

International Conference on Agriculture, Environment, and Food Security (AEFS 2018)

IOP Conference Series: Earth and Environmental Science
Volume 260

Medan, Indonesia
24 - 25 October 2018

Part 1 of 2

ISBN: 978-1-5108-8856-2
ISSN: 1755-1307

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

This work is licensed under a Creative Commons Attribution 3.0 International Licence.
Licence details: <http://creativecommons.org/licenses/by/3.0/>.

No changes have been made to the content of these proceedings. There may be changes to pagination and minor adjustments for aesthetics.

Printed with permission by Curran Associates, Inc. (2020)

For permission requests, please contact the Institute of Physics
at the address below.

Institute of Physics
Dirac House, Temple Back
Bristol BS1 6BE UK

Phone: 44 1 17 929 7481
Fax: 44 1 17 920 0979

techtracking@iop.org

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

PART 1

THE IMPLEMENTATION OF A PROFIT-SHARING SYSTEM BETWEEN BEEF CATTLE FARMERS AND THE MAIWA BREEDING CENTRE IN ENREKANG, SOUTH SULAWESI, INDONESIA	1
<i>S N Sirajuddin, Hastang, V S Lestari, Rosmawaty</i>	
THE ATTITUDE OF BEEF CATTLE FARMERS TO BIOSECURITY ADOPTION	7
<i>V S Lestari, D P Rahardja, P Mappigau, St Rohani, S N Sirajuddin</i>	
FACTORS INFLUENCING THE SOYBEAN IMPORT VOLUME IN NORTH SUMATERA PROVINCE	12
<i>T Supriana, M A Harahap, S K H Nasution</i>	
ANALYSIS OF PROBABILITY VALUE OF RISK AND ITS INFLUENCE ON AGRIBUSINESS OF CITRUS CULTIVATORS (CASE: PARBULUAN IV VILLAGE, PARBULUAN SUBDISTRICT, DAIRI DISTRICT).....	19
<i>T Supriana, S R Putri, L Sihombing</i>	
SHORT-RUN AND LONG-RUN DEMAND ELASTICITY OF SHALLOT IN NORTH SUMATERA PROVINCE	24
<i>T C Pane, T Supriana, M Khaliqi</i>	
COMPARING FARMING INCOME PROSPECTS FOR COCOA AND OIL PALM IN ASAHAN DISTRICT OF NORTH SUMATERA	30
<i>S K H Nasution, T Supriana, T C Pane, S S Hanum</i>	
FACTORS AFFECTING THE PRODUCTION OF ARABICA COFFEE OF SMALLHOLDER PLANTATIONS IN DAIRI DISTRICT	38
<i>Rahmanta, S Purba, T Supriana</i>	
INTERRELATED MODEL OF FARMER BEHAVIOUR AND AGRICULTURAL RESOURCES IN THE DEVELOPMENT OF GINGER AGRIBUSINESS AT THE ON-FARM LEVEL	44
<i>W Widayati, W G Abdullah, W I Romantiaulia, E S Mihrad</i>	
ECONOMIC VALUATION OF MANGROVE FORESTS AT SECANGGANG, LANGKAT.....	52
<i>H M Jelita, R Ginting, S F Ayu</i>	
THE IMPACTS OF HARVEST ON PRICE INDEX OF PRODUCER (CASE STUDY: HAMPARAN PERAK SUBDISTRICT, DELI SERDANG REGENCY, INDONESIA)	58
<i>Salmiah, Herawati, M Khaliqi</i>	
EXPLORATION OF THE POTENTIAL OF UPLAND RICE AGRIBUSINESS DEVELOPMENT IN SOUTH KONAWA DISTRICT, SOUTHEAST SULAWESI.....	63
<i>S A A Taridala, W G Abdullah, M A Tuwo, A Bafadal, I Fausayana, I Salam, S Wahyuni, Suaib</i>	
PARTICIPATION IN EMPOWERING INSTITUTIONS AND INFLUENCING FACTORS OF RURAL HOUSEHOLD INCOME	70
<i>I Zulfida, L Lindawati</i>	

ANALYSIS OF UPSUS PAJALE PROGRAM INFLUENCE TOWARD THE DECISION OF FARMERS IN PLANTING SOYBEAN COMMODITY (CASE STUDY: SUMBEREJO VILLAGE, PAGAR MERBAU SUBDISTRICT, DELI SERDANG DISTRICT).....	77
<i>T Supriana, P R Nasution, R P Wibowo</i>	
THE INFLUENCE OF PRICE OF PESTICIDE TO ITS APPLICATION.....	82
<i>S F Ayu, D Aulia</i>	
FACTORS AFFECTING REVENUE OF COCOA FARMERS IN BIRU-BIRU DISTRICT, DELI SERDANG REGENCY, NORTH SUMATRA	87
<i>N F Pinem, R Rambey</i>	
THE IMPACT OF FLUCTUATION OF THE PRICE OF FOOD COMMODITY ON INFLATION IN NORTH SUMATERA PROVINCE	94
<i>D J Irawati, R P Wibowo, S F Ayu</i>	
ECONOMIC ANALYSIS OF USING DUCKWEED AS FEED SUPPLEMENT IN THE COMMERCIAL RATIONS OF NATIVE CHICKENS	100
<i>A Syampurnomo, Y Prayoga, M Sembiring, D Fajar, R Rosaldi, R Ginting, A Pratama, U Sayed, J Ginting, Y L Henuk</i>	
MEASURING TECHNOLOGY SUSTAINABILITY STATUS OF LOCAL BEEF CATTLE UNDER EXTENSIVE REARING SYSTEMS IN THE DRYLAND AREA, INDONESIA	105
<i>M M J Kapa, Hasnudi, Y L Henuk</i>	
IS IRRIGATED FARM MORE EFFICIENT THAN NON-IRRIGATED NO-TILLAGE FARM AND NON-IRRIGATED CONVENTIONAL FARM FOR A SAMPLE OF KANSAS CORN FARMER?.....	110
<i>R P Wibowo</i>	
CLIMATE CHANGE ADAPTATION STRATEGIES FOR IN-FIELD CONSERVATION PRACTICES BY IRRIGATED FARM	117
<i>R P Wibowo</i>	
DEFICIT IRRIGATION FOR RICE FARMING WITH PRODUCTION RISK DUE TO WEATHER VARIABILITY	123
<i>R P Wibowo, Sumono, T Rizaldi</i>	
THE EFFECT OF CAPITAL EXPENDITURE AND GROSS FIXED CAPITAL FORMATION ON INCOME DISPARITY IN WEST COAST REGION OF NORTH SUMATERA	129
<i>B Purba, R Masbar, I Maipita, A Jamal</i>	
CONCENTRATION OF BEEF MARKET IN EAST NUSA TENGGARA (ENT) PROVINCE, INDONESIA	134
<i>D R Nendissa, R Anindita, N Hanani, A W Muhaimin, Y L Henuk</i>	
INDONESIAN TUNA POSITION IN THE INTERNATIONAL MARKET	142
<i>M Khaliqi, T C Pane, R B M I Fatoni</i>	
THE IMPLEMENTATION OF GOVERNMENT RICE RESERVE POLICY: BASED ON PRESIDENTIAL INSTRUCTION ON RICE POLICY	149
<i>S A Sembiring, P Sibuea</i>	
SUPPLY CHAIN ANALYSIS OF PAPAYA IN CENTRAL MARKET, MEDAN TUNTUNGAN SUBDISTRICT, MEDAN CITY	159
<i>S P Nasution, T Supriana, Z Lubis</i>	

