

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

PEST, DISEASE or CONDITION	CROP	SOIL or NUTRIENT CONDITION	EFFECT on PROBLEM	REFERENCE
NITROGEN EFFICIENCY	CITRUS	Adequate Mo	BETTER	Hippler, et al (2017)
MOLD, PENICILLIUM	CITRUS	Adequate Zn	BETTER	Nadeem, Hanif, Majeed, Mushtaq, (2018)
MYCORRHIZA COLONIZATION	CITRUS	B fertilization	BETTER	Dixon, Garrett, Cox (1989)
NPK UPTAKE	MANDARIN	B sprays	BETTER	Ullah, Khan, Malik, Afzal, Razzaq (2012)
CITRUS SOUR ROT, <i>Geotrichum</i>	CITRUS	Boric acid sprays	BETTER	Talibi (2011)
ROOT ROT, <i>Phytophthora</i>	ORANGE	Ca salts	BETTER	Campanella, Ippolito, Nigro (2002)
POST HARVEST STORAGE	ORANGE	Ca sprays	BETTER	Chikaizumi, Hino, Mizutani (1998)
STORAGE LIFE, CITRIC ACID	MANDARIN	Ca sprays	BETTER	El-Hammady, et al (2000).
ALBEDO BREAKDOWN	ORANGE	Ca sprays	BETTER	Treeby, Storey (2002)
GREEN MOLD, <i>Penicillium</i>	ORANGE	Ca sprays	BETTER	Youssef, et al (2012)
STORAGE LIFE	CLEMENTINE	Ca sprays, dips	BETTER	Schirra, Mulas (1994)
POST HARVEST DECAY	CITRUS	Ca, K phosphite dips	BETTER	Cerioni, et al (2013)
HLB SYMPTOMS, YIELDS	CITRUS	Ca, Mg, Mn, Zn sprays	BETTER	Morgan, et al (2019)
POST HARVEST ROT, <i>Penicillium</i>	ORANGE	CaCl ₂ dips	BETTER	El-Gali (2014)
B TOXICITY SYMPTOMS	CITRUS	CaNO ₃	BETTER	Cooper, Peynado (1959)
ACP ATTRACTION, FEEDING	ORANGE	Cold stress, Hi NH ₃	WORSE	Malik, et al (2012)
HLB/CITRUS GREENING	CITRUS	Cu, Zn, Ca sprays	BETTER	Ahmad, et al (2011)
Fe, Zn AVAILABILITY	ORANGE	Hi acidic N use	BETTER	He, Alva., Calvert, Li, Banks (1999).
LEACHING: P, K, Ca	ORANGE	Hi acidic N use	WORSE	He, Alva., Calvert, Li, Banks (1999).
BLACK CITRUS APHID, population growth	MEDIUM	Hi amino acids	WORSE	Tahori, Hazan (1970)
CITRUS APHID, <i>Aphis spiraecola</i>	TANGERINE	Hi amino acid - N	WORSE	Mostefaoui, et al. (2013)
STORAGE ROT, <i>Rhizopus</i>	ORANGE	Hi Ca	BETTER	Tian, Fan, Xu, Jiang (2002)
FRUIT PUFFINESS, QUALITY	MANDARIN	Hi Ca, pectin	BETTER	Kuraokat, et al (1975)
YIELD, TSS CONTENT with HLB	CITRUS	Hi Ca, Zn	BETTER	Ahmad, et al (2011)
ROOT GROWTH	CITRUS	Hi Cu	WORSE	Hippler, et al (2016)
Zn, Mn UPTAKE	CITRUS	Hi Cu	WORSE	Hippler, et al (2016)

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HLB/CITRUS GREENING	MANDARIN	Hi Fe	BETTER	Pustika, et al (2008)
CITRUS LEAFMINER RESISTANCE	ORANGE	Hi K	BETTER	El-Sayed, Ennab. (2008)
Zn UPTAKE	CITRUS	Hi K	BETTER	Zaman, Schumann, Miller. (2005)
CITRUS DECLINE/BLIGHT	ORANGE	Hi K, Ca, Mg, Lo micros	WORSE	Pavan, Wutscher (1993).
