

INTERACTIONS between NUTRIENTS/SOIL CONDITIONS and PESTS, DISEASES & PHYSIOLOGICAL DISORDERS

PEST, DISEASE or CONDITION	CROP	SOIL or NUTRIENT CONDITION	Effect On Problem	REFERENCE
ALMOND RUST	ALMOND	Hi N	Worse	Symmes, (2017)
ALMOND SCAB	ALMOND	Hi N	Worse	Johnson (2017)
APHID	ALMOND	Hi N	Worse	Vacante, Kreiter (2017)
BACTERIAL CANKER	ALMOND	Low N	Worse	UC IPM (2005)
BACTERIAL CANKER, <i>Pseudomonas</i>	ALMOND	Fall N spray	Better	Doll (2009)
BAND CANKER, <i>Botryosphaeria</i>	ALMOND	Hi N	Worse	Trouillas, F. (2017)
BROWN ROT, BLOSSOM	ALMOND	Hi N	Worse	Teviotdale (1996a)
DEFOLIATION	ALMOND	Low K	Worse	Basile, et al (2002)
HULL ROT	ALMOND	Hi N	Worse	Lies, (2022)
HULL ROT	ALMOND	Hi N	Worse	Saa, et al (2016)
HULL ROT	ALMOND	Hi N	Worse	Teviotdale (1996)
HULL SPLIT, LEAF SUCCULANCE	ALMOND	Hi N	Worse	Culumber (2023)
PREMATURE FRUIT SPUR DEATH	ALMOND	Low K	Worse	Parsons (2016)
SHOT HOLE	ALMOND	Hi N	Worse	Teviotdale (1996a)
SPUR SURVIVAL	ALMOND	Low K	Worse	Lemons, (2001)
BACTERIAL CANKER	HAZELNUT	Low Ca, pH; Hi Al	Worse	Scortichini (2006)
BACTERIAL BLIGHT, <i>Xanthomonas</i>	HAZELNUT	Hi N, Lo Mg/K	Worse	Lamichhane, et al (2013)
INTERNAL BROWNING	HAZELNUT	Ca sprays	Better	Cacka, Sanguankeo (2012)
KERNEL MOLD	HAZELNUT	Ca sprays	Better	Cacka, Sanguankeo (2012)
MICRONUTRIENT CONTENT	HAZELNUT	Hi N	Worse	Özenç, et al (2014)
OIL CONTENT	HAZELNUT	Hi N	Worse	Özenç, et al (2014)
DISEASE RESISTANCE, HI VIGOR	NUTS	Hi N	Worse	Muhammad, Khalsa, Brown (2020)
BLACK PECAN APHID	PECAN	Hi N	Worse	Wood, Reilly (2000)
FALL FREEZE DAMAGE	PECAN	Hi N	Worse	Heerema, R. (2013).
KERNAL NECROSIS	PECAN	Hi NO3	Worse	Wagle, (2011)
KERNEL NECROSIS	PECAN	Hi N	No Effect	Smith, Cheary, Carroll, (2007)

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KERNEL NECROSIS	PECAN	Hi N	Worse	Wagle, Smith, Wood, Rohla, (2011)
NEMATODES	PECAN	Low Ni	Worse	Nyczepir, Wood, Reilly (2006)
PECAN SCORCH MITE	PECAN	Mod N	Worse	Jackson, Hunter (1983)
POTASSIUM DEFICIENCY	PECAN	Hi N	Worse	Pollack (1998)
ROOT PRODUCTION, LIFESPAN	PECAN	Hi N	Worse	Graves (2014)
ZINC DEFICIENCY	PECAN	Hi N	Worse	Heerema, R. (2013).
<i>Botryosphaeria</i> BLIGHT	PISTACHIO	Optimum N, Ca, K	Better	Michailides, et al (2002)
EXCESS SPLITTING, BLANKS	PISTACHIO	K, Zn sprays	Better	Norozi, et al (2019)
NAVEL ORANGEWORM	PISTACHIO	Hi N, Low Ca, K	Worse	Parsons (2023)
PISTACHIO PSYLLID	PISTACHIO	Hi N, Zn	Worse	Rouhani, Samih, Esmaeilizadeh (2012)
PSYLLA	PISTACHIO	Hi Ca	Better	Rouhani, Samih & Esmaeilizadeh (2012)
SHOOT BLIGHT <i>Botryosphaeria</i>	PISTACHIO	Adequate K	Better	Gordon, (2022)
<i>Verticillium</i> WILT	PISTACHIO	Low P or K	Worse	Ashworth, Morgan, Surber (1986)
WINTER JUVENILE TREE DIEBACK	PISTACHIO	Low Ca-Hi Na	Worse	Kallsen, Parfitt, Maranto, Holtz (2012)
ANTHRACNOSE	WALNUT	Increased N	Better	Jones, Mueller, Van Sambeek (1998)
APHID	WALNUT	N level	No Effect	Mace, Mills (2015)
APICAL NECROSIS	WALNUT	Low P, Ca, Mg	Worse	Garcin, Duchesne (2001)
BLISTER MITES (<i>Aceria erinea</i>)	WALNUT	Hi N	Worse	Khan, et al (2020)
FROST INJURY	WALNUT	Hi N	Worse	Arnold, et al (2022)
NUT SET, PESTS & DISEASES	WALNUT	Hi N	Worse	Song, et al (2021)
OIL QUALITY, PHENOLICS	WALNUT	Hi N	Worse	Verardo, et al (2013)
WALNUT APHID	WALNUT	Hi N	No Effect	Mace, Mills (2015)
WALNUT BLIGHT	WALNUT	Low Ca	Worse	Chevallier, Bray, Prunet, Giraud (2009)
WALNUT BLISTER MITE	WALNUT	Hi N	Worse	Ali Khan, et al (2020)

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TOTAL	DATE	Hi N = Worse	% Hi N	Ca = Better	% Ca	K = Involved	% K
50	4/3/23	30	60%	8	16%	8	16%
		(or low N = Better)		(or low Ca = Worse)		(Hi or Low K)	

Nutrient Ratio/ Balance Involved
14%
(7 studies)

Insects, Mites		Diseases	
9	18%	14	28%
(Hi N = Worse)		(Hi N = Worse)	

Micronutrients Involved
4%
Low or Hi = Better