DIVERSIFICATION OF PRODUCTS DERIVED FROM MAIZE FOR THE SUSTAINABLE WELFARE OF THE PEOPLE IN GORONTALO PROVINCE, INDONESIA	164
<i>A M Hasan, A Halid, L Ahmad, Hasdiana, R. Ilato</i>	
COMPARING ENERGY DEMAND OF DENSIFIED BRIQUETTES OF GROUND AND UNGROUND HAZELNUT HUSKS UNDER COMPRESSION LOADING	172
<i>C Demirel, G A K Gurdil, A Kabutey, M Wasserbauer</i>	
A RATING-CURVE METHOD FOR DETERMINING DEBIT FOR DRY SEASON IN MICRO-SCALE WATERSHEDS.....	177
<i>E Susanto, N Hatta, Sumono</i>	
DEVELOPMENT OF CONCEPTUAL DESIGN AND SIMULATION OF DAPOG SYSTEM RICE SEED SEEDLING MACHINE FOR PRODUCTION SCALE	183
<i>T Rizaldi, S Pangabebean, P C Ayu, A O Jeremy</i>	
DESIGN OF FILLER AND COMPACTOR FOR OYSTER MUSHROOM GROWING MEDIUM (BAGLOG).....	189
<i>T Rizaldi, Raju, M R Piliang</i>	
DESIGN OF CURCUMA CHIPS DRYER BY UTILIZING THE WASTE HEAT OF COMMERCIAL REFRIGERATOR CONDENSER	196
<i>S Pangabebean, D M Sibarani, R Sigalingging, A Rindang</i>	
REPETITIVE LOADING OF UNROASTED BULK PALM KERNELS USING UCTM FOR ANALYSING OPTIMUM PERCENTAGE KERNEL OIL RECOVERY AND ENERGY DEMAND	202
<i>A Kabutey, D Herak, A Brunerova, R Sigalingging</i>	
MODEL OF MECHANIZATION IMPLEMENTATION ON THE HANDLING OF OIL PALM FRONDS (OPF) WASTE INTO COMPOST AND MULCH IN ACEH PROVINCE, INDONESIA	208
<i>R Bulan, Raju, Safrizal, M Yasar, A Sitorus</i>	
APPLICATION OF ELEMENTARY HYDROLOGY MODEL FOR THE ASSESMENT OF WATERSHED HEALTH AT PROGO HULU WATERSHED	214
<i>D L S Nasution, S Susanto, A Sadeli</i>	
EFFECT OF PACKAGING FILLERS MATERIALS ON THE QUALITY OF PAPAYA FRUIT (CARICA PAPAYA L.)	221
<i>R Sigalingging, H A Nasution, A Rindang, P C Ayu</i>	
DRYING CHARACTERISTIC OF UNHULLED RICE IN BIOMASS ENERGY AND COMBINATION ROTARY DRYER.....	228
<i>A Rindang, S Pangabebean, A Sukoco, P C Ayu</i>	
UTILIZATION OF SOLAR POWER AS DC WATER PUMP MOVEMENT IN HYDROPONIC PLANTS	234
<i>R Sigalingging, P Honorta</i>	
EFFECT OF BAMBOO STRAND LENGTH ON ORIENTED STRAND BOARD	243
<i>A H Iswanto, M Idris, T Sucipto</i>	
OIL PALM WATER BALANCE; A TOOLS FOR ANALYSING OIL PALM WATER FOOTPRINT AND ROOT WATER UPTAKE DISTRIBUTION IN ROOT ZONE.....	250
<i>L Safitri, Hermantoro, S Purboseno, V Kautsar, S K Saptomo, A Ardiyanto</i>	

