf soluble extracts by larvae of *Malacosoma disstria*  
Leaf traits and herbivory rates of tropical trees species differing in successional status  
Elevated Atmospheric CO<sub>2</sub> Affects the Chemical Quality of Brassica Plants and the Growth Rate of the Specialist, *Plutella xylostella*, but Not the Generalist, *Spodoptera littoralis*  
How do nutrients and warming impact on plant communities and their insect herbivores? A 9-year study from a sub-Arctic heath  
Wildfire alters oak growth, foliar chemistry, and herbivory  
Effects of prescribed fire on canopy foliar chemistry and suitability for an insect herbivore  
Foliar Chemistry and Gypsy Moth, *Lymantria dispar* (L.), Herbivory on Pure American Chestnut, *Castanea dentata* (Fam: Fagaceae), and a disease-resistant hybrid  
Impact of fire on leaf nutrients, arthropod fauna and herbivory of native and exotic eucalypts in Kings Park, Perth, Western Australia  
Induced defensive response of myrtle oak to foliar insect herbivory in ambient and elevated CO<sub>2</sub>  
Enriched atmospheric CO<sub>2</sub> and defoliation: effects on tree chemistry and insect performance  
Atmospheric CO<sub>2</sub> and soil water availability: consequences for tree-insect interactions  
Effects of CO<sub>2</sub>-mediated changes in paper birch and white pine chemistry on gypsy moth performance  
Solar ultraviolet-B radiation affects plant-insect interactions in a natural ecosystem of Tierra del Fuego (southern Argentina)  
Solar UV-B radiation affects leaf quality and insect herbivory in the southern beech tree *Nothofagus antarctica*  
Responses to solar ultraviolet-B radiation in a shrubdominated natural ecosystem of Tierra del Fuego (southern Argentina)  
Shading Effects on Susceptibility of *Rosa* spp. to Defoliation by *Popillia japonica* (Coleoptera: Scarabaeidae)  
Response of plant pathogens and herbivores to a warming experiment  
Delayed inducible resistance in mountain birch in response to fertilization and shade  
Multitrophic Effects of Elevated Atmospheric CO<sub>2</sub> on Understory Plant and Arthropod Communities  
Plant-mediated effects of drought stress on host preference and performance of a grass miner  
Effects of drought stressed cotton, *Gossypium hirsutum* L., on beet armyworm, *Spodoptera exigua* (Hubner), oviposition, and larval feeding preferences and growth  
Rainfall effects on plant-herbivore processes in an upland oak forest  
Patch-size effects on plant phenolics in successional openings of the Southern Appalachians  
Shading enhances the quality of willow leaves to leaf beetles – but does it matter?  
Effects of elevated CO<sub>2</sub> on the chrysanthemum leaf-miner, *Chromatomyia syngenesiae*: a greenhouse study  
CO<sub>2</sub>-mediated changes in mungbean chemistry: Impact on plant-herbivore interactions  
Influence of elevated CO<sub>2</sub> on interspecific interactions at higher trophic levels  
Combined effect of night-time temperature and allelochemicals on performance of a Solanaceae specialist herbivore  
Quality or quantity: the direct and indirect effects of host plants on herbivores and their natural enemies  
Elevated CO<sub>2</sub> lowers relative and absolute herbivore density across all species of a scrub-oak forest  
Decreased leaf miner abundance in elevated CO<sub>2</sub>: reduced leaf quality and increased parasitoid attack  
Influence of previous frost damage on tree growth and insect herbivory of *Eucalyptus globulus globulus*  
Induced responses in *Nicotiana attenuata* affect behavior and growth of the specialist herbivore *Manduca sexta*  
The relationship between relative growth rate and susceptibility to aphids in wild barley under different nutrient levels

Foraging activity of an Amazonian leaf-cutting ant: responses to changes in the availability of woody plants and to previous plant damage

