

CONTENTS

Dedication	v
Preface	vii

CHAPTER 1 LIPID METABOLISM

FATTY ACID DESATURATION IN SOME PLANTS OF HORTICULTURAL INTEREST: PEA, SPINACH, POTATO, ETC.....	3
Ch. Demandre, Hana Serghini-Cald, Anne-Marie Justin and P. Mazliak	
STUDIES ON THE BIOSYNTHESIS OF PHOSPHATIDYL-SULFOCHOLINE AND DEOXYCERAMIDESULFONIC ACID IN THE DIATOM <i>NITZSCHIA ALBA</i>	13
M. Kates and B.E. Volcani	
PROPIONYL-CoA GENERATION AND CATABOLISM IN HIGHER PLANT PEROXISOMES	21
H. Gerbling and B. Gerhardt	
DE NOVO BIOSYNTHESIS OF GLYCEROLIPIDS IN PLANT MITOCHONDRIA	27
Margrit Frentzen, M. Neuburger and R. Douce	
ACCUMULATION OF LIPIDS IN DEVELOPING SEA BUCKTHORN (<i>HIPPOPHAE RHAMNOIDES</i> L.) FRUITS	31
A.G. Vereshchagin	
MOBILISATION OF STORAGE LIPIDS IN GERMINATING OILSEEDS	37
D.J. Murphy and I. Cummins	
LIPASE INHIBITION BY CoA AND OLEOYL-CoA	41
M. J. Hills and D.J. Murphy	
PERSPECTIVES OF SEARCH FOR EICOSANOID ANALOGS IN PLANTS	45
I.A. Tarchevsky and A.N. Grechkin	
EXPRESSION OF LIPOXYGENASE ISOZYMES IN SOYBEAN TISSUES	51
D.F. Hildebrand, K.M. Snyder, T.R. Hamilton-Kemp, G. Bookjans, C.S. Legg and R.A. Andersen	

COMPARISON OF ACETATE AND/OR PYRUVATE DEPENDENT FATTY ACID SYNTHESIS BY SPINACH CHLOROPLASTS	109
Jutta Springer and K.-P. Heise	
BIOSYNTHETIC PATHWAY OF ALPHA-LINOLENIC ACID IN OLIVE PLANT LEAVES	113
M. Zarrouk, B. Marzouk and A. Cherif	
METABOLISM OF EXOGENOUS FATTY ACIDS BY LEAVES: POSITIONAL SPECIFICATIONS	119
P.G. Roughan and G.A. Thompson Jr.	
CONCENTRATION OF LONG-CHAIN ACYL-(ACYL-CARRIER PROTEIN) IN MESOPHYLL CHLOROPLASTS FROM THE CHILLING-SENSITIVE PLANT <i>AMARANTHUS LIVIDUS</i> L.	123
I. Nishida and P.G. Roughan	
TECHNIQUES FOR THE PURIFICATION OF ACYL-CoA ELONGASE FROM <i>ALLIUM PORRUM</i> LEAVES	127
J.-J. Bessoule, R. Lessire and C. Cassagne	
PROPERTIES OF PARTIALLY PURIFIED ACYL-CoA ELONGASE FROM <i>ALLIUM PORRUM</i> LEAVES	131
R. Lessire, J.-J. Bessoule and C. Cassagne	
STORAGE OF MEDIUM AND LONG-CHAIN FATTY ACIDS IN TWO SPECIES OF DEVELOPING <i>CUPHEA</i> SEEDS	135
H.J. Treede, S. Deerberg and K.-P. Heise	
THE ONTOGENY OF OIL STORAGE BODIES DURING SEED DEVELOPMENT IN CRUCIFERS	139
D.J. Murphy, I. Cummins and Jane N. O'Sullivan	
BIOSYNTHESIS OF TRIACYLGLYCEROLS CONTAINING VERY LONG CHAIN ACYL MOIETIES IN SEEDS	143
D.J. Murphy and K.D. Mukherjee	
LIPID SYNTHESIS IN DEVELOPING COTYLEDONS OF LINOLENIC ACID DEFICIENT MUTANTS OF LINSEED	147
S. Stymne, A. Green and M.L. Tonnet	
SYNTHESIS OF OCTADECATETRAENOIC ACID (OTA) IN BORAGE (<i>BORAGO OFFICINALIS</i>)	151
G. Griffiths, E.Y. Brechany, W.W. Christie, S. Stymne and K. Stobart	
ANALYSIS OF SPECIFIC, UNSATURATED PLANT FATTY ACIDS	155
Emma Dabi-Lengyel, I. Zámbo, P. Tétényi and Eva Héthelyi	
GC/MS INVESTIGATION ON DIFFERENT FATTY ACIDS FROM SEEDS OF SOME MEDICINAL PLANTS	157
Eva Héthelyi, P. Tétényi, I. Zámbo, P. Kaposi, B. Dános and Emma Dabi-Lengyel	
SOME ASPECTS OF THE ROLE OF PHOTOSYNTHETIC ELECTRON TRANSPORT COMPONENTS IN CHLOROPLAST FATTY ACID DESATURATION	159
Tatiana E. Gafarova	
DEVELOPMENT OF FATTY ACID SYNTHESIS IN GREENING <i>AVENA</i> LEAVES	163
M. Kato, Y. Ozeki and M. Yamada	
A NEW BETAINE LIPID FROM <i>OCHROMONAS DANICA</i> : DIACYLGLYCERYL-O-2-(HYDROXYMETHYL)-(N,N,N-TRIMETHYL)-8-ALANINE (DGTA)	167
G. Vogel and W. Eichenberger	

