

BIBLIOGRAPHY

- Abrol IP (1986) Salt affected soils: An overview. *In* VL Chopra, RS Paroda, eds, Approaches for incorporating drought and salinity resistance in crop plants, Oxford and IBH Publishing Company, New Delhi, pp 1-23
- Alia, Pardha Saradhi P (1993) Suppression in mitochondrial electron transport is the prime cause behind stress induced proline accumulation. Biochem Biophys Res Comm 193: 54-58
- Altman A (1982) Retardation of radish leaf senescence by polyamines. Physiol Plant 54: 189-193
- Apelbaum A, Burgoon AC, Anderson JD, Lieberman M (1981) Polyamine inhibit biosynthesis of ethylene in higher plant tissue and fruit protoplasts. Plant Physiol 68: 453-456
- Armstrong CL, Green CE (1985) Establishment and maintenance of friable, embryogenic maize callus and the involvement of L-proline. Planta 164: 207-214
- Aspinall B, Paleg LG (1981) Proline accumulation: physiological aspects. *In* LG Paleg, B Aspinall, eds, The Physiology and Biochemistry of Drought Resistance in Plants, Academic Press, Sydney, ISBN 0-12-544380-3 pp 206-241
- Aurisano N, Bertani A, Mattana M, Reggiani R (1993) Abscisic acid induced stress like polyamine pattern in wheat seedlings, and its reversal by potassium ions. Physiol Plant 89: 687-692
- Bates LS, Waldren RP, Teare ID (1973) Rapid determination of free proline for water stess studies. Plant Soil 39: 205-207
- Ben-Hayyim G, Kochba J (1983) Aspects of salt tolerance in a NaCl selected

- stable cell line of Citrus sinensis. Plant Physiol 72:685-690
- Bernfeld P (1955) Amylases, α and β Meth Enzym 1 : 149-155
- Besford RT, Richardson CM, Campos JL, Tiburcio AF (1993) Effect of polyamines on stabilization of molecular complexes in thylakoid membranes of osmotically stressed oat leaves. Planta 189: 201-206
- Bhaskaran S, Smith RH, Schertz K (1983) Sodium chloride tolerant callus of Sorghum bicolor (L) moench. Z Pflanzenphysiol 112: 459-463
- Binzel ML, Hasegawa PM, Rhodes D, Handa S, Bressan BA (1987) Solute accumulation in tobacco cells adapted to NaCl. Plant Physiol 84: 1408-1415
- Binzel ML, Hess FD, Bressan RA, Hasegawa PM (1988) Intracellular compartmentation of ions in salt adapted tobacco cells. Plant Physiol 86: 607-614
- Blits KC, Cook DA, Gallagher JL (1993) Salt tolerance in cell suspension cultures of the halophyte *Kosteletzkya virginica*. Journal of Exp Bot 44(260): 681-686
- Blumwald E, Poole RJ (1985) Na⁺/H⁺ antiport in isolated tonoplast vesicles from storage tissue of *Beta vulgaris*. Plant Physiol 78: 163-167
- Boggess SF, Koeppe DE, Stewart CR (1978) Oxidation of proline by plant mitochondria. Plant Physiol 62: 22-25
- Bradford MM (1976) A rapid and sensitive method of quantification of microgram quantities of protein utilizing the principle of protein dye binding. Anal Biochem 72: 248
- Braun Y, Hassidim M, Cooper S, Lerner HR, Reinhold L (1989) Are there separate Na⁺/H⁺ and K⁺/H⁺ antiporters? Plant membrane transport. *In* J Dainty, MI DeMichelis, E Marre, F Rasi Caldogno, eds. The current position. Elvesier, Armsterdam, pp 667-670