CROP COEFFICIENT AND WATER REQUIREMENT FOR OIL PALM (ELAEIS GUINEENSIS JACQ.) ON THE NURSERY BASED ON RADIATION EVAPORATION METHOD.....	258
<i>N Ichwan, A M Fajra, S M Marbun, Sumono</i>	
STUDY ON THE CONVECTIVE DRYING OF POTATO CUBE	264
<i>N D M Romauli, H Ambarita</i>	
EXPERIMENTAL STUDY ON CANDLEBERRY SHELL AND ARECA PALM FIBRE AS A SOLID FUEL FOR BOILER	270
<i>A Saragih, T Sitepu, N D M Romauli, H Ambarita</i>	
CONTENT OF FIBRE FRACTION COMPLETE FEED SILAGE BASED WASTE CORN (ZEA MAYS) IN THE FERMENTATION PROCESS WITH LOCAL MICROORGANISM "PROBIOTIC MOIYL"	276
<i>E S Yanti, Y L Henuk, J Ginting, Yunilas, M Tafsin, Hamdan</i>	
POTENCY AND STRATEGY OF CATTLE DEVELOPMENT BASED ON FEED RESOURCES IN TANJUNGBALAI NORTH SUMATERA REGENCY	282
<i>Muslim, M Tafsin, S Umar</i>	
PHYSICAL, CHEMICAL AND IN VITRO DIGESTIBILITY QUALITY OF OIL PALM MIDRIB FERMENTED BY PHANEROCHAETE CHRYSOSPORIUM.....	289
<i>K C Desnamrina, M Tafsin, N D Hanafi</i>	
EFFECT OF BIO ACTIVATOR USE ON CORN COBS AS A COMPLETE FEED ON PERFORMANCE AND DIGESTIBILITY OF LOCAL SHEEP	296
<i>Arwinsyah, M Tafsin, Yunilas</i>	
FARMER'S DECISION IN SELECTING THE BULL SEMEN FOR ARTIFICIAL INSEMINATION IN CENTRAL JAVA	304
<i>R Agustine, S Bintara, S Andarwati, T S M Widi, A R S Putra</i>	
THE EFFECT OF GIVING MANNAN EXTRACT FROM PALM KERNEL CAKE TO PATHOLOGY AND HISTOPATHOLOGY LIVER AND INTESTINE CHICKEN WHICH INFECTED BY SALMONELLA THYPIMURIUM.....	309
<i>T J Adawiyah, M Tafsin, N D Hanafi, T V Sari</i>	
NUTRIENT QUALITY OF OIL PALM FROND FERMENTED BY LOCAL MICROORGANISM (MOL) WITH DIFFERENT DOSAGE AND INCUBATION TIME	316
<i>M Tafsin, N D Hanafi, Yunilas, R Mulianda</i>	
EFFECT OF FASTING TIME BEFORE SLAUGHTERING ON BODY WEIGHT LOSS AND CARCASS PERCENTAGE OF BALI CATTLE	322
<i>H Hafid, Hasnudi, H A Bain, F Nasiu, Inderawati, P Patriani, S H Ananda</i>	
IMPLEMENTATION OF PALM KERNEL CAKE COMPLETE FEED WAFERS BASED ON WEANING ONGOLE CROSSBREED	329
<i>Y Sukaryana, Zairiful, Y Priabudiman, I Panjaitan</i>	
BIOGAS SLURRY APPLICATION ON SESBANIA GRANDIFLORA: A MICROBIAL TRANSPORTATION TO IMPROVE PLANT QUALITY	333
<i>Nurzainah Ginting, Hasnudi, Yunilas</i>	
REPRODUCTIVE AND MORPHOLOGICAL PERFORMANCES OF STALLIONS IN DISTRICT OF KARO, NORTH SUMATERA, INDONESIA.....	339
<i>S L Ginting, Hamdan, Y L Henuk, R E Mirwandhono, T H Wahyuni</i>	

CARCASS COMPOSITION OF FAT TAILED SHEEP AT DIFFERENT SLAUGHTER WEIGHT	346
<i>U Hasanah, Hasnudi, E Mirwandhono, N Ginting, P Patriani, M Baihaqi</i>	
THE EFFECT OF FED MAGGOT MEAL AS A SUPPLEMENT IN THE COMMERCIAL DIETS ON THE PERFORMANCE OF FINISHER BROILER CHICKENS	352
<i>S Y F G Dillak, N P F Suryatni, H T Handayani, S T Temu, H P Nastiti, D B Osa, R Ginting, Yunilas, Y L Henuk</i>	
REPRODUCTIVE PERFORMANCE OF BUFFALO-COWS WITH VARIOUS SYNCHRONIZATION PROTOCOLS IN KAMPAR REGENCY OF RIAU PROVINCE	358
<i>Yendraliza, J Handoko, M Rodiallah</i>	
GROWTH PERFORMANCE OF WEANER RABBITS FED DRIED MORINGA OLEIFERA LEAF MEAL.....	365
<i>D P Zendrato, R Ginting, Warisman, D J S Siregar, A Putra, I Sembiring, Hamdan, J Ginting, Y L Henuk</i>	
SPERMATOOZA SEPARATION METHOD WITH DIFFERENT PERCOLL COMPOSITION ON MOTILITY, ABNORMALITIES, AND MORTALITY OF LOCAL GOAT SPERM	370
<i>P Patriani, Hasnudi, E Mirwandhono, Nurzainah Ginting, U Hasanah</i>	
ADDITION OF ANDALIMAN TO SHELF LIFE OF BEEF NUGGET	376
<i>Hasnudi, R E Mirwandhono, G A W Siregar</i>	
CAUSING FACTORS OF DECLINING TREND ON SAMOSIR PANORUSAN GOAT POPULATION AS ENDANGERED SPECIES IN SAMOSIR ISLAND	380
<i>Nurzainah Ginting, A Manik, Hasnudi, N Ginting, D N Aulia, B O Marpaung, N V Rahman, U Hasanah</i>	
THE EFFECT OF PANORUSAN SAMOSIR GOAT CHARACTERISTICS ON ITS SELLING PRICE IN SUB-DISTRICT PANGURURAN, SAMOSIR REGENCY.....	386
<i>E Mirwandhono, A K Hakim, Nurzainah Ginting, I Sembiring, Yunilas, Hamdan, P Patriani</i>	
SYNERGISM OF CELLULOLYTIC BACTERIA IN CONSORTIUM AS STARTER CULTURE AGENT "MOIYL" FOR FIBER FEED	392
<i>T H Wahyuni, Yunilas, Nurzainah Ginting</i>	
CHEMICAL COMPOSITION OF PENNISETUM PURPUREUM AND PANICUM MAXIMUM ON SILVOPASTORAL SYSTEM IN JAMBULA, TERNATE, INDONESIA.....	397
<i>B Suwignyo, A Guntur, N Umami, R Utomo, P Suryanto, G Pawening</i>	
EFFECT OF VARIOUS FEED ADDITIVES ADMINISTRATION ON PERFORMANCE AND HEMATOLOGICAL PARAMETERS OF LOCAL CHICKENS (GALLUS DOMESTICUS)	403
<i>Samadi, M Delima, Herawati</i>	
PHYSICOCHEMICAL AND ORGANOLEPTIC CHARACTERISTICS OF ACEH BEEF AND BRAHMAN CROSS BEEF IN COLD TEMPERATURE STORAGE OF 4°C.....	408
<i>M Firdaus, Hasnudi, H Rusmalirin</i>	
THE DURABILITY OF OSB COMPOSITE PLYWOOD WITH AVOCADO, MAHOGANY, AND PINE WOOD VENEERS AGAINST DRYWOOD AND SUBTERRANEAN TERMITES	413
<i>T D Cahyono, H Yanti, M Y Massijaya, A H Iswanto, M R Uluputty</i>	
DIVERSITY OF PLANT COMMUNITY AT GUNUNG LEDANG, MALAYSIA	419
<i>O Onrizal, S N Ismail, M Mansor</i>	