CHAPTER 2

STRUCTURAL AND FUNCTIONAL ORGANIZATION OF LIPIDS

STRUCTURAL AND FUNCTIONAL ASPECTS OF ACYL LIPIDS IN THYLAKOID MEMBRANES FROM HIGHER PLANTS	171
P.A. Siegenthaler, A. Rawlyer and J.-P. Mayor	
MONOGALACTOSYLDIACYLGLYCEROL DESATURATION IN SPINACH CHLOROPLASTS	181
Jaen Andrews, H. Schmidt and E. Heinz	
THE FUNCTION OF MEMBRANE GLYCEROLIPID FATTY ACYL UNSATURATION IN SIGNAL TRANSDUCTION AND CELL CYCLE CONTROL: A BIOPHYSICAL APPROACH	193
Y.Y. Leshem	
ROLE OF PHOSPHATIDYLGLYCEROL IN PHOTOSYNTHETIC MEMBRANE: STUDY WITH MUTANTS OF <i>CHLAMYDOMONAS REINHARDTII</i>	203
A. Trémolières, J. Garnier, D. Guyon, J. Maroc and B. Wu	
ESR STUDIES OF LIPID-PROTEIN INTERACTIONS IN PHOTOSYNTHETIC MEMBRANES	207
D.J. Murphy, L. Gang, I. Nishida and P.F. Knowles	
THE PHASE BEHAVIOUR OF MEMBRANE LIPIDS AND THE ORGANISATION OF THE PHOTOSYNTHETIC MEMBRANE	209
P.J. Quinn	
LIPID COMPOSITION OF THYLAKOID MEMBRANES FROM TOBACCO MUTANT CHLOROPLASTS EXHIBITING EITHER ONLY PHOTOSYSTEM I OR PHOTOSYSTEM I AND II ACTIVITY	215
J. Bednarz, A. Radunz and G.H. Schmid	
STUDY ON THE LIPID COMPOSITION OF CHLOROPLASTS OF THE TOBACCO MUTANT <i>N. TABACUM</i> VAR. XANTHI EXHIBITING AN INCREASED PHOTOSYSTEM I ACTIVITY	219
A. Radunz, J. Bednarz and G.H. Schmid	
CHANGES IN THE MOLECULAR ORGANIZATION OF MONOGALACTOSYLDIACYLGLYCEROL BETWEEN RESTING AND FUNCTIONAL STATES OF THYLAKOID MEMBRANES	225
A. Rawlyer and P.A. Siegenthaler	
ASSOCIATIONS OF PIGMENT-PROTEIN COMPLEXES IN PHOSPHOLIPID ENRICHED BACTERIAL PHOTOSYNTHETIC MEMBRANES	227
W.H.J. Westerhuis, M. Vos, R.J. van Dorssen, R. van Grondelle, J. Ames and R.A. Niederman	
EFFECTS OF CATALYTICAL HYDROGENATION IN SITU OF PHOSPHATIDYLGLYCEROL-ASSOCIATED TRANS- Δ^3 -HEXADECENOATE ON THE STABILITY OF THE THYLAKOID LIGHT HARVESTING COMPLEX	233
Ibolya Horváth, L. Vígh, S.H. Cho and G.A. Thompson Jr.	
THE EFFECTS OF PACLOBUTRAZOL ON STEROL AND ACYL LIPID COMPOSITION OF MEMBRANES IN <i>APIUM GRAVEOLENS</i> AND <i>RHODOTORULA GRACILIS</i>	239
Penny A. Haughan, Carole E. Rolph, J.R. Lenton and L.J. Goad	
EFFECTS OF PHOSPHOLIPASE A ₂ DIGESTION ON THE ELECTRIC-FIELD SENSING CAROTENOIDS IN PHOTOSYNTHETIC MEMBRANES OF <i>RHODOBACTER SPHAEROIDES</i>	241
Leticia M. Olivera and R.A. Niederman	
UPD-GALACTOSE-INDEPENDENT SYNTHESIS OF MONO-GALACTOSYLDIACYLGLYCEROL (MGDG). AN ENZYMIC ACTIVITY OF THE SPINACH CHLOROPLAST ENVELOPE	243
J.W.M. Heemskerk, F.H.H. Jacobs and J.F.G.M. Winternans	