CITRUS LEAF MINER	CITRUS	Hi K, Lo Ca	WORSE	Mustaqeem, et al (2014)
INTERNAL DRYNESS, GRANULATION	PUMMULO	Hi Mg, S	WORSE	Wang, et a l (2014)
CITRUS NEMATODES	CITRUS	Hi Mg; Lo N	WORSE	Sorribas, et al (2008)
HLB/CITRUS GREENING	ORANGE	Hi micros, K; Lo N	BETTER	Spann, Schumann, Rouse, Ebel (2011)
HLB	CITRUS	Hi Mn	BETTER	Zambon, Kadyampakeni, Grosser (2019)
EXCESS SHOOT GROWTH	CITRUS	Hi N	WORSE	Alva, Paramasivam, et al (2003)
CITRUS LEAFMINER, <i>Phyllocnistis</i>	LEMON	Hi N	WORSE	Ateyyat, Mustafa (2001)
THRIPS	ORANGE	Hi N	WORSE	Bacon (1996)
SCALE GROWTH <i>Gascardia & Ceroplastes</i>	CITRUS	Hi N	WORSE	Beattie, Weir, Clift, Jiang (1990)
CITRUS ROOT WEEVIL, <i>Diaprepes</i>	ORANGE	Hi N	WORSE	Borowicz, Albrecht, Mayer (2003)
SPIDER MITES	ORANGE	Hi N	WORSE	Borowicz, Albrecht, Mayer (2003)
SOIL BIOCONTROL ORGANISMS	CITRUS	Hi N	WORSE	Casale, et al (1995)
CITRUS PSYLLA	CITRUS	Hi N	WORSE	Catling (1969)
SA PSYLLA, Ovulation, Egg Population	CITRUS	Hi N	WORSE	Catling (1972)
FRUIT QUALITY	CITRUS	Hi N	WORSE	Chapman (1985).
PEEL THICKNESS	CITRUS	Hi N	WORSE	Chapman (1968)
KEY LIME ANTHRACNOSE, <i>Colletotrichum</i>	LIME	Hi N	WORSE	Crane (2010)
COLOR DEVELOPMENT	ORANGE	Hi N	WORSE	Davies, Albrigo, (1994)
RIND STAINING	ORANGE	Hi N	WORSE	Eckert & Eaks, (1989)
FRUIT COLOR, JUICE, QUALITY	CITRUS	Hi N	WORSE	Fake (2004)
REGREENING	CITRUS	Hi N	WORSE	Farag, Essa, Nagy, Haikal, Attia (2014)
MEALYBUGS	CITRUS	Hi N	WORSE	Franco, et al (2004)

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DIEBACK of TREES	CITRUS	Hi N	WORSE	Fraps, & Asbury (1928)
MAL SECCO/DRY DISEASE, <i>Phoma</i>	LEMON	Hi N	WORSE	Gassner (1940)
STORAGE ROT	CITRUS	Hi N	WORSE	Grierson, Hatton (1977)
THRIPS DAMAGE, <i>Scirtothrips</i>	ORANGE	Hi N	WORSE	Hare, et al 1989
SUGAR/ACID RATIO	GRAPEFRUIT	Hi N	WORSE	He, Calvert, Alva, Banks, Li (2003).
Cu DEFICIENCY	CITRUS	Hi N	WORSE	Hippler, Cipriano, et al (2017)
ROT, <i>Alternaria</i>	CITRUS	Hi N	WORSE	Kapyampakeni, Duncan (2019)
FRUIT PUFFING	MANDARIN	Hi N	WORSE	Kawase, Hirose (1981)
SUGAR/ACID RATIO	MANDARIN	Hi N	WORSE	Khalid (2013)
SCAB	LEMON	Hi N	WORSE	Koo, Young, Reese, (1973)
RIND PITTING	ORANGE	Hi N	WORSE	Kruger, et al (2005)
ROOT ROT, <i>Fusarium</i>	CITRUS	Hi N	WORSE	Labuschagne, Kotze (1988)
HIGH SHOOT/FIBEROUS ROOT	CITRUS	HI N	WORSE	Lea-Cox, Syvertsen (1996)
EDIBLE FRUIT/PEEL RATIO	PUMMULO	Hi N	WORSE	Li, et al (2015)
N FERTILIZER EFFICIENCY, YIELDS	ORANGE	Hi N	WORSE	Li, et al (2019)
NITROGEN, metabolizing enzymes	CITRUS	Hi N	WORSE	Liao, et al (2019)
PHOTOSYNTHETIC RATE	CITRUS	Hi N	WORSE	Liao, et al (2019)
Mn CONTENT	ORANGE	Hi N	WORSE	Magwaza (2008)
RIND PITTING	ORANGE	Hi N	WORSE	Magwaza (2008)
APHID, MEALYBUG, SCALE	CITRUS	Hi N	WORSE	Manner, et al (2006).