- Chandler SF, Thorpe TA (1986) Variation from plant tissue cultures : biotechnological application to improving salinity tolerance. Biotechnol Adv 4: 117-135
- Chapman VJ (1975) The salinity problem in general, its importance, and distribution with special reference to natural halophytes. *In* A Poljakoff-Mayber, J Gale, eds, Plants in saline environments, Springer-Verlag, Berlin, Heidelberg, New York, 7-24
- Chen H, Wang JJ (1991) Studies on isolation and characteristics of a sugarcane cell line resistant to hydroxyproline. Acta Botanica Sinica 33(10): 738-743
- Chen Y, Zahavi F, Barak P, Umiel N (1980) Effects of salinity stresses on tobacco 1. The growth of *Nicotiana tabacum* callus cultures under seawater, NaCl and mannitol stresses. ZPflazenphysiol 98: 141-153
- Chi, Gek-Lan, Lin, Wen-Shu, Lee JEE, Pua Eng-Chong (1994) Role of polyamines on *de novo* shoot morphogenesis from cotyledons of *Brassica campestris* ssp. pekinensis (Lour) Olsson *in vitro*. Plant Cell Reports 13: 323-329
- Collin HA, Dix PJ (1990) Culture systems and selection procedures. *In* PJ Dix, ed, Plant cell line selection procedures and applications. New York, VCH Weinheim; pp 3-18
- Cooke RJ, Oliver J, Davis DD (1973) Stress and protein turnover in *Lemna* minor. Plant Physiol 64: 1109-1113
- Cramer GR, Epstein E, Lauchli A (1989) Na⁺ Ca²⁺ interactions in barley seedlings: relationship to ion transport and growth. Plant Cell Environ 12: 551-558

- Cramer GR, Lynch J, Lauchli A, Epstein E (1987) Influx of Na⁺, K⁺ and Ca²⁺ into roots of salt stressed cotton seedlings. Plant Physiol 83: 510-516
- Croughan TP, Stavarek SJ, Rains DW (1981) *In vitro* development of salt resistance of plants. Environ Exp Bot 21: 317-324
- Darra BL, Saxena SM (1973) Role of IAA on the mineral composition of maize (Zea mays) crop under various osmotic stress conditions. Plant Soil 38: 657-661
- Davies KJA (1987) Protein damage and degradation by oxygen radicals. General aspects J Biol Chem 262: 9895-9901
- Deng ZN, Zhang WC, Wan SY (1993) *In vitro* induction and protoplast plant regeneration from NaCl tolerant lines in citrus. Acta Horticultarae Sinica 20(2): 127-132
- Desai HV, Mehta AR (1985) Changes in polyamine levels during shoot formation, root formation, and callus induction in cultured Passiflora leaf discs. J Plant Physiol 119: 45-53
- DiTomaso JM, Shaff JE, Kochian LV (1989) Putrescine induced wounding and its effect on membrane integrity and ion transport processes in roots of intact corn seedlings. Plant Physiol 90: 988-995
- Dix PJ (1993) The role of mutant cell lines in studies on environmental stress tolerance: an assessment. Plant J 3: 309-313
- Dix PJ, Mclysaght VA, Pearce RS (1984) The potential of cell cultures for the production of salt-tolerant cultivars. *In* W Lange, AC Zeven, NG Hogenboom, eds, Proceedings 10th Congress of Eucarpia. Pudoc, Wageningen
- Downton WJS (1984) Salt tolerance of food crops: Prospectives for

- improvements. CRC Critical Reviews in Plant Sciences 1: 183-201
- Drolet G, Dumbroff EB, Legge RL, Thompson JE (1986) Radical scavenging properties of polyamines. Phytochemistry 25(2): 367-371
- Epstein E (1972) Mineral nutrition of plants: Principles and perspectives. John Wiley and Sons Inc. New York
- Epstein E (1980) Response of plants to saline environment. *In* DW Rains, RC Valentine, A Hollaender, eds, Genetic engineering of osmoregulation:

 Impact on plant productivity for food, chemicals and energy. Plenum Press, New York, pp 7-21
- Ericson ME, Alfinito SH (1984) Protein produced during salt stress in tobacco cell cultures. Plant Physiol 74: 506-509
- Filho GE, Prisco JT, Campose FAP, Filho JE (1983) Effect of salinity in vivo and in vitro on ribonuclease activity of Vigna unguiculata cotyledons during germination. Physiol Plant 59: 183-188
- Flores HE, Galston AW (1982) Analysis of polyamine in higher plants by High Performance Liquid Chromatography. Plant Physiol 69: 701-706
- Flores HE, Galston AW (1984 a) Osmotic stress-induced polyamine accumulation in cereal leaves I. Physiological parameters of the response.