INTERACTIONS OF THE CHLOROPLAST ATP SYNTHASE WITH GLYCOLIPIDS	247
U. Pick, K. Gounaris and J. Barber	
DUAL LOCALIZATION OF GALACTOSYL TRANSFERASE ACTIVITY IN ISOLATED PEA CHLOROPLASTS?	253
R.O. Mackender	
LIPID SYNTHESIS IN ISOLATED CHLOROPLASTS FROM <i>ACETABULARIA</i> <i>MEDITERRANEA</i>	257
R. Bäuerle, F. Lütke-Brinkhaus, H. Kleinig	
INCORPORATION OF INORGANIC PHOSPHATE INTO THE PHOSPHOLIPIDS OF ISOLATED CHLOROPLASTS	259
P.G. Roughan and J.E. Cronan Jr.	
AN AUXIN-MEDIATED CONTROL OF A RAPID PHOSPHOINOSITIDE RESPONSE IN ISOLA- TED PLANT CELL MEMBRANES	261
B. Zbell	
POSITIONAL DISTRIBUTION OF POLYUNSATURATED FATTY ACIDS IN GALACTOLIPIDS FROM SOME ALGAE OF <i>RHODOPHYTA</i> , <i>PHAEOPHYTA</i> , <i>BACILLARIOPHYTA</i> AND <i>CHLOROPHYTA</i>	265
T. Arao and M. Yamada	
EFFECT OF WATER STRESS ON FATTY ACIDS OF CHLOROPLASTS IN <i>SARATOVSKAYA</i> <i>55</i> AND <i>LUTESCENCE</i> 1848 VAR. WHEAT SEEDLING	267
T.V. Shigalova, O.B. Chivkunova and M.N. Merzlyak	
PHOTOACUSTIC SPECTRA OF CHLOROPHYLLS AND CAROTENOIDS IN FRUITS AND IN PLANT OILS	271
E.M. Nagel, H.K. Lichtenthaler, L. Kocsányi and P.A. Biais	
EPICUTICULAR WAXES OF <i>ZEA MAYS</i> ssp. <i>MAYS</i> AND RELATED SPECIES	275
P. Avato, G. Bianchi and N. Pogna	