Cu DEFICIENCY	CITRUS	Hi N	WORSE	Mattos Jr., et al (2010)
MAL SECCO/DRY DISEASE, <i>Phoma</i>	LEMON	Hi N	WORSE	Migheli, et al (2009)
SOIL BIODIVERSITY	ORANGE	Hi N	WORSE	Morrow, et al (2019)
VITAMIN C CONTENT	CITRUS	Hi N	WORSE	Mozafar (1993)
CITRUS CANKER	CITRUS	Hi N	WORSE	Peltier (1918)
ESSENTIAL OIL CONTENT	LEMON	Hi N	WORSE	Quaggio (2002)

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MAL SECCO/DRY DISEASE, <i>Phoma</i>	LEMON	Hi N	WORSE	Raciti, Cutuli, Intrigliolo, Giuffrida (1990)
COLOR DEVELOPMENT	ORANGE	Hi N	WORSE	Reuther, Smith, (1952)
MAL SECCO/DRY DISEASE, <i>Phoma</i>	LEMON	Hi N	WORSE	Ruggieri (1948)
MEALYBUGS	CITRUS	Hi N	WORSE	Salama, El-Sherif, Megahed, (1985)
SCALE, <i>Parlatoria zizyphus</i>	CITRUS	Hi N	WORSE	Salama, El-Sherif, Megahed, (1985)
INSECT, MITE DAMAGE	CITRUS	Hi N	WORSE	Schumann, Vashisth, Spann, (2017)
ACP FEEDING, <i>Diaphorina</i>	CITRUS	Hi N	WORSE	Serikawa, Backus, Rogers (2013)
COLOR DEVELOPMENT	GRAPEFRUIT	Hi N	WORSE	Smith, Scudder, Hrnciar, G., (1969)
FRUIT GRANULATION	CITRUS	Hi N	WORSE	Smoot, Houck, Johnson (1971)
XANTHEMA (Cu def)	CITRUS	Hi N	WORSE	Smoot, Houck, Johnson (1971)
EXANTHEMA Cu DEFICIENCY	CITRUS	Hi N	WORSE	Smoot, Houck, Johnson, (1971)
CITRUS CANKER, <i>Xanthomonas</i>	CITRUS	Hi N	WORSE	Thind (2017)
BROWN SPOT, <i>Alternaria</i>	TANGERINE	Hi N	WORSE	Timmer, et al, (2001)
FRUIT PUFFINESS, QUALITY	MANDARIN	Hi N	WORSE	Torigatah, Masui, Suzuki. (1955)
Mn, Cu UPTAKE	MANDARIN	Hi N	WORSE	Verstraeten, et al. (2011)
EDIBLE FRUIT/PEEL RATIO	PUMMULO	Hi N	WORSE	Wang, et a l (2014)
BROWN SPOT, <i>Alternaria</i>	TANGERINE	Hi N	WORSE	Whiteside J., (1976)
FRUIT YIELD, QUALITY	CITRUS	Hi N	WORSE	Zaman, Schumann, Miller. (2005.