DIVERSITY OF UNDERSTOREY AT SINGKIL SWAMP WILDLIFE RESERVE.....	425
<i>O Onrizal</i>	
STUDY OF THE BIOGAS TECHNOLOGY ADOPTION AS A LIVESTOCK WASTE MANAGEMENT AMONG SMALLHOLDER FARMERS IN INDONESIA	430
<i>A R S Putra, T G Czekaj, M Lund</i>	
COMMUNITY'S CHARACTERISTICS AND PARTICIPATION IN THE URBAN PARKS' PRESERVATION IN MAKASSAR, INDONESIA	436
<i>S Rahbiah, Nurliani, Irmayani</i>	
THE ROLE OF FOREST RESTORATION IN CONSERVING MANGROVE PLANT AT THE EASTERN COAST OF NORTH SUMATRA.....	443
<i>O Onrizal, R Amelia, M Arif, R Agustini, K Amri, G N Simamora, J M Saragih, R K Saragih, N Sulistiyono, M Mansor</i>	
MAPPING OF ACTUAL AND POTENTIAL LAND SUITABILITY FOR OIL PALM IN SEVERAL LAND UNIT USING GEOGRAPHIC INFORMATION SYSTEM	450
<i>Rahmawaty, A Rauf, S Frastika</i>	
EFFECT OF ZEOLITE, VOLCANIC SAND AND SEA WATER ON BULK DENSITY OF PEAT SOIL AND GROWTH OF RICE	456
<i>Sarifuddin</i>	
PROFILES OF TEMPERATURE, SALINITY, DISSOLVED OXYGEN, AND PH IN TIDAL LAKES	462
<i>R Leidonald, A Muhtadi, I Lesmana, Z A Harahap, A Rahmadya</i>	
PRODUCTIVITY OF OYSTER MUSHROOMS (PLEUROTUS OSTREATUS) ON MEDIA CORNCOBS MIXED WITH SAWDUST	469
<i>R Rambey, I D B Sitepu, E B M Siregar</i>	
LAYER INTERACTION ADSORPTION ISOTHERMS MODEL OF MANGO SEED AS BIOSORBENT IN REDUCING FREE FATTY ACID AND PEROXYDE VALUE IN CRUDE PALM OIL REFINING.....	475
<i>S Pandia, A Setiawan, N Sanjaya, B Haryanto</i>	
MODEL DISTRIBUTION OF POISONOUS PLANTS AS CONSERVATION BIOPESTICIDES SOURCES IN BATANG GADIS NATIONAL PARK, MANDAILING NATAL, NORTH SUMATERA	482
<i>Y Afifuddin, P Patana, J Rangkuti, P. Pulungan, S. Lubis</i>	
THE EFFECT OF GLUE SPREADS AND ADHESIVE TYPE ON QUALITY OF LAMINATED BOARD FROM OIL PALM TRUNK	491
<i>R Hartono, A H Iswanto, T Sucipto, T D Cahyono, W Dwiwanto, T Darmawan</i>	
THE DIVERSITY OF TREE SPECIES AS FEED SOURCES OF SUMATRAN ORANGUTAN IN BUKIT LAWANG OF GUNUNG LEUSER NATIONAL PARK.....	498
<i>O Onrizal, N L Auliah</i>	
ENVIRONMENTAL PERFORMANCE, VOLUNTARY DISCLOSURE, AND CORPORATE VALUE	502
<i>R B Bukut, Nurlaila</i>	
PREFERENCES OF SUMATRAN ORANGUTAN NESTING TREE AT BUKIT LAWANG FORESTS OF GUNUNG LEUSER NATIONAL PARK.....	508
<i>O Onrizal, M Bahar</i>	

SOIL RESPIRATION AND MICROBIAL POPULATION IN TROPICAL PEAT UNDER OIL PALM PLANTATION.....	512
<i>S F Batubara, F Agus, A Rauf, D Elfiati</i>	
EFFECT OF RATIO OF ANDALIMAN (ZANTHOXYLUM ACANTHOPODIUM) WITH GARLIC AND AGING TIME ON THE QUALITY OF SAMBAL TUK TUK	520
<i>M Sonangda, H Sinaga, L N Limbong</i>	
ORGANOLEPTIC PROPERTIES OF FUNCTIONAL POWDERED DRINK PRODUCTS BASED ON PALM SUGAR.....	528
<i>I S Rianse, U Rianse, S Wahyuni, W Gusmiarty, RH F Faradilla, Zulfikar, W K Baka, Tamrin, K Fatmala, Sarbia, Nofiana, K Astuti, Erawati, A Ramadhan</i>	
THE EFFECTIVENESS OF LACTIC ACID BACTERIA LEVEL ON SYNERESIS AND ACIDITY OF FERMENTED MILK ADDED CARROT (DAUCUS CARROTA L) PORRIDGE	536
<i>Yurliasni, Z Hanum, R Jannah</i>	
THE UTILIZATION OF NUTMEG SEED (MYRISTICA FRAGRANS HOUTT) EXTRACT AS AN ANTIMICROBIAL ON TEMPEH SAUSAGE	540
<i>K A Panggabean, H Rusmarilin, D Suryanto</i>	
MODIFIED CASSAVA FLOUR (MOCAF) CONTENT OF CASSAVA (MANIHOT ESCULENTA CRANTZ) IN NORTH SUMATERA.....	547
<i>E H Kardhinata, E Purba, D Suryanto, H Rusmarilin</i>	
ALOE VERA AND LEMON JUICE CAPABILITY IN DECREASING FORMALDEHYDE CONTENT IN TOFU SUMEDANG WITH COLD STORAGING	552
<i>C Daniela, H Rusmarilin, H Sinaga</i>	

PART 2

EFFECT OF PRE-TREATMENT IN THE MAKING OF PURPLE-FLESHED SWEET POTATO FLOUR TOWARDS CAKE CHARACTERISTICS	559
<i>K Chuango, E Julianti, S Ginting</i>	
A COMPARISON STUDIES ON THE CHEMICAL CHARACTERISTICS OF PUMPKIN SEED OIL WITH EXTRA VIRGIN OLIVE OIL AND PALM OLEIN.....	566
<i>N A Agustina, J Elisabeth, E Julianti</i>	
THE EFFECT OF PRE-TREATMENT IN ORANGE-FLESHED SWEET POTATO (OFSP) FLOUR MANUFACTURING PROCESS ON CAKE'S QUALITY.....	572
<i>S Azzahra, E Julianti, T Karo-Karo</i>	
THE INFLUENCE OF SOLID AND LIQUID PALATE CLEANSERS TOWARD THE NEUTRALIZATION EFFECTIVENESS OF CHILI'S SPICY SENSATION.....	579
<i>K Fibrianto, K Nurdiani, N T Puanda, E S Wulandari</i>	
GLYCEROLYSIS-INTERESTERIFICATION OF CHICKEN-PALM STEARIN BLEND: EFFECT OF SOLVENT AND CHICKEN STEARIN TO PALM STEARIN RATIO	586
<i>D A Sari, D S Ningsih, B P Nusantoro, W Setyaningsih, C Hidayat</i>	
EFFECT OF PRE-TREATMENT IN THE PRODUCTION OF PURPLE-FLESHED SWEET POTATO FLOUR ON COOKIES QUALITY.....	593
<i>Z Ulfa, E Julianti, M Nurminah</i>	

