

REFERENCES & BIBLIOGRAPHY

- BOWEN, W., CABRERA, P. & BAIGORRIA, G. 1998. Simulating the response of potato to applied nitrogen. CIP program report. Pp. 387-388.
- ADDISCOTT, T.M., WHITMORE, A.P. & POWLSON, D.S. 1991. Farming, fertilizers and nitrate problem. Wallingford: CAB International.
- ARNOLD, T.H. & DE WET, B.C.. 1993. Plants of Southern Africa: Names and distribution. National Botanical Garden, Pretoria, p 825.
- ASADI, M.E., CLEMENTE, R.S., GUPTA, A., LOOF, R. & HANSEN, G. 2002. Impacts of fertigation via sprinkler on nitrate leaching and potato yield. *Agricultural Water Management Journal* 52 (3), 197-213.
- AVNER, S. 2003. Irrigation and fertigation technology. ISHS Symposium on Greenhouse Management under Saline conditions, Pisa, Italy. *Irrigation Equipment and Technology* 48-55.
- BARTELLE, A.L., HYDE, G.M. & THORNTON, R.E. 2000. Influence of early-season nitrogen application pattern on impact sensitivity in Russet Burbank potato tubers. *Postharvest Biology and Technology* 19, 273-277.
- BAR-YOSEF, B. 1999. Advances in fertigation. In: *Advances in Agronomy* 65, 1- 77.
- BERGSTROM, L. & BRINK, N. 1986. Effects of differential applications of fertilizer N on leaching losses and distribution of inorganic N in the soil. *Plant and Soil* 93, 333- 345.
- CUNNINGHAM, A.B. 1988. An investigation of Herbed Medicine Trade in BEUKEMA, H.P. & VAN DER ZAAG, D. E. 1990. Introduction to potato production. Wageningen: Pudoc.
- BIEDMOND, H. & VOS, J. 1992. Effect of nitrogen on the development and growth of the potato plant. 2. The partitioning of dry matter, nitrogen and nitrate. *Annals of Botany* 70, 37-45.

BOWEN, W., CABRERA, H., BARRERA, V. & BAIGORRIA, G. 1998. Simulating the response of potato to applied nitrogen. CIP program report. Pp. 381-386.

BREIMER, M.E. 1982. Environmental factors affecting the nitrate content in spinach. A critical topic in nutrition and health. <http://www.encyclopedia.bigtone.com>

BROADBENT, F.E., GOH, K.S. & HAYNES, G.S. 1987. <http://www.potato-news.com/document/leaf-miners>

BROADLEY, R. 2003. Ginger in Queensland: a commercial production. *Agency for Food and Fibre Sciences*. Horticulture. <http://www.qld.gov.au>

CLARK, R.B. 1983. Plant genotype differences in the uptake, translocation, accumulation, and use of mineral elements required for plant growth. *Plant and Soil* 72, 175-196.

COOKE, G.W. 1982. Fertilizing for Maximum Yield. Granada, London.

CROZIER, C.R., CREAMER, N.G. & CUBETA, M.A. 2000. Fertilizer management impacts on stand establishment, disease, and yield of Irish potato. *Potato Research* 43, 49-59.

CROUCH, N. 1996. Local News. Muttering, mumblings and meanderings. *Indigenous Plant Use Newsletter* 4(1), 3-7.

CUNNINGHAM, A.B. 1988. An investigation of Herbal Medicine Trade in Natal/Kwazulu. Investigation report No. 29, Institute of Natural Resources, University of Natal.

DAHNKE, W.C. & JOHNSON, G.V. 1990. Testing soils for available nitrogen. In: Westerman, R.L. (ed.). Soil testing and plant analysis, Third Edition. SSSA, Madison, WI, USA. Pp. 127-139.

DANHLENBURG, A.P., MAIER, N.A & WILLIAM, C.M.J. 1989. Effects of N nutrition on potatoes on market quality requirement. *Acta Horticulturae*. 273, 199-204.

DASBERG, S. & BRESLER, E. 1985. Drip irrigation manual, Publ. No. 9. International Irrigation Information Centre, Bet Dagan, Israel.

DARWISH, T. & NIMAH, M.N. 1997. Use of sewage water in irrigation agriculture and fertigation methods as a cool for controlled adverse environmental effects. In: Proceedings of FAO/RNE conferred workshop, Amman, Jordan.