PEEL THICKNESS	CITRUS	Hi N	WORSE	Zhuang, Y.M. (1994)
POTASSIUM DEFICIENCY	CITRUS	Hi N, Ca or Mg	WORSE	Srivastava, et al (2015)
FRUIT YIELD	MANDARIN	Hi N, K	WORSE	Hammami, et al (2009)
RIND CREASING	ORANGE	Hi N, K; Lo Ca	WORSE	Sallato, Bonomelli, Martiz (2017)
PHOTOSYNTHESIS RATE	CITRUS	Hi N, Lo K	WORSE	Bernardi, et al (2015)
BLACK SCALE	CITRUS	Hi N, Lo K	WORSE	Chaboussou, (1976)
FRUIT ROT, <i>Ceratocystis</i>	CITRUS	Hi N, Low Ca	WORSE	Mirzaee, Mohammadi, Nasrabad (2009)
CITRUS WHITEFLY, egg laying	MANDARIN	Hi N, P	WORSE	Onillon, et al (1985)

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BLACK SCALE <i>Parlatoria zizyphus</i>	CITRUS	Hi N, P	WORSE	Salama, El-Sherif, Megahed (1985)
COTTONY CUSHION SCALE, <i>Icerya</i>	CITRUS	Hi N, P	WORSE	Salama, El-Sherif, Megahed (1985)
ARBUSCULAR MYCORRHIZAL FUNGI	TANGERINE	Hi N, P	WORSE	Youpensuk, Lordkaew, Rerkasem (2008)
RED SCALE, <i>Aonidiella</i>	CITRUS	Hi N, P, K	BETTER	Salama, Amin, Hawash (1972)
PURPLE SCALE, <i>Lepidosaphes</i>	CITRUS	Hi N, P, or K	WORSE	Salama, Amin, Hawash (1972)
S. AFRICAN CITRUS PSYLLID	ORANGE	Hi N, Protein	WORSE	Catling (1971)
CITRUS RED MITE	CITRUS	Hi N, Protein	WORSE	Hare, Bethke (1988)
ROOT ROT, <i>Phytophthora</i>	CITRUS	Hi N, Salinity	WORSE	Erwin, Ribeiro (1996)
ROOT ROT, <i>Phytophthora</i>	CITRUS	Hi NH3	WORSE	Allen (1962)
ROOT ROT, <i>Fusarium</i>	CITRUS	Hi NH3	WORSE	Klotz, De Wolfe, Wong (1958).
ASIAN CITRUS PSYLLID	ORANGE	Hi NH3	WORSE	Malik, N, et al (2012)
CITRUS NEMATODE	CITRUS	Hi NH3, Lo P	WORSE	Ibrahim, Hassan. (1985)
NEMATODES	CITRUS	Hi NH3, Salinity	WORSE	Dunn, Duncan, Romeo (1998).
GROWTH, VAM PRESENCE	CITRUS	Hi P	WORSE	Antunes, Cardoso (1991)
MYCORRHIZA, P contribution	CITRUS	Hi P	WORSE	Navarro, Morte (2019)
CITRUS WHITEFLY, <i>Dialeurodes</i>	MANDARIN	Hi P, N	WORSE	Bmn, Onillon, Franco, (1986)
CITRUS BLIGHT	CITRUS	Hi pH; Ca	WORSE	Wutscher, (1989).
NEMATODES	CITRUS	Hi salinity	WORSE	Syvetsen, Levy (2005)
ROOT ROT, <i>Phytophthora</i>	CITRUS	Hi salinity	WORSE	Syvetsen, Levy (2005)
BROWN SPOT, <i>Alternaria</i>	CITRUS	Hi Si	BETTER	Asanzi, Taylor, Vahrmeijer (2014).
CITRUS LEAFMINER RESISTANCE	CITRUS	Hi Si	BETTER	Dito (2016).
ROOT ROT, <i>Fusarium</i>	CITRUS	Hi Si	BETTER	Marais, L. J. (2015)
ROOT GROWTH, TREE HEALTH	CITRUS	Hi Si	BETTER	Matichenkov, Calvert, Snyder (1999)
INSECT FEEDING RESISTANCE	CITRUS	Hi Si	BETTER	Matichenkov, Calvert, Snyder (2000)
ROOT MASS, SHOOT GROWTH	CITRUS	Hi Si	BETTER	Matichenkov, et al (2001)
FROST RESISTANCE	LEMON	Hi Si	BETTER	Taranovskaia (1940)

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CITRUS BLACKFLY, <i>Aleurocanthus</i>	CITRUS	Hi Si	BETTER	Vieira, et al (2016)
MYCORRHIZA GROWTH; P deficiency	ORANGE	Hi soil Cu	WORSE	Graham, Timmer, Fardelmann, (1986)
DEPLETION – SOM	CITRUS	Hi soluble fertilizer	WORSE	Marinari, et al (2007)
SOM DEPLETION, CO2 RELEASE	GENERAL	Hi soluble N	WORSE	Rajani, Ashokkumar (2019)
HUANGLONGBING/CITRUS GREENING	CITRUS	Hi starch	WORSE	Etxeberria, et al (2009)
CITRUS RED MITE egg production	CITRUS	Hi sugar	WORSE	Hare, Bethke (1988)