PHYSICOCHEMICAL CHARACTERIZATION OF WATER-SOLUBLE POLYSACCHARIDE OF PACHYRHIZUS EROSUS L. WITH FERMENTATION ASSISTED EXTRACTION METHOD.....	600
<i>H Rusmarilin, A Hilman</i>	
POTENTIAL OF NATURAL ANTIOXIDANTS OF BLACK CUMIN SEED (NIGELLA SATIVA) AND SESAME SEED (SESAMUM INDICUM) EXTRACT BY MICROENCAPSULATION METHODS.....	608
<i>H Rusmarilin, Z Lubis, L M Lubis, Y A P Barutu</i>	
THE INFLUENCE OF COAGULANTS AND COOKING PERIOD ON THE QUALITY OF DALI NI HORBO	615
<i>M B Pratiwi, H Sinaga, E Julianti</i>	
THE EFFECT OF ADDITION OF ANDALIMAN (ZANTHOXYLUM ACANTHOPODIUM DC) ON THE QUALITY OF ANDALIMAN CONDIMENT	622
<i>E T Pa, H Sinaga, Ridwansyah</i>	
FORMULATION OF INSTANT PORRIDGE BASED ON MORINGA LEAVES AS A FUNCTIONAL FOOD FOR NURSING MOTHER.....	628
<i>D Pranowo, S A Mustaniroh, A Ihwah</i>	
PHYTOCHEMICAL AND ANTIOXIDANT ACTIVITY OF GAHARU LEAF TEA (AQUILARIA MALACCENSIS LAMK) AS RAW MATERIAL OF TEA FROM MIDDLE TAPANULI REGENCY, NORTH SUMATERA PROVINCE.....	633
<i>Surjanto, R Batubara, T I Hanum, W Pulungan</i>	
DIVERSITY AND HABITAT CONDITION OF TOR FISH (TOR SPP.) IN THE UPSTREAM OF WAMPU WATERS, NORTH SUMATRA, INDONESIA.....	639
<i>Desrita, I S Tamba, A Muhtadi, J Ariyanti, R Leidonald</i>	
PROXIMATE CARCAS COMPOSITION WITH DIFFERENT CAHPO4 AND BODY CONFORMATION OF RED TILAPIA	646
<i>E Yusni</i>	
THE GONAD MUTURITY LEVEL OF TOR FISH (TOR SPP.) IN UPSTREAM WAMPU WATERSHED LANGKAT REGENCY OF NORTH SUMATERA	651
<i>Desrita, J Ariyanti, A Muhtadi, I S Tamba, E Yusni, I Lesmana, O R Dhuha, E Santoso</i>	
BIODIVERSITY FLORA AND FAUNA IN TROPICAL TIDAL LAKE.....	658
<i>R Leidonald, I Lesmana, A Muhtadi, Desrita</i>	
DEVELOPING DETOXIFICATION AND PURIFICATION TECHNOLOGIES OF PONDS WITH PESTICIDE RESIDUE FOR ORGANIC TIGER SHRIMP FARMING DEVELOPMENT	665
<i>M H Fattah, S Rahbiah</i>	
COMMUNITY STRUCTURE OF ECHINODERMS IN SEAGRASS ECOSYSTEM OF PANDARATAN BEACH, TAPANULI TENGAH REGENCY, NORTH SUMATERA.....	672
<i>I E Susetya, S Wahyuni, A Fadhilah, Z A Harahap, E. Yusni, S A Saridu</i>	
BIOLOGY AND GROWTH OF ASIATIC HARD CLAM (MERETRIX MERETRIX) POPULATION IN TANJUNG BALAI, NORTH SUMATERA	679
<i>Desrita, I E Susetya, M Suriani, A Rahman</i>	
ELASMOBRANCH CATCH COMPOSITION OF NORTH SUMATERA FISHERS	686
<i>A Fadhilah, I E Susetya, B M Simeon</i>	

IDENTIFICATION OF ECTOPARASITES IN FRY TILAPIA (OREOCHROMIS NILOTICUS) IN AQUACULTURE POND	693
<i>E Yusni, N Rambe</i>	
CHARACTERISTICS OF SURIMI GEL FROM OREOCHROMIS MOSSAMBICUS IN DIFFERENT AQUACULTURE AREAS.....	700
<i>R A Kurniasih, Y S Darmanto, V E Herawati</i>	
CPUE ANALYSIS OF SKIPJACK TUNA (KATSUWONUS PELAMIS) AT THE SIBOLGA NUSANTARA FISHERY PORT.....	708
<i>A Fadhillah, A Pulungan, Y Soemaryono, E Yusni, A F Dewinta</i>	
RELATIONSHIP BETWEEN CORAL REEF ECOSYSTEM AND CORAL FISH COMMUNITIES IN UNGGEH ISLAND CENTRAL TAPANULI REGENCY	716
<i>Z A Harahap, Y H Gea, I E Susetya</i>	
ASSESSMENT OF ONE-YEAR MANGROVE REFORESTATION USING RHIZOPHORA APICULATA SEEDLINGS IN LUBUK KERTANG VILLAGE, NORTH SUMATRA.....	723
<i>M Basyuni, A Al Habib, B Slamet, N Sulistiyono, L A P Putri, Y Bimantara, E Yusraini, I Lesmana</i>	
INTRODUCING OF A SILVOFISHERY POND ON SAPLING AND SEEDLING DENSITY BASED IN LUBUK KERTANG VILLAGE, NORTH SUMATERA	729
<i>M Basyuni, K S Nasution, B Slamet, N Sulistiyono, Y Bimantara, L A P Putri, E Yusraini, R Hayati, I Lesmana</i>	
LAND SUITABILITY EVALUATION FOR OIL PALM PLANTATIONS (ELAEISGUENENSIS JACQ) ON SITELLU TALI URANG JULU, PAKPAK BHARAT DISTRICT	735
<i>F S Harahap, R Sitompul, A Rauf, Rahmawaty, D E Harahap, H Walida</i>	
THE EVALUATION OF SOIL CHEMISTRY AND SOIL PHYSIC ON UNDERSTUDIED OF CAMPHOR TREES (DRYOBALANOPS AROMATICA COLEBR).....	743
<i>H Prasetyo, A Rauf, T Sabrina, B Hidayat, F S Harahap</i>	
SCREENING FOR DISEASE RESISTANCE IN RICE VARIETIES AGAINST BACTERIAL PANICLE BLIGHT DISEASE (BURKHOLDERIA GLUMAE) IN NORTHERN SUMATRA OF INDONESIA	750
<i>Weny, I Safni, Lisnawita, K Lubis</i>	
SUPPRESSION OF FUSARIUM WILT OF BANANA WITH AN APPLICATION OF TRICHODERMA ASPERELLUM INOCULANTS	756
<i>N A Izzati M Z, S S Maryam S A R, N Azwady A A</i>	
PHENOTYPIC AND GENOTYPIC CORRELATION AMONG TASTE ATTRIBUTES AND WEIGHT OF GREEN BEAN IN ARABICA COFFEE (COFFEA ARABICA L.)	760
<i>S Malau</i>	
EXPLORATION AND IDENTIFICATION OF AREN PLANT (ARENGAPINNATAMERR) IN DISTRICT OF SOUTH TAPANULI.....	766
<i>M Khairiyah, P Harahap</i>	
THE RADIO SENSITIVITY OF MATURE CALLUS AND SELECTION OF IRRADIATED 40 GY LAMTORO (LEUCAENA LEUCOCEPHALA) CALLUS ON ACID STRESS THROUGH TISSUE CULTURE	770
<i>P D M H Karti, S J Manpaki, I Prihantoro</i>	