 Plant Physiol 75: 102-109
- Flores HE, Galston AW (1984b) Osmotic stress-induced polyamine accumulation in cereal leaves II. Relation to amino acid pools. Plant Physiol 75: 110-113
- Flowers TJ, Troke PF, Yeo AR (1977) The mechanism of salt tolerance in halophytes. Ann Rev Plant Physiol 28: 89-121
- Fobert P, Webb DT (1988) Effects of polyamines, polyamine precursors, and polyamine biosynthetic inhibitors on somatic embryogenesis from egg plant (*Solanum melongena*) cotyledons. Can J Bot 66: 1734-1742

- Foster SA, Walters DR (1991) Polyamine concentrations and arginine decarboxylase activity in wheat exposed to osmotic stress. Physiol Plant 81:1-6
- Freytag AM, Wrather JA, Erichsen AW (1990) Salt tolerance sugarbeet progeny from tissue cultures challenged with multiple salts. Plant Cell Rep 8: 647-650
- Friedman R, Altman A, Levin N (1989) The effect of salt stress on polyamine biosynthesis and content in mung bean plants and in halophytes. Physiol Plant 76: 295-302
- Fuhrer J, Kaur-Sawhney R, Shih LM, Galston AW (1982) Effects of exogenous 1,3-diaminopropane and spermidine on senescence of oat leaves. Plant Physiol 70: 1597-1600
- Gale J (1982) Use of brackish and solar desalinated water in closed system agriculture. *In* A San Pietro, ed, Biosaline research: A look to the future. Plenum Press, New York, pp 315-323
- Garbarino J, DuPont FM (1988) NaCl induces a Na⁺/H⁺ antiport in tonoplast vesicles from barley roots. Plant Physiol 86: 231-236
- Gordon SA, Weber RP (1951) Colorimetric estimation of indole acetic acid.

 Plant Physiol 26: 192-195
- Gossett DR, Millhollon EP, Cran Lucas M, Banks SW, Marney Marye-Michelle (1994) The effects of NaCl on antioxidant enzyme activities in callus tissue of salt tolerant and salt sensitive cotton cultivars (Gossypium hirsutum L.) Plant Cell Reports 13: 498-503
- Greenway H, Munns R (1980) Mechanisms of salt tolerance in non-halophytes.

 Annu Rev Plant Physiol 31: 149-190

- Guerrier G, Bourgeais Chaillou P (1994) Solute contents in roots and root calli of NaCl tolerant and NaCl sensitive tissues of *Lycopersicon*. Biologia Plantarum 36(3): 321-328
- Gulati A, Jaiwal PK (1992) Comparative salt responses of callus cultures of Vigna radiata (L.) Wilczek to various osmotic and ionic stresses. J Plant Physiol 1-9
- Gulati A, Jaiwal PK (1993a) Invitro selection and characterization of trans-4-hyroxy-L-proline resistant callus lines of *Vigna radiata*: tolerance to NaCl. Plant Physiology and Biochemistry, Paris 31(5): 699-705
- Gulati A, Jaiwal PK (1993b) Selection and characterization of mannitol tolerant callus lines of *Vigna radiata* (L.) Wilczek. Plant Cell Tissue Organ Cult 34:35-41
- Guye MG, Vigh L, Wilson JM (1986) Polyamine titer in relation to chill sensitivity in *Phaseolus* sp. J Exp Bot 37: 1036-1043
- Heuer B, Plaut Z (1982) Activity and properties of ribulose 1,5-biphosphate carboxylase of sugarbeet plants grown under saline conditions. Physiol Plant 54: 505-509
- Huang AHC, Cavalieri AJ (1979) Proline oxidase and water stress induced proline accumulation in spinach leaves. Plant Physiol 63: 531-535
- Huq SMI, Larher F (1984) Osmoregulation in higher plants: effects of maintaining a constant Na: Ca ratio on the growth, ion balance and organic solute status of NaCl stressed cowpea (Vigna sinensis L.).
 ZPflanzenphysiol 113: 163-176
- Ibrahim KM, Collins JC, Collin HA (1992) Characterization of progeny of Coleus blumei following an in vitro selection for salt tolerance. Plant Cell Tissue Organ Cult 28: 139-145

- Imlay JA, Linn S (1988) DNA damage and oxygen radical toxicity. Science 240 : 1302-1309
- Janardhan Reddy P, Vaidyanath K (1986) *In vitro* characterization of salt stress effects and the selection of salt tolerant plants in rice (*Oryza sativa* L.).