The effect of wilting on the selection of leaves by the leaf-cutting *Atta laevigata*

Effects of elevated CO<sub>2</sub> and temperature on plant growth and herbivore defensive chemistry

Interactions between willows and insect herbivores under enhanced ultraviolet-B radiation

Effects of light intensity and artificial wounding on monoterpene production in *Myrica cerifera* from two different ecological habitats

Leaf chemical changes induced in *Populus trichocarpa* by enhanced UV-B radiation and concomitant effects on herbivory by *Chrysomela scripta* (Coleoptera: Chrysomelidae)

Response of a Gall-Forming Guild (Hymenoptera: Cynipidae) to Stressed and Vigorous Prairie Roses

Leaf age effects of elevated CO<sub>2</sub>-grown white oak leaves on spring-feeding Lepidopterans

Development of gypsy moth larvae feeding on red maple saplings at elevated CO<sub>2</sub> and temperature

Effects of elevated CO<sub>2</sub>-grown loblolly pine needles on the growth, consumption, development, and pupal weight of red-headed pine sawfly larvae reared with open-topped chambers

Effects of elevated CO<sub>2</sub>, soil nutrient levels, and foliage age on the performance of two generations of *Neodiprion lecontei* (Hymenoptera: Diprionidae) feeding on loblolly pine

Influence of water stress on cyanogenic capacity in *Eucalyptus cladocalyx*

Effects of ambient UV-B radiation on soybean crops: Impact on leaf herbivory by *Anticarsia gemmatilis*



CIT. SOURCE	VOL	PP	DATE	DEFENSE	ENVIRONMENTAL VARIABLE
1 Oecologia	77	302-306	1988		N
2 Global Change Biology	11	588-599	2005	phenolics	CO2, O3
3 Oikos	88	259-272	2000	phenolics	CO2, N
4 Oikos	108	176-182	2005	leaf toughness	maturity, temp
5 Journal of Tropical Ecology	16	447-464	2000	phenolics	N
6 Oecologia	142	191-201	2005		CO2
7 Journal of Arid Environments	55	405-416	2003	symmetry	light
8 Oecologia	140	96-103	2004	leaf toughness	CO2
9 Oecologia	140	86-95	2004		water
10 Ecological Entomology	27	271-278	2002	phenolics	CO2
11 Biotropica	31	598-606	1999		litter
12 Biotropica	37	301-313	2005		disturbance
13 Journal of Tropical Ecology	21	397-406	2005		disturbance
14 Journal of the American Society for Horticultural Science	128	497-503	2003	trichomes	light
15 Oecologia	143	117-125	2005	phenolics	maturity
16 Plant Ecology	175	59-69	2004	phenolics	soil
17 Environmental Entomology	32	1242-1250	2003	peroxidase, chitinase	N
18 Oecologia	123	75-81	2000	tannins	CO2
19 Journal of Chemical Ecology	16	1557-1564	1990	phenolics	N
20 Ecology	74	2072-2084	1993	tannins	N
21 Environmental Entomology	27	631-635	1998		N
22 Functional Ecology	12	742-749	1998	tannins, leaf toughness	CO2, temp
23 Journal of Tropical Ecology	19	525-530	2003		N
24 Environmental Entomology	34	37-46	2005		CO2
25 Journal of entomological science	39	387-397	2004		
26 Plant Ecology	162	227-231	2002		disturbance
27 Population Ecology	30	501-510	2001		N
28 Global Change Biology	10	27-36	2003	tannins	CO2
29 Journal of Experimental Botany	53	323-331	2002	terpenes	CO2, N
30 Journal of Chemical Ecology	25	635-656	1999	phenolics	light
31 Journal of the American Society for Horticultural Science	129	344-353	2004		N
32 Oecologia	130	594-599	2002		N
33 Ecology	75	86-98	1994	phenolics	disturbance
34 Entomologia Experimentalis et Applicata	115	67-77	2005	leaf toughness	light
35 Oikos	92	169-177	2001		growth form
36 Ecology	81	1588-1600	2000	tannins	N
37 Ecological Entomology	29	174-187	2004	tannins	light
38 Ecoscience	8	164-172	2001	phenolics	disturbance
39 Journal of Ecology	87	514-525	1999		N
40 Biochemical Systematics and Ecology	32	53-63	2004	phenolics, lignin	disturbance