PARTIAL ISOLATION OF DISTAL PROMOTER SEQUENCE OF THE NPR1 GENE FROM LOCAL CHILLI PEPPER [CAPSICUM ANNUUM L.] GENOTYPE BERANGKAI	775
<i>M Oktavioni, IA Candra, B Nova, L Syukrini, A Asben, J Jamsari</i>	
EFFECT OF SALINITY ON SPORE GERMINATION, HYPHAL LENGTH AND ROOT COLONIZATION OF THE ARBUSCULAR MYCORRHIZAL FUNGI	782
<i>Delvian, R Rambey</i>	
IDENTIFICATION OF THE MORPHOPHYSIOLOGICAL CHARACTERISTICS OF CASSAVA (MANIHOT ESCULENTA CRANTZ) BASED ON ALTITUDE.....	788
<i>A Setiawan, Rosmayati, N Rahmawati</i>	
RATTAN ROOT MORPHOLOGY UNDER DIFFERENT INORGANIC NITROGEN FERTILIZATION	795
<i>L I Bangkele, M Basir-cyio, A Tjoa, A T Tellu</i>	
SEQUENCE APPROACH OF ELAEIS GUINEENSIS FOR EARLY DETECTION OF GANODERMA BONINENSE RESISTANCE	803
<i>R Hayati, M Basyuni</i>	
APPEARANCE OF AGRONOMIC CHARACTERS AND GENETIC PARAMETERS ESTIMATION ON M3 POPULATION OF ROSELLE [HIBISCUS SABDARIFFA L.]	808
<i>D S Hanafiah, G Rakasiwi, M Fahreza, Rosmayati, L A M Siregar, Meiriani</i>	
GROWTH RESPONSE AND N UPTAKE OF TWO SOYBEAN VARIETIES ON INOCULATION OF BRADYRHIZOBIUM SP. IN ULTISOL BINJAI, SUMATERA UTARA	813
<i>I N Selvia, A Sahar, Y Hasanah</i>	
THE EFFECTS OF POTASSIUM, NITROGEN AND STRAW COMPOST GIVING TO INCREASE ORGANIC MATERIAL LEVELS AND K-EXCHANGEABLE RICE FIELDS AND RICE GROWTH	819
<i>S Aminah, H Hanum, Sarifuddin</i>	
RESPONSE OF TOMATO (LYCOPERSICONESCULENTUM MILL) INFECTED BY PHYTOPHTHORA INFESTANS (MONT.) DE BARY WITH THE TREATMENT OF COPPER AND POTASSIUM PHOSPHATE ON PLANT DEVELOPMENT	825
<i>Astini, Lisnawita, H Hanum</i>	
RICE HUSK BIOCHAR APPLICATION AND THE PLANTING TIMES EFFECT ON DRY WEIGHT AND WATER USE EFFICIENCY OF UPLAND RICE VARIETIES	833
<i>S Mayly, A Rauf, C Hanum, H. Hanum</i>	
BACILLUS STRATOSPHERICUS FROM ORYCTES RHINOCEROS LARVAE AS DECOMPOSER OF OIL PALM EMPTY FRUIT BUNCHES	838
<i>Marheni</i>	
THE EFFECT OF GIVING ELECTRIC FIELD TO THE METABOLISM OF ANDALIMAN (ZANTHOXYLUM ACANTHOPODIUM DC) SEEDS WHICH CONTRIBUTES TO ACCELERATING GERMINATION	844
<i>S E Panggabean, W Kamson, A P Simanjuntak, N Rahmawati</i>	
RESISTANCE TEST OF SEVERAL SWEET POTATO GENOTYPES AGAINST SWEETPOTATO WEEVIL CYLAS FORMICARIUS FABRICUS (COLEOPTERA: CURCULIONIDAE) IN THE LOWLANDS.....	849
<i>F Syahnas, D Bakti, L Lubis, Rosmayati, N Rahmawati</i>	