DECKARD, E.L., TSAI, C.Y. & TUCKER, T.C. 1984. Effect of nitrogen nutrition on quality of agronomic crops. In: R.D. Hauk (ed.). Nitrogen in crop production. American Society of Agronomy, Crop Science Society of America, Soil Science Society. Am, Madison, Wisconsin. Pp. 601- 616.

FERTILIZER SOCIETY OF SOUTH AFRICA HANDBOOK. 2000. 4th edition. Soil analysis, 18-24.

FERTILIZER SOCIETY OF SOUTH AFRICA HANDBOOK. 2003. 5th revised edition. Fertilization of potatoes 221-222.

FINCK, A. 1982. Fertilizer and fertilization. Introduction and practical guide to crop fertilization. Verlag Chimie, Weinheim.

GRINDLAY, R. 1967. The relationship between N to the shoot and leaves. In: Dissemination.

FOLLET, F. M. 2002. Effects of fertigation with nitrogen on soil properties. Fertilizers and lime Research. <http://www.massey.ac.nz>.

GILLIAN, J.W., LOGAN, T.J. & BROADBENT, F.E. 1985. Fertilizer use in relation to the environment. In: O.P. Engelstad (ed.) Fertilizer technology and use. 3rd ed. SSSA, Madison, W.I. Pp. 561-588.

GOH, K.M. & HAYNES, R.J. 1986. Nitrogen and agronomic practice. Mineral nitrogen in the plant-soil system. Orlando, Florida. Academic Press, *Physiological Ecology*, 379-468.

GRANDSTEDT, A. 2000. Increasing the efficiency of plant nutrient recycling with the agricultural system as a way of reducing the load to the environment. *Agriculture, Ecosystem and Environment* 80, 165-185.

HARTMANN, J., HANKE, M. & STUMLAND, B. 1990.

GREENWOOD, D.J., CLEAVER, T.J., TURNER, M.K., HUNT, J., NIEDORG, K.B. & LOQUENS, S.M.H. 1980. Comparison of the effects on nitrogen fertilizers on the yield, nitrogen content and quality of 21 different vegetable and agricultural crops. *Journal of Agricultural Science* 95, 471-485.

HARVEY, M. & MCPHERSON, I.K. 1980. Response of summer-sown potatoes to

GREENWOOD, D.J., LEMAIRE, G., GOSSE, G., CRUZ, P., DRAYCOTT, A. & NEETSON, J.J. 1990. Decline in percentage nitrogen of C₃ and C₄ crops with increasing plant mass. *Annals Botany* 66, 425-436.

GRINDLAY, D.J.C., SYLVESTER-BRADLEY, R. & SCOTT, R.K. 1993. Nitrogen uptake of young vegetative plants in relation to green area. *Journal of Science, Food & Agriculture* 63, 116.

GRINDLAY, R. 1997. The relationship between N in the shoot and leaves. In: Diagnostic procedure for crop nitrogen management and decision making. *Journal of Science, Food & Agriculture* 63, 118-121.

HAGIN, J. & LOWENGART, A. 1996. Fertigation for minimizing environmental pollution by fertilizers. *Fertilizer Research* 43, 5-7.

HAMMER, G.L. & WRIGHT, G.C. 1994. A theoretical analysis of nitrogen and radiation effects on radiation use efficiency in peanut. *Australian Journal of Agricultural Research* 45, 575-589.

HANKEY, A. & REYNOLDS, Y. 2002. Witwatersrand National Botanical Garden Institute, SA. <http://www.plantzafrica.com/plantgrs/siphonaeth.htm>.

HARTEMINK, A.E., JOHNSTON, M., O'SULLIVAN, J.N. & POLOMA, S. 2000. Nitrogen Use Efficiency of taro and sweet potato in the humid lowlands of Papua New Guinea. *Agriculture, Ecosystems and Environment* 79, 271-280.

HARPER, J.E. 1994. Nitrogen metabolism. In: Boote, K.J., Benneth, J.M., Sinclair, T.R. & Paulsen, G.M. (eds). *Physiology and Determination of Crop Yield*. ASA, CSSA, SSSA. Madison, WI. pp 285-302.

HEGNEY, M.A. & MCPHARLIN, I.R. 2000. Response of summer-planted potatoes to level of applied nitrogen and water. *Journal of Plant Nutrition* 23 (2), 197-218.

HUTCHINGS, A. 1996. Zulu Medicinal Plants. Natal University Press, Pietermaritzburg.

HOLZAPFEL, C.W., MARAIS, W., WESSELS, P.L. & VAN WYK, B.E. 2002. Furanoterpenoids from wild ginger (*Siphonochilus aethiopicus*). *Phytochemistry* 59, 405-407.