 Theor Appl Genet 71: 757-760
- Jasrai YT, Bhatt PN, Mehta AR (1988) Endogeneous IAA content and epiphyllous bud regeneration in *Kalanchoe mortagei*, Abstract No. 8.33 "International Congress of Plant Physiology" IARI, New Delhi
- Jia JF, Lu W, Zhao XS (1993) Selection of NaCl-tolerant variant of Setaria italica via tissue culture technique and its physiological and biochemical characteristics. Biotechnology in agriculture. Proceedings of the First Asia-Pacific Conference in Agricultural Biotechnology, Beijing, China, In CB You, Zl Chen, YJ Ding, eds, Current Plant and Biotechnology in Agriculture, Vol 15. Dordrecht, Netherlands, Kluwer Academic Publishers, pp 309-312
- Jolivet Y, Larher F, Hamelin J (1982) Osmoregulation in halophytic higher plants: The protective effect of glycine betaine against the heat destabilization of membranes. Pl Sci Lett 25: 193-201
- Kalir A, Omri G, Poljakoff Mayber, A (1984) Peroxidase and catalase activity in leaves of *Halimione portulacoides* exposed to salinity. Physiol Plant 62: 238-244
- Karlekar K, Parekh TV, Chatpar HS (1985) Salt mediated changes in some enzymes of carbohydrate metabolism in halotolerant *Cladosporium* sphaerospermum. J Biosci 9: 197-201
- Kaur-Sawhney R, Galston AW (1979) Interaction of polyamines and light on

- biochemical processes involved in leaf senescence. Plant Cell Environ 2: 189-196
- Kavi Kishor PB (1989) Activities of phenylalanine and tyrosine ammonia lyases and aminotransferases during organogenesis in callus cultures of rice. Plant Cell Physiol 30(1): 25-29
- Kavi Kishor PB, Reddy GMJ (1985) Resistance of rice callus tissues to sodium chloride and polyethyleneglycol. Current Sci 54: 1129-1131
- Klein H, Priebe A, Jager HJ (1979) Putrescine and spermidine in peas-effect of nitrogen source and potassium supply. Physiol Plant 45: 497-499
- Kononowicz AK, Floryanowicz Czekalska, Clithero J, Meyers A, Hasegawa PM (1990) Chromosome number and DNA content of tobacco cells adapted to NaCl. Plant Cell Reports 8: 672-675
- Krishnamurthy R (1991) Amelioration of salinity effect in salt tolerant rice (*Oryza sativa* L.) by foliar application of putrescine. Plant Cell Physiol 32(5): 699-703
- Krishnamurthy R, Anbazhagan M, Bhagwat KA (1987) Effect of NaCl on the inorganic ions, growth and yield of rice. Oryza 24: 66-69
- Kueh JSH, Bright SWJ (1981) Proline accumulation in a barley mutant resistant to trans-4-hydroxy-L-proline. Planta 153: 166-171
- Kumar V, Sharma DR (1989) Isolation and characterization of sodium chloride resistant callus culture of *Vigna radiata* (L.) Wilczek var. radiata. J Exp Bot 40 (210): 143-147
- Lauchi A, Schuber TS (1989) The role of calcium in the regulation of membrane and cellular growth processes under salt stress. *In* JH Cherry, ed, Environmental stress in plants. Springer Verlag, Berlin Heidelberg, pp 131-138

- Levitt J (1980) Responses of plants to environmental stresses, Vol 2 water, radiation, salt and other stresses. Academic Press, New York
- Li HJ (1990) Study on selection of salt resistant variants of rice. Journal of Shenyang Agricultural University 21(1): 53-59
- Linsmaier EM, Skoog F (1965) Organic growth factor requirements of tobacco tissue culture. Physiol Plant 18: 100-127
- Lu W, Jia JF (1994) Selection of a salt tolerant cell line from embryogenic callus of millet and studies on its physiological and biochemical characteristics.