IN VITRO TEST OF ENDOPHYTIC ANTAGONIST ACTIVITY FOR COLLETOTRICHUM GLOEOSPORIOIDES, CAUSAL AGENT OF ANTRACNOSE IN COCOA	854
<i>A Khaeruni, M Zulkifli, T Wijayanto, G A K Sutariati, L O S Bande, R Arini</i>	
SPODOPTERA LITURA AS A MAIN PEST IN OIL PALM PEAT PLANTATION	860
<i>D Bakti, M D S Saragih, I Safni, S H Pasaribu</i>	
INSECT MANAGEMENT WITH REFUGIA PLANT IN UPLAND RICE (ORYZA SATIVA L.)	868
<i>Sutriono, E Purba, Marheni</i>	
GROWTH PATTERN OF FIFTEEN UPLAND RICE VARIETIES IN SHADING STRESS	874
<i>Khairunnisa, Rosmayati, C Hanum</i>	
THE INFLUENCE OF ATTRACTANT FROM COFFE BEAN AND OUTER SKIN OF COFFEE TO IMAGO OF COFFEE BERRY BORER HYPOTHENEMUS HAMPEI FERR. (COLEOPTERA: CURCULIONIDAE) ON THE FIELD	881
<i>N Ramli, M C Tobing, D Bakti</i>	
TRANSMISSION OF VIRUS BY WHITEFLY BEMISIA TABACI FROM DUTCH EGGPLANT SOLANUM BETACEUM CAV. FOR CUCURBITACEAE PLANTS IN GREENHOUSE	887
<i>R Sirait, M I Pinem, Hasanuddin</i>	
POTENTIAL USES OF MARINE BEAN (VIGNA MARINA BURM.) AS SALT TOLERANT LEGUME IN COASTAL SALTY LAND, SOUTHEAST SULAWESI, INDONESIA	891
<i>A Septiana, Analuddin</i>	
GROWTH AND PRODUCTION OF SOYBEAN (GLYCINE MAX L. MERRIL) VARIETIES IN RESPONSE TO WATERLOGGING AT VEGETATIVE (V5) GROWTH PHASE BY APPLICATION OF GIBBERELIC ACID AND SALICYLIC ACID	897
<i>Calvin, R I Damanik, L A M Siregar</i>	
SEED BIOPRIMING WITH INDIGENOUS ENDOPHYTIC BACTERIA ISOLATED FROM WAKATOBI ROCKY SOIL TO PROMOTE THE GROWTH OF ONION (ALLIUM ASCALONICUM L.)	903
<i>G A K Sutariati, A Khaeruni, Muhidin, A Madiki, TC Rakian, L Mudi, N Fadillah</i>	
GROWTH PERFORMANCE OF TWO SUPERIOR LINE OF LOCAL UPLAND RICE (ORYZA SATIVA L.) FROM SE SULAWESI ON THE LOW LIGHT INTENSITY	911
<i>G R Sadimantara, T Alawyah, N W S Suliartini, E Febrianti, Muhidin</i>	
THE EFFECTIVENESS OF COVER CROP AND RHIZOBACTERIA AS AMELIORATION ON EX-NICKEL MINE SOIL SOUTHEAST SULAWESI	916
<i>S Leomo, M Tufaila, R Adawiyah, T C Rakian, Muhidin, S Alam, L Mudi, G A K Sutariati</i>	
MORPHOLOGICAL CHARACTERS AND N UPTAKE OF MINT (MENTHA PIPERITA) WITH THE GROWING MEDIA COMPOSITION TREATMENT	920
<i>Y Hasanah, F E Sitepu, R R Butar Butar</i>	
ONLINE LIBRARY DATABASE FROM NATIONAL CENTER FOR INFORMATION ON BIOTECHNOLOGY (NCBI) REGARDING GANODERMA BONINENSE	926
<i>R Hayati, M Basyuni, D Chalil, Y Bimantara</i>	
UTILIZATION OF TRICHODERMA VIRIDE AS ORGANIC FERTILIZER TO INDUCE THE RESISTANCE OF BANANA SEEDS ON FUSARIUM OXYSPORUM F.SP CUBENSE (FOC)	930
<i>S H Wahyuni, D P Y Nasution</i>	

ANALYSIS OF CHANGES IN MORPHOLOGICAL CHARACTERISTICS OF LEAVES AND STEMS IN SOME SWEET POTATO CULTIVARS (IPOMOEA BATATAS L.) FROM SIMALUNGUN AND DAIRI HIGHLANDS PLANTING IN THE LOWLANDS	936
<i>M Irwan, Rosmayati, D S Hanafiah, N Rahmawati, D Bakti</i>	
CHANGES IN SOME CHARACTERS OF SOYBEAN LEAVES INOCULATED WITH MYCORRHIZA IN SALINITY STRESS.....	942
<i>N Rahmawati, Rosmayati, Delvian, M Basyuni</i>	
GROWTH AND PRODUCTION RESPONSES OF LOCAL SWEET POTATOES (IPOMOEA BATATAS L.) GENOTYPES ON PADDY STRAW BIOCHAR APPLICATION IN THE PADDY FIELDS.....	948
<i>M Y Andika, N Rahmawati, F E T Sitepu</i>	
EFFECT OF BENZYL AMINO PURIN (BAP) AND GIBBERELLIN ACID (GA ₃) TO CHLOROPHYLL AND ANTIOXIDANT ENZYMES OF SOYBEAN (GLYCINE MAX (L) MERILL.) GENOTYPES IN RESPONSE TO INUNDATION CONDITIONS	953
<i>R I Damanik, L D Lumbangaol, N Rahmawati, R Sipayung</i>	
NORMAL DISTRIBUTION OF AGRONOMIC CHARACTERS AND PLANT HERITABILITY OF SOYBEAN F ₂ POPULATION HYBRIDIZATION BETWEEN SALT RESISTANCE GENOTYPE AND ANJASMORO VARIETY.....	959
<i>N Rahmawati, Rosmayati, R P Astari</i>	
EVALUATION OF LAND SUITABILITY ON ARABICA COFFEE PLANTATION BY PARAMETRIC METHOD IN LINTONGNIHUTA DISTRICT	965
<i>P Marbun, Z Nasution, H Hanum, A Karim</i>	
THE GROWTH AND YIELD OF SWEET CORN (ZEA MAYS SACCHARATA STURT.) WITH ANORGANIC AND ORGANO-BIO FERTILIZER	971
<i>R R Lahay, R Sipayung, T Sabrina</i>	
THE EFFECT OF NITROGEN FERTILIZER, ZEOLITE AND FRESH STRAW TO INCREASE TOTAL-N, CATION EXCHANGE CAPACITY (CEC) OF RICE CROP	975
<i>R Wulandari, H Hanum, Y Hasanah</i>	
COMPOSITION AND STRUCTURE COMMUNITY OF ARTHROPODS IN ORGANIC AND CONVENTIONAL ARABICA COFFEE PLANTATION.....	980
<i>Husni, Jauharlina, Saifullah</i>	
APPLICATION OF PHOSPHATE SOLUBILIZING FUNGI AND VARIOUS SOURCES OF P-FERTILIZERS TOWARD P-AVAILABLE AND P NUTRIENT CONTENT OF SOYBEAN (GLYCINE MAX L. MERRILL) IN ANDISOL SOIL	985
<i>N Silitonga, M Sembiring, P Marbun, Rosneli</i>	
THE EFFECT OF PHOSPHATE SOLUBILIZING MICROBES AND CHICKEN MANURE IN INCREASING THE P AVAILABILITY AND GROWTH OF GREEN BEANS (PHASEOLUS RADIATUS L.) ON ANDISOL	991
<i>S R Siswana, M Sembiring, H Hanum, Rosneli</i>	
THE USE OF POLYETHYLENE GLYCOL AS SIMULATING MEDIA OF DROUGHT STRESS ON VIABILITY OF SEEDS VARIETIES OF CACAO (THEOBROMA CACAO L.) ON GERMINATION STADIA	997
<i>R Yuningsih, L A M Siregar, R I M Damanik</i>	