CHAPTER 3

BIOSYNTHESIS AND FUNCTION OF PRENYLLIPIDS

ENZYMIC SYNTHESIS OF MEVALONIC ACID IN PLANTS	279
J. Bach and T. Weber	
PHYTOENE DESATURASE, A TARGET FOR HERBICIDAL INHIBITORS	283
G. Sandmann, A. Schmidt, H. Linden, J. Hirschberger and P. Böger	
DEHYDROGENATION AND CYCLIZATION REACTIONS IN CAROTENE BIOSYNTHESIS	287
P. Beyer and H. Kleinig	
THE ROLE OF ISOPENTENYL-DIPHOSPHATE Δ -ISOMERASE IN PHYTOENE SYNTHESIS OF <i>DAFFODIL</i> CHROMOPLASTS	293
M. Lützow, P. Beyer and H. Kleinig	
MONOTERPENE BIOSYNTHESIS BY CHROMOPLASTS FROM <i>DAFFODIL</i> FLOWERS	299
U. Mettal, W. Boland, P. Beyer and H. Kleinig	
ISOLATION OF CELL COMPARTMENTS INVOLVED IN THE BIOSYNTHESIS OF LOWER TER- PENOIDS OF <i>CITROFORTUNELLA MITIS</i> FRUITS	303
L. Bellingheri, M. Gleizes, G. Pauly, J.P. Carde and A. Marpeau	

PARTIAL PURIFICATION OF THE ENZYME SYSTEMS INVOLVED IN MONO-, SESQUI- AND DITERPENE BIOSYNTHESIS	309
J. Walter, L. Bellingheri, A. Cartayrade, G. Pauly and M. Gleizes	
ON THE ORIGIN OF ISOPRENOID INTERMEDIATES FOR THE SYNTHESIS OF PLASTO- QUINONE-9 AND β -CAROTENE IN DEVELOPING CHLOROPLASTS	313
G. Schultz and D. Schulze-Siebert	
EFFECTS OF 9 β ,19-CYCLOPROPYLSTEROLS ON THE STRUCTURE AND FUNCTION OF THE PLASMA MEMBRANE FROM MAIZE ROOTS	321
M.A. Hartmann, A. Grandmougin, P. Ullmann, P. Bouvier-Navé and P. Benveniste	
TRITERPENOIDS IN EPICUTICULAR WAXES	325
P.-G. Gülz	
FLUORESCENCE ANISOTROPY OF DIPHENYLHEXATRIENE INCORPORATED INTO SOY- BEAN PHOSPHATIDYLCHOLINE VESICLES CONTAINING PLANT STEROLS	329
I. Schuler, G. Duportail, P. Benveniste and M.A. Hartmann	

CHAPTER 4 CARRIER PROTEINS, GENETICS OF PLANT LIPIDS

MODIFICATIONS TO THE TWO PATHWAY SCHEME OF LIPID METABOLISM BASED ON STUDIES OF <i>ARABIDOPSIS</i> MUTANTS	335
J. Browse, L. Kunst, S. Hugly and C. Somerville	
PLANT LIPID-TRANSFER PROTEINS: STRUCTURE, FUNCTION AND MOLECULAR BIOLOGY	341
V. Arondel, F. Tchang, Ch. Vergnolle, A. Jolliot, M. Grosbois, F. Guerbette, Marie-Dominique Morch, J.-C. Pernollet, M. Delseny, P. Puigdomenech and J.-C. Kader	
GLYCEROL-3-PHOSPHATE ACYLTRANSFERASE AND ITS COMPLEMENTARY DNA	351
N. Murata, O. Ishizaki and I. Nishida	
CLONING AND SEQUENCE DETERMINATION OF A COMPLEMENTARY DNA FOR PLASTID GLYCEROL-3-PHOSPHATE ACYLTRANSFERASE FROM SQUASH	361
O. Ishizaki, I. Nishida, K. Agata, G. Eguchi and N. Murata	
GLYCEROL-3-PHOSPHATE ACYLTRANSFERASE FROM SQUASH CHLOROPLASTS: PROTEIN CHARACTERIZATION BY PURIFICATION AND cDNA CLONING	363
I. Nishida, O. Ishizaki and N. Murata	
ACYL CARRIER PROTEINS OF BARLEY SEEDLING LEAVES AND CARYOPSES	367
L. Hansen and Penny von Wettstein-Knowles	
IMMUNOCHEMICAL ASPECTS OF PEA CHLOROPLASTS ACYL TRANSFERASE	371
J.P. Dubacq, D. Douady and C. Passaquet	
ISOFORMS OF NON-SPECIFIC LIPID TRANSFER PROTEIN FROM GERMINATED CASTOR BEAN SEEDS	375
M. Yamada, S. Tsuboi, Y. Ozeki and K. Takishima	
PHOSPHOLIPID TRANSFER PROTEINS FROM FILAMENTOUS FUNGI	379
P. Grondin, C. Vergnolle, L. Chavant and J.-C. Kader	