 Acta Agronomica Sinica 20(2): 241-247
- Lynch J, Lauchli A (1988) Salinity affects intracellular calcium in corn root protoplasts. Plant Physiol 87: 351-356
- Maliga P (1984) Isolation and characterization of mutants in plant cell culture.

 Ann Rev Plant Physiol 35: 519-542
- Martinez V, Lauchli A (1993) Effects of Ca²⁺ on the salt-stress response of barley roots as observed *in vivo* ³¹P-nuclear magnetic resonance and *in vitro* analysis. Planta 190: 519-524
- Match T, Ishikawa T, Takahashi E (1989) Collapse of ATP induced pH gradient by sodium ions in microsomal membrane vesicles prepared from *Atriplex gmelini* leaves. Plant Physiol 89: 180-183
- Meijer EG, Simmonds J (1988) Polyamine levels in relation to growth and somatic embryogenesis in tissue cultures of *Medicago sativa* L. J Exp Bot 39: 787-794
- Meredith CP (1984) Selecting better crops from cultured cells. *In JP* Gustafson, ed, Gene manipulation in plant improvement 16th Stadler Genetics Symposium. New York, Plenum Press, pp 503-528

- Muralitharan MS, Van Steveninck RFM, Chandler SF (1990) Growth characteristics and ion contents of non-selected and salt-selected callus lines of high bush blueberry (*Vaccinium corymbosum*) cultivars Blue Crop and Denise Blue. Plant Cell Reports 9: 151-155
- Murashige T, Skoog F (1962) A revised medium for rapid growth and bioassay with tobacco tissue cultures. Physiol Plant 15: 473-497
- Nabors MW (1990) Environmental stress resistance. *In* PJ Dix, ed, Plant cell line selection procedures and applications. New York, VCH Weinheim, pp 167-186
- Naik GR, Joshi CV (1986) Metabolism of exogenous proline in sugarcane var.

 Co740 under salinity and PEG stress. Cur Sci 55: 104-106
- Naik BI, Srivastava SK (1978) Effects of polyamines on tissue permeability.

 Phytochemistry 17: 1885-1887
- Niu X, Zhu Jiang-Kang, Narasimhan ML, Bressan RA, Hasegawa PM (1993)

 Plasma-membrane H⁺ ATPase gene expression is regulated by NaCl cells of the halophyte *Atriplex nummularia* L. Planta 190: 433-438
- Norlyn JD (1980) Breeding salt-tolerant crop plants. In DW Rains, RC Valentine, A Hollaender, eds, Genetic Engineering of Osmoregulation: Impact on Plant Productivity for Food, Chemicals and Energy. Plenum Press, New York, pp 293-309
- Ostrem JA, Olson SW, Schmitt JM, Bohnert HJ (1987) Salt stress increases the level of translatable mRNA for phosphoenolpyruvate carboxylase in Mesembryanthemum crystallium. Plant Physiol 84: 1270-1275
- Paek K, Chandler S, Thorpe T (1988) Physiological effects of Na₂SO₄ on callus cultures of *Brassica campestris* (Chinese cabbage). Physiologia Plantarum 72: 160-6

- Pandey R, Ganapathy PS (1985) The proline enigma: NaCl-tolerant and NaCl-sensitive callus lines of *Cicer arietinum*. Plant Science 40: 13-17
- Pardha Saradhi P, Alia, Vani B (1993) Inhibition of mitochondrial electron transport is the prime cause behind proline accumulation during mineral deficiency in *Oryza sativa*. Plant and Soil 155/156: 465-468
- Pasternak D (1982) Biosaline research in Israel: Alternative solutions to a limited fresh water supply. *In* A San Pietro, ed, Biosaline research. A look to the future. Plenum Press, New York, pp 39-57
- Pegg AE (1986) Recent advances in the biochemistry of polyamines in eukaryotes. Biochem J 234: 249-262
- Perez-Prat E, Binzel ML, Bressan RA, Valpuesta V, Hasegawa PM (1990)