INGESTAD, T. & AGREN, G.I. 1992. Theories and methods on plant nutrition and growth. *Physiology of Plants* 84, 177-184.

JENKINS, P.D. & NELSON, D.G. 1992. Aspects on nitrogen fertilizer rate on tuber dry matter content of potato cv. Record. *Potato Research* 35, 127-132.

KINGHORN, A.D & BALANDRIN, M.F. 1993. Human medicinal agents from plants. ACS Symposium Series 534, *American Chemical Society*, Washington.
<http://www.spindrift.co.za/horticulture>.

KOLBE, H. & ZHANG, W.L 1995. Model calculations for the effects of nitrogen, phosphorus and potassium nutrition on the behaviour of potato tuber in storage. *Potato Research* 38, 87-96.

KUCKE, M. & KLEEBERG, P. 1997. Nitrogen balance and soil nitrogen dynamics in two areas with different soil, climatic and cropping conditions. *European Journal of Agronomy* 6, 89-100.

LEEDS, R. 1971. Available nitrogen in soils and its determination by the Degtjareff method. *Soil Science Society of America Special Publication No. 1*. Soil Science Society of America, Madison, Wisconsin.

LEE, M.T. & ASHER, C.J. 1981. Nitrogen nutrition of ginger (*Zingiber officinale*), effects of sources rates and times of nitrogen application. *Plant and Soil* 62, 23-34.

LEEDS, R.A. 1967. *Principles of plant nutrition*. 4th edition. International Potash Institute, Wettswilhausen - Bern/Switzerland.

LEE, M.T., EDWARDS, D. G. & ASHER, C.J. 1981. Nitrogen nutrition of ginger II. Evaluation of the Establishment of Leaf Analysis Test. *Field Crop Research* 4,69-81.

LOCK, J.M. 1985. Zingiberaceae. *Flora of Tropical Africa* 31, 1-23. Morphological and anatomical characters of ginger plants in wild and the primary culture. Welwyn Garden City.

LOCASCIO, S.J., WILTBANK, W.J., GULL, D.D. & MAYNARD, D.N. 1984. Fruit and vegetable quality as affected by nitrogen nutrition. In: R.D. Hauk (ed.). Nitrogen in crop production. ASA-CSSA-SSSA, Madison, Wisconsin. Pp. 601-616.

LOPEZ-BELLIDO, R.J. & LOPEZ-BELLIDO, L. 2000. Efficiency of nitrogen under Mediterranean conditions: effects of tillage, crop rotation and nitrogen fertilization. *Field Crop Research* 71, 31-46.

MACKERRON, D.K.L., YOUNG, M.W. & DAVIES, H.V. 1993. A method to optimize nitrogen application in relation to soil supply of nitrogen and yield of potato. *Plant and Soil* 154, 139-144.

MARSHALL, B. & MACKERRON, D.K.L. 1986. The effects of nitrogen application on growth and nitrogen distribution within the potato canopy. *Annals of Applied Biology* 109, 577-587.

MARSHALL, B. & VOS, J. 1991. The relationship between the nitrogen concentration and photosynthetic capacity of potato (*Solanum tuberosum* L.) leaves. *Annals of Botany* 68, 33-39.

MARSHNER, H. & KRAUSS, A. 1995. Mineral nutrition of higher plants. 2nd edition. London, Academic Press. Pp 436-460.

MENGEL, K. 1991. Available nitrogen in soils and its determination by the 'Nmin' method and electroultrafiltration (EUF). *Fertilizer Research* 28, 251-256.

MENGEL, K. & KIRKBY, E.A. 1987. Principles of plant nutrition. 4th edition. International Potash Institute, Worblaufen – Bern/Switzerland.

MERK, .1989. The Merck Index. 11th edition Merck Rahway.

MILLARD, P. & MACKERRON, D.K.L. 1986. The effects of nitrogen application on growth and nitrogen distribution within the potato canopy. Wellesbourne. *Annals of applied biology*, 109, 427-437.

MILLARD, P. & MARSHALL, B. 1986. Growth, nitrogen uptake and partitioning within the potato (*Solanum tuberosum* L.) crop, in relation to nitrogen application. *Journal of Agricultural Science, Cambridge* 107, 421-429.

MILLARD, P. 1986. The nitrogen content of potato (*Solanum tuberosum* L.) tubers in relation to fertilizer nitrogen application – the effect of amino acid composition and yield. *Journal of Science, Food & Agriculture* 37, 107-114.

