

TRANSACTIONS OF THE JAPANESE
SOCIETY OF IRRIGATION, DRAINAGE
AND RECLAMATION ENGINEERING

No.241

Contents

Research Papers

Return Flow Generating Point on a Hillslope Layered with Traffic Pan	DEB Sanjit Kumar, MIYAZAKI T., MIZOGUCHI M. and SEKI K. ... 1
An Application of LCA Approach to Evaluate Biomass Resources Recycling in Agriculture – An examination on material flow and recycling process in mixed farming of cattle raising and cultivation –	KOBAYASHI H. and YUYAMA Y. ... 13
Real-Time Flood Forecasting Using Self-Organizing Linear Output Network	CHIKAMORI H. and NAGAI A. ... 25
The Actual Condition of the City and the Rural Area Exchange in Stay Type Allotment Gardens – Especially, in case of Kasama Kleingarten –	MAKIYAMA M., FURUYA T. and KITAMURA S. ... 35
A Model Estimation for Reducing Nitrogen Effluent Load from a Watershed including Cow Barn and Forage Field	YOSHIDA M., MURAKAMI T. and FUJIHARA S. ... 45
Animal Path to Invade into a Unit of Paddy Fields in Mountainous Areas – A case study of wild boar invading path in Ryujin-mura, Wakayama Prefecture –	TAKEYAMA E., KUKI Y., MATSUMURA K. and MIYAKE Y. ... 59
Level Difference Reduction between a Farm Drain and a Field Lot for Downscaling a Paddy Field Fish Pass – The form of farm drain suitable for habitat expansion of aquatic life –	ARITA H. ... 67
Maintenance of Ditches Considered from Workers and Defrayers – A case study of Shichikayousui of the Tedori River in Ishikawa Prefecture –	SAKATA N. Y. ... 73
Mechanism of Bearing Capacity for Pile with Multi-Stepped Two Diameters Subjected to Vertical Load	SHODA D., KAWABATA T., UCHIDA K. and IMAI M. ... 79
Tracer Experiments and Parameter Estimation in Horizontally Two-Dimensional Homogeneous Porous Media	INOUE K., MASAKI I., SETSUNE N. and TANAKA T. ... 87
Development of Settlement Prediction Method Considering Secondary Consolidation with Interconnected Consolidation Apparatus	NISHIMURA S. and HIDAKA.T. ... 97

Multi-Objective Optimization of Rainfall-Runoff Models Using the Compromise Programming

.....TANAKAMARU H. and FUJIHARA Y.107

Accumulation of Oxidized Iron in a Drainpipe and Countermeasure to Ensure Drainage Function in an Area of

Mud Flow Deposit from Mt. Tokachi-dake

.....KITAGAWA I., TAKEUCHI H. and KISO S.117

Technical Papers

Relationships between Fish and Amphibian Fauna and Characteristic of Water Zone in Hill-bottom valleys of
Upper Basin of the Kokai River

.....KAKINO W., HUJISAKU M., MIZUTANI M., and GOTO A.123

Effect of Cultivation Methods in a Controlled Mixing Tillage of Plow Layer on Habitat Condition of the genus
Sympetrum

.....JINGUJI H., TASHIRO T., SATO T., TSUYUZAKI H. and KONDO T.133

Consolidation of Farm Lots of Core Tenant Farmers by the Method of Adjustment of User Rights of Farm Plots

.....ISHII A.141

Note

Apparent Contact Angle Effects of Homogeneous Dry Sand on Fingered Flow Growing Under a Constant Rainfall
Condition

.....ANNAKA T. and KAWASHIMA M.149

Notice about photocopying

In order to photocopy any work from this publication, you or your organization must obtain permission from the following organization which has been delegated for copyright for clearance by the copyright owner of this publication.

Except in the USA

Japan Academic Association for Copyright Clearance (JAACC)

41-6 Akasaka 9-chome, Minato-ku, Tokyo 107-0052, Japan

Phone : 81-3-3475-5618 FAX : 81-3-3475-5619 E-mail : kammori@msh.biglobe.ne.jp

In the USA

Copyright Clearance Center, Inc.(CCC)