 Isolation and characterization of a cDNA clone encoding an E₁E₂-type

 ATPase from *Nicotiana tabacum* (abstract no 609). Plant Physiol 93: S
 104.
- Pollard A, Wyn Jones RG (1979) Enzyme activities in concentrated solutions of glycinebetaine and other solutes. Planta 144: 291-298
- Poovaiah BW,Reddy ASN (1987) Calcium messenger system in plants. CRC Crit Rev Plant Sci 6: 47-103
- Prakash L, Prathapasenan G (1988) Effect of NaCl salinity and putrescine on shoot growth, tissue ion concentration and yield of rice (*Oryza sativa* L).
 J Agron Crop Sci 160: 325-334
- Prakash NS, Sarin NB (1993) Isolation of salt tolerant cell lines of *Cajanus* cajan and comparative study of their physiological responses with intact plants under salt stress. Plant Physiology and Biochemistry, New Delhi 20(1): 11-15

- Priebe A, Klein H, Jager HJ (1978) Role of polyamines in SO₂ polluted pea plants. J Exp Bot 29: 1045-1050
- Pua EC, Thorpe TA (1986) Differential response of non-selected and Na₂SO₄ selected callus cultures of *Beta vulgaris* L. to salt stress. J Plant Physiol 123: 241-248
- Rains DW, Croughan SS, Croughan TP (1986) Isolation and characterization of mutant cell lines and plants: salt tolerance. *In* IK Vasil, ed, Cell Culture and somatic cell genetics of plants, Vol 3, Orlando, FL, Academic Press, pp 537-547
- Rains DW, Croughan TP, Stavarek SJ (1980) Selection of salt tolerant plants using tissue culture. *In* DW Rains, RC Valentine, A Hollaender, eds, Genetic Engineering of Osmoregulation. Plenum Press, New York, pp 279-292
- Ramagopal S (1986) Protein synthesis in a maize callus exposed to NaCl and mannitol. Plant Cell Reports 5: 430-434
- Ramani S, Apte SK (1994) Salinity stress-regulated gene expression in rice cultivars differentially tolerant to salt stress. Proceedings DAE symposium on stress and adaptive responses in biological systems, MS University of Baroda, Vadodara, pp 253-257
- Rao UR (1990) Space technology and forest management with specific relevance to developing nations. Proceedings 41st IAF Congress, Dresden, Germany, pp 1-10
- Redmond JW and Tseng A (1979) High pressure liquid chromatographic

- determination of putrescine, cadaverine, spermidine and spermine. J Chromatogr 170: 479-481
- Reggiani R, Aurisano N, Mattana M, Bertani A (1993) Influence of K⁺ ions on polyamine level in wheat seedlings. J Plant Physiol 141: 136-140
- Reggiani R, Hochkoeppler A, Bertani A (1989) Polyamines in rice seedlings under oxygen deficit stress. Plant Physiol 91: 1197-1201
- Ricardi G, Cella R, Camerino G, Ciferri O (1983) Resistance to azetidine-2-carboxylic acid and sodium chloride tolerance in carrot cell cultures and *Spirulina platensis*. Plant Cell Physiol 24: 1073-1078
- Rus Alvarez A, Guerrier G (1994) Proline metabolic pathways in calli from Lycopersicon esculentum and L. penellii under salt stress. Biologia Plantarum 36(2): 277-284
- Sarin MN (1962) Physiological studies on salt tolerance in crop plants V. Use of IAA to overcome depressing effect of sodium sulphate on growth and maturity of wheat. Agra Univ J Res Sci 2: 187-196
- Schobert B, Tschesche H (1978) Vivsual solution properties of proline and its interaction with proteins. Biochem Biophys Acta 541: 270-277
- Scott TK, ed, (1984) Hormonal regulation of development II. The functions of hormones from the level of the cell to the whole plant. Encyclopedia of Plant Physiology, New Series, Vol 10, Springer Verlag, Berlin
- Sechi AM, Cabrini L, Laudi L, Pasquali P, Lenaz G (1978). Inhibition of phospholipase A2 and phospholipase C by polyamines. Arch Biochem Biophys 186: 248-254
- Sells GD, Koeppe DE (1981) Oxidation of proline by mitochondria isolated from water-stressed maize shoots. Plant Physiol 68: 1058-1063
- Shannon MC (1982) Genetics of salt tolerance: New Challenges. In A San