SOME CHARACTERISTICS OF A PROTEIN A: ACP-1 FUSION IN PLANT FATTY ACID SYNTHESIS	383
D.J. Guerra and P.D. Beremand	

CHAPTER 5 BIOCIDES, INTERACTION WITH PLANT LIPIDS

PLANT LIPID BIOSYNTHESIS AS TARGET FOR BIOCIDES	389
H.K. Lichtenthaler	
ACETYL-CoA CARBOXYLASE AS TARGET FOR HERBICIDES	401
M. Focke and H.K. Lichtenthaler	
INHIBITION OF THE FATTY ACID BIOSYNTHESIS IN ISOLATED CHLOROPLASTS	405
K. Kobek and H.K. Lichtenthaler	
PERTURBATION OF FUNGAL GROWTH AND LIPID COMPOSITION BY CYCLOPROPENOID FATTY ACIDS	409
Katharine M. Schmid and G.W. Patterson	
STEROLS AND FATTY ACIDS IN THE PLASMA MEMBRANES OF <i>TAPHRINA DEFORMANS</i> CULTURED AT LOW TEMPERATURE AND WITH PROPICONAZOLE	413
M. Sancholle, J.D. Weete and A. Rushing	
MEMBRANE LIPID COMPOSITION OF <i>TRICHODERMA</i> STRAINS AND THEIR SENSITIVITY TO SAPONIN AND POLYENE ANTIBIOTICS	417
Katalin Grulz and P.A. Blacs	
INFLUENCE OF HALOXYFOP-ETHOXYETHYL (GRASS HERBICIDE) ON POLAR LIPIDS IN TOLERANT (PEA) AND SENSITIVE (OAT, WHEAT) PLANTS	421
A. Banas, Ingemar Johansson, G. Stenlid and S. Stymne	
EFFECT OF PARAQUAT ON LIPID METABOLISM IN PARAQUAT RESISTANT AND SUSCEPTIBLE <i>CONYZA CANADENSIS</i>	425
E. Lehoczkí and T. Farkas	
HERBICIDE ACTION ON THE CAROTENOGENIC PATHWAY	427
M.P. Mayer, D.L. Bartlett, P. Beyer and H. Kleinig	
INVOLVEMENT OF THYLAKOID MEMBRANE LIPIDS IN THE BINDING AND INHIBITORY PROPERTIES OF ATRAZINE AND DIURON	431
J.-P. Mayor, A. Rawyler and P.-A. Slegenthaler	
SOME EFFECTS OF PYRENOCINE A ON ONION ROOT AND SPINACH CHLOROPLAST LIPID METABOLISM	435
S.A. Sparace, R. Menassa and J.B. Mudd	
FLUAZIFOP, A GRASS-SPECIFIC HERBICIDE, ACTS BY INHIBITING ACETYL-CoA CARBOXYLASE	437
K.A. Walker, S.M. Ridley and J.L. Harwood	
CHLOROACETAMIDE INHIBITION OF FATTY ACID SYNTHESIS IN THE GREEN ALGA <i>SCENEDESMUS ACUTUS</i>	439
H. Weisshaar and P. Böger	