41	Journal of Tropical Ecology	19	171-177	2003	thick leaves	CO2
42	African Journal of Ecology	38	183-187	2000	leaf toughness	water
43	Oikos	101	385-397	2003	phenolics	N
44	Entomologia Experimentalis et Applicata	113	1-14	2004	tannis	water
45	Global Change Biology	9	74-83	2003		
46	Functional Ecology	13	801-810	1999	cyanate	CO2
47	Ecology	83	1399-1411	2002	phenolics	CO2
48	Australian Journal of Botany	53	33-44	2005	terpenes, leaf toughness	maturity
49	Journal of Chemical Ecology	31	267-286	2005	phenolics	CO2
50	Oecologia	138	566-573	2004		CO2
51	Population Ecology	45	75-81	2003	monoculture	density
52	Ecological Entomology	20	396-399	1995	phenolics	N
53	Global Change Biology	10	1899-1908	2004	phenolics	CO2
54	Oecologia	118	210-217	1999	tannins	CO2
55	Journal of Chemical Ecology	25	1687-1714	1999	phenolics	N, light
56	Journal of Applied Entomology	125	501-505	2001		CO2, N
57	Oikos	103	3-16	2003	phenolics	light
58	New Phytologist	131	521-532	1995	terpenes	N
59	Oecologia	137	233-244	2003	tannins	CO2, O3
60	Annals of Botany	94	377-384	2004	leaf toughness	growth form
61	Ecology	80	2676-2682	1999	tannins	disturbance
62	Oikos	94	228-235	2001	phenolics, peroxidase	water, N
63	Plant Physiology	132	1755-1767	2003	phenolics	CO2
64	Journal of Chemical Ecology	26	1-19	2000	alkaloids, terpenes	O3
65	Entomologia Experimentalis et Applicata	108	169-178	2003	thicker leaves	temp, CO2
66	Global Change Biology	8	142-152	2002		temp, CO2
67	New Phytologist	140	43-53	1998	phenolics	UV
68	Biotropica	35	462-471	2003		disturbance
69	Ecology	78	215-230	1997	phenolics	CO2, light
70	Canadian Journal of Forest Research	28	1055-1067	1998		litter
71	New Phytologist	167	207-218	2005	leaf toughness	CO2
72	Oecologia	134	95-103	2003	tough leaves	CO2
73	Agricultural and Forest Entomology	5	17-26	2003		CO2
74	Population Ecology	30	1119-1126	2001		CO2, temp
75	Agricultural and Forest Entomology	5	209-217	2003	phenolics, thicker leaves	CO2
76	Tropical Zoology	15	219-232	2002		water
77	Acta Oecologica	18	255-261	1997		CO2
78	Bulletin of Entomological Research	92	127-136	2002		disturbance
79	Journal of Chemical Ecology	24	1677-1695	1998	amide	temp
80	Ecology	74	763-777	1993	phenolics, leaf toughness	CO2
81	Global Change Biology	3	279-289	1997	tannins	CO2, O3
82	Oecologia	136	402-411	2003	phenolics	N
83	Global Change Biology	6	111-121	2000		O3
84	American Journal of Botany	86	1154-1159	1999	tannins	CO2
85	Plant Ecology	179	73-82	2005		disturbance
86	Journal of Tropical Ecology	17	127-148	2001	leaf toughness, phenolics	water