- Pietro, ed, Biosaline research: A look to the future. Plenum Press, New York, pp 271-278
- Shevyakova NI, Roschchupkin BV, Paramonova NV, Kuznetsov VV (1994)

 Stress responses in *Nicotiana sylvestris* cells to salinity and high temperature: Accumulation of proline, polyamines, betaines and sugars.

 Russian Journal of Plant Physiology 41(4): 490-496
- Shevyakova NI, Strogonov BP, Kiryan IG (1985) Metabolism of polyamines in NaCl-resistant cell lines from *Nicotiana sylvestris*. Plant Growth Reg 3: 163-167
- Singh NK, Handa AK, Hasegawa PM, Bressan RA (1985) Proteins associated with adaptation of cultured tobacco cells to NaCl. Plant Physiol 79: 126-137
- Slocum RD, Kaur Sawhney R, Galston AW (1984) The physiology and biochemistry of polyamines in plants. Arch Biochem Biophys 235: 283-303
- Smith TA (1973) Amine levels in mineral deficient *Hordeum vulgare* leaves. Phytochemistry 12: 2093-2100
- Smith TA (1985) Polyamines. Ann Rev Plant Physiol 36: 117-143
- Somogyi M (1952) Notes on sugar determination. J Biol Chem 195: 19-23
- Srivastava SK, Smith TA (1981) The effect of some oligoamines and guanidines on membrane permeability in higher plants. Phytochemistry 21: 997-1008
- Staal M, Maathuis FJM, Elzenga TM, Overbeek JH, Prins HBA (1991)

 Na⁺/H⁺ antiport activity in tonoplast vesicles from roots of the salttolerant *Plantago maritima* and the salt-sensitive *Plantago media*. Physiol
 Plant 82: 179-184

- Steward GR, Lahrer F (1980) Accumulation of amino acids and related compounds in relation to environmental stress. *In* BJ Miflin, ed, The biochemistry of plants. A comprehensive Treatise, Vol 5, Academic Press, New York
- Stewart CR, Boggess SF, Aspinall D, Paleg LG (1977) Inhibition of proline oxidation by water stress. Plant Physiol 59: 930-932
- Stewart CR, Boggess SF (1978) Metabolism of (5-3H) proline by barley leaves and its use in measuring the effects of water stress on proline oxidation.

 Plant Physiol 61: 654-657
- Stewart CR, Lee JA (1974) The role of proline accumulation in halophytes.

 Planta 120: 279-289
- Stuart DA, Strickland SG (1984) Somatic embryogenesis from cell cultures of Medicago sativa L. The role of amino acid additions to the regeneration medium. Pl Sci Lett 34: 164-174
- Stuart DA, Varner JE (1980) Purification and characterization of a salt-extractable hydroxyproline-rich glycoprotein from aerated carrot discs. Plant Physiol 66: 787-792
- Subhashini K, Reddy GM (1990) Effect of salt stress on enzyme activities in callus cultures of tolerant and susceptible rice cultivars. Ind J Exp Biol 28: 277-279
- Subhashini K, Reddy GM (1991) Role of proline in callus growth and plant regeneration under salt stress in rice. Proc Indian Natn Sci Acad B57 (1): 81-84
- Sumaryati S, Negrutin I, Jacobs M (1992) Characterization and regeneration of salt and water-stress mutants from protoplast culture of *Nicotiana plumbaginifolia* (Viviani). Theor Appl Genet 83: 613-619

- Suresh MR, Ramakrishna S, Adiga PR (1978). Regulation of arginine decarboxylase and putrescine level in *Cucumis sativus* cotyledons. Phytochemistry 17: 57-63
- Tabor CW, Tabor H (1984) Polyamines. Annu Rev Biochem 53: 749-790
- Tal M (1990) Somaclonal variation for salt resistance. *In* YPS Bajaj, ed, Biotechnology in agriculture and forestry, Vol 2, Somaclonal variation in crop improvement, Berlin, Springer-Verlag, pp 236-257
- Tal M (1993) *In vitro* methodology for increasing salt tolerance in crop plants.