CHAPTER 6 BIOTECHNOLOGY OF LIPIDS, NUTRITIONAL ASPECTS

PLANT LIPIDS AS RENEWABLE SOURCES OF INDUSTRIAL SURFACTANTS	4
P.J. Quinn	
ENZYMIC MODIFICATION OF SUNFLOWER LECITHIN	4
Anna P. Erdélyi	
NON-CALORIC FAT SUBSTITUTE AND NEW TYPE EMULSIFIERS ON THE BASIS OF SUCROSE ESTERS OF CARBOXYLIC ACIDS	4
W. Engst, A. Elsner and G. Mieth	
CONTAMINANTS AND MINOR COMPONENTS OF VEGETABLE OILS	4
Mária Jeránek and Zsuzsa Weinbrenner	
METAL IMPURITIES OF CRUDE AND EDIBLE VEGETABLE OILS	4
Anna Fábics Ruzics	
INTERACTIONS OF CHLOROPHYLL PIGMENTS WITH LIPIDS OF RAPESEED OIL	4
M. Holasova, H. Parizková, J. Pokorný and J. Davídek	
THE BIOLOGICAL ROLE OF SOY LIPIDS IN THE NUTRITION	4
K. Lindner	
THE ROLE OF LIPIDS IN THE ABSORPTION OF VITAMIN A	4
A. Blaskovits, L. Gampe and J. Borvendég	
INVESTIGATION OF COFFEE LIPIDS	4
F. Örsi and B. Diczázi	
STUDIES ON CEREAL LIPASES	4
Julie O'Connor, H.J. Perry and L. Harwood	
LIPID AND ANTIOXIDANT CONTENT OF RED PEPPER	4
H.G. Daood, P.A. Blacs, N. Kliss-Kutz, F. Hajdú and B. Czinkotal	

CHAPTER 7 DEVELOPMENT, ENVIRONMENT, STRESS

METABOLIC RESPONSES OF PLANT CELLS TO STRESS	
G.A. Thompson, Jr., K.J. Einspahr, S. Ho Cho, T.C. Peeler and Martha B. Stephenson	
MEMBRANE RESPONSE TO ENVIRONMENTAL STRESSES: THE LIPID VIEWPOINT - INTRO- DUCTORY OVERVIEW	
P. Mazlák	
MEMBRANE STABILITY UNDER THERMAL STRESS	
P.J. Quinn	
ARE EICOSAPOLYUNSATURATED FATTY ACIDS INVOLVED IN THE HYPERSENSITIVE RESPONSE IN POTATO?	
M.N. Merzlyak, O.B. Chivkunova, I.V. Reshetnikova, N.I. Maximova and M.V. Gusev	

	EFFECTS OF WATER STRESS ON THE LIPID METABOLISM OF DURUM WHEAT	521
	A. Kameli and Dorothy M. Lösel	
443	ENZYMATIC BREAKDOWN OF POLAR LIPIDS IN COTTON LEAVES UNDER WATER STRESS	527
	A.T. Pham Thi, L. El-Hafid, Y. Zully-Fodil and J. Vieira da Silva	
455	EFFECTS OF WATER STRESS ON MOLECULAR SPECIES COMPOSITION OF POLAR LIPIDS FROM <i>VIGNA UNGUICULATA</i> LEAVES	531
	A.T. Pham Thi, F. Monteiro de Paula, G. Herbert, A.M. Justin, C. Demandre and P. Mazliak	
461	STRATEGIES OF MODIFICATION OF MEMBRANE FLUIDITY BY CATALYTIC HYDROGENATION	533
465	F. Joó, L. Vigh	
469	SODIUM CHLORIDE EFFECT ON GLYCEROLIPIDS, CHANGES DURING RIPENING OF OLIVE	537
	B. Marzouk, M. Zarrouk and A. Cherif	
473	EFFECT OF SALT ON LIPID RESERVES OF COTTON SEEDS	541
	A. Smaoul and A. Cherif	
475	METABOLISM OF INOSITOL PHOSPHOLIPIDS IN RESPONSE TO OSMOTIC STRESS IN <i>DUNALIELLA SALINA</i>	543
	K.J. Einspahr, T.C. Peeler and G.A. Thompson, Jr.	
481	HOMEOVISCIOUS REGULATION OF MEMBRANE PHYSICAL STATE IN THE BLUE-GREEN ALGA, <i>ANACYSTIS NIDULANS</i>	545
	Z. Gombos and L. Vigh	
483	EFFECTS OF CO ₂ CONCENTRATION DURING GROWTH ON FATTY ACID COMPOSITION IN <i>CHLORELLA VULGARIS</i> 11H	549
489	M. Tsuzuki, E. Kenjo, T. Takaku, S. Miyachi and A. Kawaguchi	
491	EFFECTS OF CO ₂ CONCENTRATION ON THE COMPOSITION OF LIPIDS IN <i>CHLAMYDOMONAS REINHARDTII</i>	553
	Naoki Sato	
497	EFFECTS OF LOW TEMPERATURE ON LIPID AND FATTY ACID COMPOSITION OF <i>SORGHUM</i> ROOTS AND SHOOTS	555
	A.T. Pham Thi, M.D. Sidibé-Andrieu, Y. Zully-Fodil and J. Vieira da Silva	
505	TEMPERATURE-INDUCED DESATURATION OF FATTY ACIDS IN THE CYANOBACTERIUM, <i>SYNECHOCYSTIS</i> PCC 6803	559
	H. Wada and N. Murata	
511	CHOLINE TOLERANT <i>NICOTIANA TABACUM</i> CELL LINES ARE MORE RESISTANT TO COOL TEMPERATURES THAN THE CHOLINE SENSITIVE WILD TYPE	563
	Myriam Gawer, Noémi Guern, Dalsy Chevrin and Paul Mazliak	
517	EFFECT OF HIGH TEMPERATURES ON OXYGEN EVOLVING ACTIVITY AND LIPID COMPOSITION OF ISOLATED CHLOROPLASTS FROM SPINACH AND JOJOBA LEAVES	567
	Thérèse Guillot-Salomon, Jacqueline Bahl, L. Ben-Rais, M.-J. Alpha, Catherine Cantrel and J.-P. Dubacq	
	TEMPERATURE-DEPENDENT ALTERATION IN CIS AND TRANS UNSATURATION OF FATTY ACIDS IN <i>VIBRIO</i> SP. STRAIN ABE-1	571
	H. Okuyama, S. Sasaki, S. Higashi and N. Murata	