DISEASE RESISTANCE	MANDARIN	Hi Zn	BETTER	Razzaq, et al (2013)
PREMATURE FRUIT DROP	MANDARIN	Hi Zn	BETTER	Razzaq, et al (2013)
HLB, Incidence, development	CITRUS	Hi/Lo K, Ca, Mg, B	WORSE	Spann, Schumann (2009)
NITROGEN EFFICIENCY, YIELDS	MANDARIN	HUMIC ACID + KELP	BETTER	El-Salhy, El-Sese, Badran, Gaber (2017)
PURPLE SCALE & BLACK SCALE	CITRUS	K deficiency	WORSE	Chaboussou (1976)
FRUIT DROP, JUICE QUALITY, YIELD	MANDARIN	K, Zn sprays	BETTER	Ashraf, et al (2012)
PREMATURE FRUIT DROP	CITRUS	K, Zn sprays	BETTER	Ashraf, et al (2012)
PREMATURE FRUIT DROP	MANDARIN	K, Zn sprays	BETTER	Ashraf, et al (2013)
CITRUS LEAFMINER, <i>Phyllocnistis</i>	ORANGE	KSi	BETTER	Abo El-Enien, et al (2017)
CUTICLE LEAFMINER RESISTANCE	ORANGE	KSi	BETTER	Abo El-Enien, et al (2017)
FRUIT SET, FRUIT RETENTION, YIELD	ORANGE	K-Si sprays	BETTER	El- Gioushy (2016)
GREASY SPOT DISEASE, <i>Mycosphaerella</i>	ORANGE	Lo Ca	WORSE	Mann, Schumann, Spann, (2011)
CREASE	ORANGE	Lo Ca, Hi K:Ca, Mg:Ca	WORSE	Storey, Treeby, Milne (2002)
RED SCALE, generations/season (fewer)	LEMON	Lo Ca, Mg, Hi K	BETTER	Steyn (1951)
CITRUS DECLINE	MANDARIN	Lo Ca:Mg	WORSE	Cheng, Zeng (1991)
CITRUS RED MITE, fecundity	CITRUS	Lo free amino acids	WORSE	Hare, Bethke (1988)
FRUIT SIZE	CITRUS	Lo K	WORSE	Embleton, Jones, Platt, (1975)
CITRUS BUD MITE	LEMON	Lo K	WORSE	Sternlicht, Regev, Goldenberg (1975)
COLD INJURY	CITRUS	Lo Mg	WORSE	Lawless, W.W. & Camp, A.F., 1940
CITRUS BUD MITE	LEMON	Lo N	BETTER	Sternlicht, Regev, Goldenberg (1975)

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CITRUS LEAF MINER	ORANGE	Lo N	BETTER	Tsagkarakis, et al (2011)
CITRUS RED MITE	CITRUS	Lo N	WORSE	Hare, et al (1992)
MITE DENSITY, <i>Panonychus</i>	ORANGE	Lo N	WORSE	Hare, et al 1989
STORAGE ROT	ORANGE	Lo N	WORSE	Reese, Koo. (1975)
CITRUS NEMATODE	MANDARIN	Lo N	WORSE	Sinha, Neog (2003)
RED SCALE, generations/season (more)	LEMON	Lo N, Hi P, Cl	WORSE	Steyn (1951)
CITRUS DECLINE	ORANGE	Lo N, K	WORSE	Srivastava, Singh (2005)
NEMATODES	CITRUS	Lo P	WORSE	Ardakani, et al (2014)
HOLLOW CORE	ORANGE	Lo P	WORSE	Ladaniya, (2008)
CITRUS DECLINE/BLIGHT	CITRUS	Lo Zn	WORSE	Srivastava, Singh (2005)
HLB/CITRUS GREENING	CITRUS	Lo Zn	WORSE	Teixeira, et al (2008)
FRUIT SIZE	CITRUS	Lo Zn or Fe	WORSE	Jones, Smith, (1964)
GLASSYWINGED SHARPSHOOTER	CITRUS	Low C:N ratio	WORSE	Bi, Castle, Byrne, Tuan Toscano (2005)
GREASY SPOT, <i>Mycosphaerella</i>	CITRUS	Low Ca, Mg, B, Mn	WORSE	Mann, Schmann, Spann (2011)
CITRUS BLACK SPOT, <i>Guignardia</i>	CITRUS	Low K, Zn	WORSE	Boakye (2017)
GREASY SPOT DISEASE, <i>Mycosphaerella</i>	ORANGE	Low micronutrients	WORSE	Mann, Schumann, Spann, (2011)
KOHANSHO rind disorder	ORANGE	Low N	WORSE	Chikaizumi, Hino, Mizutani (2004)
CITRUS BUD MITE	LEMON	Low N, Hi K	BETTER	Sternlicht, et al (1975)
CITRUS CANKER, <i>Xanthomonas</i>	CITRUS	Low N, P, K, Ca, micros	WORSE	Hameed, et al (2019)
HLB/CITRUS GREENING	CITRUS	Low Zn, Fe	WORSE	Masaoka, et al (2011)
CITRUS MITES	CITRUS	Micronutrient sprays	BETTER	Chávez-Dulanto (2018)
PREMATURE FRUIT DROP	MANDARIN	Micronutrient sprays	BETTER	Ibrahim, Ahmed, Anwar, Majeed (2007).