 Acta Hortic 336: 69-79
- Tantau H, Dorffling K (1991) *In vitro* selection of hydroxyproline-resistant cell lines of wheat (Triticum aestivum): accumulation of proline, decrease in osmotic potential, and increase in frost tolerance. Physiol Plant 82: 243-248
- Tester M (1990) Plant ion channels: Whole-cell and single-channel studies.

 New Phytol 114: 305-340
- Torrigiani P, Altamura MM, Pasqua G, Monacelli B, Serafini-Fracassini D, Bagni N (1987) Free and conjugated polyamines during *de novo* floral vegetative bud formation in thin cell layers of tobacco. Physiol Plant 70: 453-760
- Trivedi LS, Rao KK (1979) Production of cellulolytic enzymes by Aspergillus fumigatus. Indian J Expt Biol 17: 671-674
- Turner LB, Stewart GR (1988) Factors affecting polyamine accumulation in barley (*Hordeum vulgare* L.) leaf sections during osmotic stress. J Exp Bot 37: 170-177
- Van Swaaij AC, Jacobsen E, Kiel JAKW, Feenstra WJ (1986) Selection, characterisation and regeneration of hydroxyproline-resistant cell lines of

- Solanum tuberosum: tolerance to NaCl and freezing stress. Physiol Plant 68(3): 359-366
- Vajrabhaya M, Thanapaisai T, Vajrabhaya T (1989) Development of salt tolerant lines of KDML and LPT rice cultivars through tissue culture.

 Plant Cell Rep 8: 411-414
- Vazquez Flota FA, Loyola Vargas VM (1994) A Catharanthus roseus salt tolerant line. I.Selection and characterization. Journal of Plant Physiology 144(1): 116-120
- Watad AA, Reinhard L, Lerner HR (1983) Comparison between a stable NaCl-selected nicotiana cell line and the wild type. K⁺, Na⁺ and proline pools as a function of salinity. Plant Physiol 73: 624-629
- Weinstein LH, Kaur Sawhney R, Rajam MV, Wetlaufer SH, Galston AW (1986) Cadmium induced accumulation of putrescine in oat and bean leaves. Plant Physiol 82: 641-645
- Widholm JM (1976) Selection and characterization of cultured carrot and tobacco cells resistant to lysine, methionine and proline analogs. Can J Bot 54: 1523 1529
- Winer L, Apelbaum A (1986) Involvement of polyamines in the development and ripening of avocado fruits. J Plant Physiol 26: 223-234
- Winicov I (1991) Characterization of salt tolerant alfalfa (*Medicago sativa L*)

 plants regenerated from salt tolerant cell lines. Plant Cell Reports 10(11)

 : 561-564
- Wise RR, Naylor AW (1987) Chilling-enhanced photo oxidation: Evidence for the role of singlet oxygen and endogenous antioxidants. Plant Physiol 83: 278-282

- Wright STC (1978) Phytohormones and stress phenomena. *In* DS Letham, PB Goodwin, TJV Higgins, eds, Phytohormones and Related Compounds A Comprehensive Treatise, Vol 2, Elsevier/North-Holland Biomedical Press, Amsterdam, pp 495-536
- Yang YW, Newton RJ, Miller FR (1990) Salinity tolerance in Sorghum II. Cell culture response to sodium chloride in *S.bicolor* and *S.halepense*. Crop Science 30(4): 781-785
- Young ND, Galston AW (1983) Putrescine and acid stress. Plant Physiol 71: 767-771
- ZenK MH (1974) Haploids in physiological and biochemical research. In KJ Kasha, ed, Haploids in higher plants, University of Guelph, Guelph, pp 339
- Zhou RR, Yang XR, Ji YM, Yu SW (1993) Salinity adaptation of tobacco salt-tolerant callus variant. Acta Phytophysiologica Sinica 19(2): 188-194