- MILLARD, P. 1998. The accumulation and storage of nitrogen by herbaceous plants. *Plants, Cell and Environment* 11, 1-8.
- MMOLAWA, K.B. & DANI, O.R. 2000. Root zone solute dynamics under drip irrigation: A review. *Plant and Soil* 222, 161-189.
- NEETSON, J.J. & WADMAN, W.P. 1987. The accumulation of nitrogen in
- NEETSON, J.J. & WADMAN, W.P. 1987. Assessment of economically optimum application rates of fertilizer nitrogen on the basis of response curves. *Fertilizer Research* 18, 37-52.
- NEETSON, J.J. 1989. Crop response to nitrogen fertilization and
- NEETSON, J.J. 1989. Evaluation of the performance of three advisory methods for nitrogen fertilization of sugar beet and potatoes. *Netherlands Journal of Agricultural Science* 37, 143- 155.
- NOVOA, R. & LOOMIS, R.S. 1981. Nitrogen and plant production. *Plant and Soil* 58, 177-204.
- OAGILE, O. 1998. The effect of nitrogen on the yield and quality of vegetable Amaranth (*Amaranthus* spp.). MSc. Thesis, University of Pretoria, Pretoria, South Africa. Pp. 2-15.
- O'BRIEN, P.J. & ALLEN, E.J. 1986. Effects of nitrogen fertilizer applied to seed crops on seed yield and regrowth of progeny tubers in potatoes. *Journal of Agricultural Science, Cambridge* 107, 103-111.
- O'BRIEN, P.J., JONES, J.L., ALLEN, E.J. & RAOUF, G.S. 1986. Effects of physiological age of seed tubers on seed yield and regrowth of progeny tubers in potatoes. *J. Agric. Sci. Camb.* 107, 307-327.
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O'ENEMA, O., BOERT, P.C.M., VAN EERDT, M.M., FRAKERS, B., VAN DER MEER, H.G., ROEST, C.W.J., SCHREDER, J.J. & WILLEMS, W.J. 1998. Leaching of nitrates from agricultural groundwater. *Environmental Pollution* 102, 471-478.

OHLSON, M., NORDIN, A. & NASHOLM, T. 1995. Accumulation of amino acids in forest plants in relation to ecological amplitude and nitrogen supply. *Functional Ecology* 9, 596-605.

OLSON, R.A. & KURTZ, L.T. 1982. Crop nitrogen requirements, utilization and fertilization. In: F.J. Stevenson (ed.). Nitrogen in Agricultural Soils. *American Society of Agronomy*, Madison, Wisconsin. Pp. 567- 604.

ROLLETT, R.H. 2002. Fertigation in the world. Colorado State University. Fitech.
<http://www.ediho.es/horticomb/fitech3/>

SINCLAIR, T.R. & HORRIE, T. 1989. Leaf nitrogen, photosynthesis and crop radiation use efficiency: A review. *Crop Science* 29, 90-98.

SMITH, R.M, CROUCH, N.R. & CONDY, G. 1997. *Haworthia limifolia* var. *limifolia*. Asphodelaceae: Alooidae. *Flowering Plants of Africa* 55, 24-29.

STANFORD, G. & LEGG, J.O. 1984. Nitrogen and yield potential. In: Hauk, R.D. (ed.). Nitrogen in crop production. ASA-CSSA-SSSA, Madison, WI, USA. Pp. 601-616.

STEYN, J.M., DU PLESSIS, H.F., FOURIE, P. & ROOS, T. 1999. Drip irrigation and irrigation scheduling of potatoes. World potato congress.
<http://www.potatocongress.org/sub.cfm?source=141>

STOCKDALE, E.A., GANUT, J.L. & SELIGMAN J. 1997. Soil-plant nitrogen dynamics: what concepts are required. *European Journal of Agronomy* 7, 145-159.

THEIS, J.E., SINGLETON, P.W. & BOHLOOL, B.B. 1995. Phenology, growth and yield of field-grown crops as a function of varying modes of nutrition. *Soil Biochemistry* 27, 575-583.

VAN KEULEN, H., GOUDRIAAN, J. & SELIGMAN, N.G. 1989. Modelling the effects of nitrogen on canopy development and crop growth. In: RUSSELL, G., MARSHALL, B. & JARVIS, P.G. (eds). *Plant canopies: their growth, form and function*. Cambridge: Cambridge University Press, pp. 83-104.