GREASY SPOT, <i>Mycosphaerella</i>	CITRUS	Micronutrient sprays	BETTER	Timmer, Zitko (1995)
NEMATODES	CITRUS	Mod N, K	WORSE	Ardakani, et al (2014)
CITRUS BLIGHT/DECLINE	CITRUS	N accumulation	WORSE	Srivastava, Singh, Albrigo, (2008)

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NITROGEN EFFICIENCY	ORANGE	N fertigation	BETTER	García (2000)
MITE DAMAGE	CITRUS	N sprays	BETTER	Menge, et al (1990)
PHYTOPHTORA DAMAGE, CROP SIZE	CITRUS	N sprays	BETTER	Menge, et al (1990)
THRIPS DAMAGE	CITRUS	N sprays	WORSE	Menge, et al (1990)
FUSARIUM ROOT ROT, BLIGHT	CITRUS	NH3	WORSE	Burnett, Nemeč, Patterson (1982)
HLB SYMPTOMS, YIELDS	CITRUS	Nutrients optimum +	BETTER	Dewdney, Vashisth, Diepenbrock (2019)
WOOLLY WHITEFLY	CITRUS	Optimum N, P	BETTER	Nega, Getu, Hussein (2014)
NH3 ACCUMULATION – LEAVES	CITRUS	P deficiency	WORSE	Rabe Lovatt (1986)
DECREASED FRUIT DROP	MANDARIN	Slow release N-P-K	BETTER	El-Salhy, El-Galil, El-Aal, Ali (2010)
FLORAL BUD FORMATION	MANDARIN	Slow release N-P-K	BETTER	El-Salhy, El-Galil, El-Aal, Ali (2010)
FRUIT/TREE, YIELD	MANDARIN	Slow release N-P-K	BETTER	El-Salhy, El-Galil, El-Aal, Ali (2010)
NPK BALANCE IN LEAVES	MANDARIN	Slow release N-P-K	BETTER	El-Salhy, El-Galil, El-Aal, Ali (2010)
NUTRIENT RESERVES	MANDARIN	Slow release N-P-K	BETTER	El-Salhy, El-Galil, El-Aal, Ali (2010)
SHOOT NUTRIENT CONTENT	MANDARIN	Slow release N-P-K	BETTER	El-Salhy, El-Galil, El-Aal, Ali (2010)
S. AFRICA PSYLLA, Egg Population	CITRUS	Soft Leaves	WORSE	Moran, Buchan (1975)
CITRUS PSYLLA	CITRUS	Succulent Leaves	WORSE	Pande (1972)
S. AFRICAN CITRUS THRIPS	CITRUS	Succulent Shoots	WORSE	Bedford (1943)
APHID, <i>Spirea</i>	CITRUS	Succulent Shoots	WORSE	Braham, Amor (2018)
CITRUS DECLINE/BLIGHT	CITRUS	Zn imbalance	WORSE	Smith (1975)

TOTAL	DATE	Hi N = Worse	% Hi N	Ca = Better	% Ca	K = Involved	% K	Si = Involved
200	1/26/20	104	52%	23	12%	30	15%	11 references
		(or low N = Better)		(or low Ca = Worse)		(Hi or Low K)		(Hi or Low Si)