87	Proceedings of the National Academy of Sciences of the USA	96	980-985	1999		UV
88	Entomologia experimentalis et applicata	97	283-291	2000	terpenes	maturity
89	Entomologia Experimentalis et Applicata	93	233-247	1999		UV
90	Oecologia	119	389-399	1999	tannins	light, CO2
91	Functional Ecology	13	859-867	1999		N
92	Biotropica	35	181-188	2003	ants	disturbance
93	Ecology	85	2709-2716	2004		N
94	Oecologia	143	419-427	2005		
95	Ecology	81	49-65	2000	tannins	N
96	Global Change Biology	5	881-890	1999	thicker leaves	UV
97	Ecology	72	1609-1623	1991	phenolics	N
98	Oecologia	86	552-560	1991	tannins	light
99	Journal of Chemical Ecology	27	1963-1978	2001	less sugar	light
100	Plant Biology	6	746-754	2004	lignin	growth form
101	Journal of Agricultural and Food Chemistry	52	4185-4191	2004	phenolics	CO2
102	Journal of Ecology	90	544-556	2002	phenolics	N
103	Forest Ecology and Management	168	91-99	2002	tannins	disturbance
104	Forest Ecology and Management	160	177-187	2002	tannins	disturbance
105	Environmental Entomology	32	359-365	2003	tannins	N
106	Austral Ecology	26	500-506	2001		disturbance
107	Journal of Chemical Ecology	30	1143-1152	2004	tannins	CO2
108	Global Change Biology	4	419-430	1998	tannins	CO2
109	Canadian Journal of Forest Research	27	1281-1290	1997	phenolics	water, CO2
110	Oecologia	98	133-138	1994	phenolics	CO2, N
111	Oecologia	116	528-535	1998		UV
112	Oecologia	138	505-512	2004	leaf thickness	light, UV
113	Global Change Biology	7	467-478	2001		UV
114	Environmental Entomology	29	502-508	2000		light
115	Ecology	85	2570-2581	2004		temp
116	Ecology	77	2302-2311	1996		CO2
117	Environmental Entomology	33	1609-1616	2004		CO2
118	Oikos	108	371-85	2005	stress	water
119	Journal of Chemical Ecology	29	1997-2011	2003	tannins, terpenes	CO2
120	Ecology	79	604-617	1998	tannins	water
121	Ecology	74	55-67	1993	phenolics	disturbance
122	Oikos	91	550-558	2000		light
123	Global Change Biology	4	287-291	1998	thicker leaves	CO2
124	Current Science	82	1148-1151	2002	tannins	CO2
125	Global Change Biology	8	668-678	2002		CO2
126	Ecoscience	4	286-295	1997		CO2
127	Oecologia	142	413-420	2005		N
128	Oecologia	134	82-87	2003		CO2
129	Ecological Applications	9	240-244	1999	proteinase inhibitor	UV
130	Austral Ecology	26	489-499	2001	stress	frost
131	Oecologia	122	371-379	2000	alkaloids	N
132	Oecologia	137	564-571	2003		N

133	Oecologia	112	370-378	1997	leaf toughness	previous defoliation
134	Entomologia Experimentalis et Applicata	78	215-220	1996	latex, volatiles	water
135	Global Change Biology	8	1240-1252	2002	phenolics	temp, CO2
136	Oecologia	137	312-320	2003	phenolics, leaf toughness	UV
137	Canadian Journal of Botany	82	1501-1508	2004	monoterpene	light
138	Tree Physiology	22	1137-1146	2002		UV
139	Environmental Entomology	33	1052-1061	2004		N
140	Global Change Biology	4	235-246	1998	TNC	CO2
141	Oecologia	137	114-122	2003	phenolics	light
142	Global Change Biology	3	501-511	1997		CO2
143	Environmental Entomology	26	1312-1322	1997	terpene	CO2, N
144	Functional Plant Biology	29	103-110	2002	cyanogenic	water
145	Plant Ecology	156	121-130	2001		N