TEMPERATURE DEPENDENCE OF THE INHIBITORY EFFECT OF ANTIBODIES TO LIPIDS ON PHOTOSYNTHETIC ELECTRON TRANSPORT	575
A. Radunz and G.H. Schmid	
TEMPERATURE AND LIGHT EFFECTS ON THE EXPRESSION OF THE <i>ARABIDOPSIS</i> LINO-LENATE MUTANT PHENOTYPE IN CALLUS CULTURES	583
J.A. Brockman and D.F. Hildebrand	
INFRASPECIFIC VARIABILITY IN COLD HARDINESS OF MARITIME PINE (<i>PINUS PINASTER</i> AIT.) AND FROST INDUCED CHANGES IN TERPENE HYDROCARBON COMPOSITION OF OLEORESIN	585
A. Marpeau, Ph. Baradat, P. Pastuszka, M. Gleizes, Th. Boisseaux, J. Walter and J.P. Carde	
THE EFFECTS OF LIGHT AND OF OSMOTIC STRESS ON ENZYME ACTIVITIES ASSOCIATED WITH GALACTOLIPID SYNTHESIS	591
R.O. Mackender, C. Liljenberg and C. Sundquist	
IMBIBITIONAL STRESS IN DRY POLLEN: INJURY IS CAUSED BY THE PRESENCE OF GEL PHASE PHOSPHOLIPID DURING IMBIBITION	593
F.A. Hoekstra, J.H. Crowe and L.M. Crowe	
INCREASED LEAKAGE FROM AGEING POLLEN COINCIDES WITH INCREASED LEAKAGE FROM LIPOSOMES PRODUCED FROM ITS PURIFIED LIPIDS	595
Danielle G.J.L. van Bilsen and F.A. Hoekstra	
EFFECTS OF POWDERY MILDEW INFECTION ON THE LIPID METABOLISM OF CUCUMBER	597
J.K. Abood and Dorothy M. Lösel	
THE EFFECT OF GROWTH CONDITIONS ON THE COMPOSITION OF THE SOLUBLE CUTICULAR LIPIDS AND THE WATER PERMEABILITY OF ISOLATED CUTICULAR MEMBRANES OF <i>CITRUS AURANTIUM</i> L.	603
M. Riederer, Uta Geyer and J. Schönherr	
EFFECTS OF SOME DETERGENTS ON THE STEROLS OF THE RED ALGA <i>PORPHYRIDIUM</i>	607
H. Nyberg and P. Saranpää	
Author Index	611
Subject Index	615
Index of Taxa	625