CHOOSING PLUS TREE OF SALAGUNDI (ROUDHOLIA TEYSMANII) AT SALIB KASIH TOURISM AREA	1000
<i>K S Hartini, B Ompusunggu</i>	
THE EFFICACY INDAZIFLAM ON WEED SEEDBANK VERTICALLY ON THE ULTISOL SOIL ON PALM OIL PLANTATIONS	1005
<i>P K Tampubolon, E Purba, Mukhlis</i>	
SEED MORPHOLOGY AND GERMINATION OF MACADAMIA (MACADAMIA INTEGRIFOLIA) FROM NORTH SUMATRA.....	1013
<i>A Susilowati, Y S Kusuma, C R Kholibrina</i>	
CHLOROPHYLL CONTENT AND STOMATAL DENSITY OF SOYBEAN VARIETIES ON TECHNOLOGICAL PACKAGES APPLICATION UNDER DRY LAND CONDITIONS	1018
<i>Y Hasanah, H Hanum, A S Hidayat</i>	
THE INCREASING OF PHOSPHORUS AVAILABILITY AND CORN GROWTH (ZEA MAYS L.) WITH THE APPLICATION OF PHOSPHATE SOLUBILIZING MICROBES AND SOME SOURCES OF ORGANIC MATERIALS ON ANDISOL	1024
<i>Masdariah, M Sembiring, Mukhlis, Rosneli</i>	
PERFORMANCE OF SOME POPULATIONS OF MAIZE (ZEA MAYS L.) ON PEAT SOIL APPLIED SLUDGE AND ASH OF OIL PALM.....	1029
<i>K Lubis, S S Siddik, H Setiado</i>	
CHANGES IN BIOCHEMICAL CHARACTERISTICS IN SHADE SOYBEAN PLANTS	1033
<i>L Mawarni, T Nisa, Karyudi</i>	
RELATIONSHIP PATTERN AND MORPHOLOGICAL CHARACTERIZATION OF BROWN RICE IN MUNTE AND PAYUNG SUBDISTRICT, KARO.....	1038
<i>E S Bayu, W Winarti, R I M Damanik</i>	
GROWTH AND YIELD OF TOMATO (LYCOPERSICUM ESCULANTUM MILL.) AS INFLUENCED BY THE COMBINATION OF LIQUID ORGANIC FERTILIZER CONCENTRATION AND BRANCH PRUNING	1046
<i>L M Mooy, A Hasan, R Onsili</i>	
NATIONAL CENTER FOR BIOTECHNOLOGY INFORMATION (NCBI) DATABASE SEARCH FOR RUBBER PLANT HEVEA BRASILIENSIS.....	1054
<i>M Basyuni, R Hayati, B Pratomo, Lisnawita</i>	
SEQUENCE ANALYSIS OF GANODERMA BONINENSE ISOLATES FROM OIL PALM.....	1059
<i>A Purba, M Basyuni, L A P Putri, D Chalil, R Hayati, D Arifiyanto, I Syahputra</i>	
GERMINATION SEED OF CACAO (THEOBROMA CACAO L.) ON SOME OSMOTIC SOLUTIONS.....	1066
<i>Haryati</i>	
EFFECT OF TRICODERMA AND ORGANIC FERTILIZERS ON VEGETATIF GROWTH OF BLACK PEPPER (PIPER NIGRUM L.) UNDER FIELD CONDITION	1072
<i>N Syam, A Boceng, N Jufri, Suharman</i>	
CHARACTERIZING THE VEGETATIVE AND FRUIT OF LOCAL DWARF BANANA CAVENDISH FROM SE SULAWESI.....	1079
<i>Muhidin, G R Sadimantara, S Leomo, D N Yusuf, T C Rakian</i>	

EFFECT OF SOIL TILLAGE METHODS AND CATTLE FERTILIZER OF COW ON INCREASING SWEET CORN (ZEA MAYS SACCHARATE STURT) PRODUCTION	1084
<i>J Ginting</i>	
EFFECT OF LIQUID ORGANIC FERTILIZER ON THE RICE VARIETIES FIELD PRODUCTION	1091
<i>J Ginting</i>	
FLOWER MORPHOLOGY AND INFLORESCENCE OF ANDALIMAN (ZANTHOXYLUM ACANTHOPODIUM DC.) FROM DAIRI, NORTH SUMATERA	1097
<i>B L Siregar, L A M Siregar, T C Nisa, L A P Putri</i>	
APPLICATION OF FERTILIZER TYPE AND DOSAGE TOWARD BROWN PLANTHOPPER (NILAPARVATA LUGENS STALL.) ATTACK LEVEL ON SEVERAL PADDY (ORYZA SATIVA L.) VARIETIES	1104
<i>A B Tarigan, Marheni, J Ginting</i>	
EFFECT OF K-CARRAGEENAN CONCENTRATION ON PHYSICAL AND MECHANICAL PROPERTIES OF VEGETABLE LEATHER BASED ON KELOR LEAVES (MORINGA OLEIFERA L.)	1112
<i>S Wahyuni, Holilah, Asranudin, M I K Rianse, M S Sadimantara</i>	
THE EFFECT OF SULFUR AND RHIZOBIUM SP APPLICATION TO THE GROWTH AND NODULATION OF MUCUNA BRACTEATA	1120
<i>M Wahyuni, M Sembiring, Wagino, H G Sihite</i>	
PROVISION OF MICORIZA ARBUSCULA IN SOME TYPES OF GRASS TO THE DEGREE OF INFECTION AND PHOSPORUS UPTAKE.....	1126
<i>E Kurniawati, N Diana, Delvian</i>	
PALM OIL PLANTATION ORIENTED AGROSILVOPASTORAL SYSTEM DEVELOPMENT FOR ENHANCING THE ECONOMY	1130
<i>C Hanum</i>	

Author Index