VAN WYK, B-E., MAKHUVHA, N., VAN DER BANK, H., & VAN DER BANK, M. 1997. Genetic polymorphism in wild and cultivated *Siphonochilus aethiopicus* (Zingiberaceae). *Biochemical Systematics and Ecology* 4, 343-351.

VAN WYK, B-E., VAN OUDTSHOORN, B. & GERICKE, N. 1997. Medicinal Plants of South Africa. Briza Publications, Pretoria.

VAN WYK, B-E., VAN OUDTSHOORN, B. & GERICKE, N. 2000. Medicinal Plants of South Africa. 2nd ed. Briza Publications. Cape Town, South Africa. Pp. 8 & 240.

VAN WYK, B-E. & GERICKE, N. 2000. People's plants. Briza Publications, Pretoria.

VILJOEN, A.M., DEMIRCI, B., BASER, K.H.C. & VAN WYK, B-E. 2002. The essential composition of the roots and rhizomes of *Siphonochilus aethiopicus*. *South African Journal of Botany* 68,115-116.

VITOSH, M.L. 1990. Nitrogen management strategies for potato producers. Michigan State University. <http://www.hermes.ecn.purdue.edu/>

VOS, J. 1992. Field observations on nitrogen catch crops. Potential and actual growth and nitrogen accumulation in relation to sowing date and crop species. *Plant and Soil* 195, 299-309.

VOS, J. 1995a. The effects of nitrogen supply and stem density on leaf attributes and stem branching in potato (*Solanum tuberosum* L.) *Potato Research* 38, 271-279.

VOS, J. 1995b. Nitrogen and growth of potato crops. In: Haverkort, A.J., MacKerron, D.K.L. (Eds.), Potato Ecology and Modelling of Crops under Conditions of Limiting Growth. Current Issues in Production Ecology, vol. 3. Kluwer Academic Publishers, Dordrecht. Pp. 115-128.

VOS, J. & BIEDMOND, H. 1992. Effect of nitrogen on the development and growth of the potato plant. 1. Leaf appearance, expansion, growth, life spans of leaves and stem branching. *Annals of Botany* 70, 27-35.

VOS, J. & MARSHALL, B. 1994. Nitrogen and potato production: strategies to reduce nitrate leaching. In: Proceedings of the 12th Triennial Conference of the European Association for Potato Research, Paris, France. Pp. 101-110.

VOS, J. & VAN DER PUTTEN, P.E.L. 1998. Effect of nitrogen supply on leaf growth, leaf nitrogen economy and photosynthetic capacity in potato. *Field Crops Research* 59, 63-72.

WADDELL, J.T., GUPTA, S.C., MONCRIEF, J.F., ROSEN, C.J. & STEELE, D.D. 1999. Irrigation and nitrogen management effects on potato yield, tuber quality, and nitrogen uptake. *Agronomy Journal* 91, 991-997.

WALL, D.B., & MAGNER, J.B. 1988. A comparison of surficial aquifer water quality in intense, moderate and limited agricultural regions of Minnesota. In: Proceedings of the agricultural impacts on groundwater – A conference. Omaha, N.E. 11- 13 Aug. 1986. National Well Water Association, Dublin, OH. Pp. 297-316.

WANG, F.L. & ALVA, A.K. 1996. Leaching of N from slow-release urea sources in sandy soils. *Soil Science Society of American Journal* 60, 1454-1458.

WESTERMANN, D.T., KLEINKOPF, G.E. & PORTER, L.K. 1985. Nitrogen fertilizer efficiencies on potatoes. *American Potato Journal* 65, 377-386.

WESTERMANN, D.T. & TINDALL, T.A. 1998. Potassium fertilization of Russet Burbank potatoes. *Better Crops* 1001 (2), 82.

WILSON, H. & OVID, A. 1993. Growth and yield responses of ginger (*Zingiberaceae officinale Roscoe*) as affected by shade and fertilizer applications. *Journal of Plant Nutrition* 16 (8), 1539-1545.

APPENDIX E ANALYSIS OF VARIANCE

STANDARDISED ANALYSIS OF VARIANCES

FITTED SURFACE EXPRESSION 1

Table A1 Analysis of variance for fresh weight and root characteristics of field-grown ginger as affected by treatments in the 2001/02 season.

	Mean squares			Mean squares		
	Fresh weight			Root traits		
	Number of tubers	Root length (mm)	Diameter (mm)	Root length (mm)	Diameter (mm)	Root length (mm)
Nitrogen	106679*	8625**	-	1062	2723*	-
Potash	-	390	-	-	1002	871

*Significant at 99% level of probability (** or highly significant at 95% level of probability (***).