222 Rosewood Drive, Danvers, MA 01923 USA

Phone : (978)750-8400 FAX : (978)750-4744 www.copyright.com

TRANSACTIONS OF THE JAPANESE
SOCIETY OF IRRIGATION, DRAINAGE
AND RECLAMATION ENGINEERING

No.242

Contents

Research Papers

Grid-based Optimization Model for Allocating Allowable Discharged Total Nitrogen to Point and Nonpoint Sources in Watershed	NAEDA S., KAWACHI T. and ZHANG Qin	1
A Hydrologic Analysis on Inundation in the Mekong Delta, Cambodia	KHEM Sothea, Goto A. and MIZUTANI M.	9
Acoustical Properties of the Falling Water Sound according to Differences in the Downstream Slope Angle of a single weir	GOTOH M., KOBAYASHI H., NAMIHARA A. and TSUNESUMI N.	19
Solid Ratio Dependency of Clayey Soil Erosion during Surface Drainage	SUETSUGI A., SATO T., KANETA Y. and SATO A.	29
Certainty in Estimation of Effluent Solute Load from Small Forested Catchment	TADA A., YOSHIMURA R., TANAKAMARU H. and HATA T.	39
Structuring Sustainable Soil Conservation System taking into account of Trapping Efficiency of Soil and Nutrient Losses by Grass Buffer Strips	YAMAMOTO N. and MIHARA M.	49
Flow Analysis in Pool and Weir Type Fishway Using VOF Method in Generalized Curvilinear Coordinates	NAMIHARA A., GOTO M. and KOBAYASHI H.	57
Effects of Iron Oxide on Settling Pattern and Sediment Volume of High-Swelling Smectite	KONDO F., TOYOMITSU Y. and MUTO I.	67
A Comparative Analysis of Service Charge Management in Irrigation Projects in Ghana	SATO K. and SATOH M.	75
Evaluating Crack Propagation in a Cohesive Soil using <i>J</i> integral	NISHIMURA S.	85
Estimation of Vapor Pressure near the Ground from GPS-derived Precipitable Water Vapor	MORI M., MIMORI T., HIRAMATSU K. and SHIKASHO S.	91

Technical Papers

Relationship between Diversity of Aquatic Animals and Environmental Factors in Drainage Canals at a Paddy-field Area in a Summer Season

..... NISHIMURA K., TAKEDA I., FUKUSHIMA A. and SOMURA H. 99

Fractionation of Nitrogen Isotopes during Uptake by *Artemisia princeps* (Japanese mugwort)

..... MORI A., MIZUTANI M. and NAKAMURA M. 107

Effect of the Cost Distance Reduction for Evacuation after Disasters using the Paddy Fields in a Rural Area

..... SAMURA I., OKAZAWA H., SHIMADA S. and NAKAMURA Y. 115

Notes

A Method of Classifying Households Based on Their Attitude toward Regional Maintenance Plans of Agricultural Canal

..... AIZAKI H. 123

Solid-Liquid Separation of Methane Fermented Liquid by Freezing and Melting

..... YAMAOKA M., YUYAMA Y. and NAKAMURA M. 125

Notice about photocopying

In order to photocopy any work from this publication, you or your organization must obtain permission from the following organization which has been delegated for copyright for clearance by the copyright owner of this publication.

Except in the USA

Japan Academic Association for Copyright Clearance (JAACC)

41-6 Akasaka 9-chome, Minato-ku, Tokyo 107-0052, Japan

Phone : 81-3-3475-5618 FAX : 81-3-3475-5619 E-mail : kammori@msh.biglobe.ne.jp

In the USA

Copyright Clearance Center, Inc.(CCC)

222 Rosewood Drive, Danvers, MA 01923 USA

Phone : (978)750-8400 FAX : (978)750-4744 www.copyright.com

TRANSACTIONS OF THE JAPANESE
SOCIETY OF IRRIGATION, DRAINAGE
AND RECLAMATION ENGINEERING
No.243

Contents

Research Papers

Removal Performance for Nitrogen and Phosphate Using a Purification Material Consisted of Zeolitic Tuff and Waste Cement Slurry	K. UCHIDA, Y. KAWAMOTO, S.NAKAMURA and K.NISHITA	1
The Reduction Technique of Cadmium Uptake by Rice using Flood-water Management – Assessment of mid-drainage and organic fertilizer –	AODA T., KOBAYASHI Y. and INABA K.	9
Method for Evaluating Flood Mitigation Value of Irrigation Ponds With Use of Delay Rate	TAKESHITA S., BESSI K., MITSUNO T. AND NAKAMURA K.	15
Design Method to Reinforce Old Small Earth Dam Embankment Using Cement-mixed Muddy Soil	TANI S. and FUKUSHIMA S.	25
Water Purification Characteristic of Native Plant Species whose Height does not Obstruct the View in Planted Canal – A cases study of <i>Carex dispalata</i> , <i>Carex thunbergii</i> and <i>Phalaris arundinacea</i> –	TSUJI M., YAMADA K. and HIRATSUKA A.	33
Applicability of The Larch Wood Chip as Filter Material for Pipe Drain	KITAGAWA I. and YOKOI Y.	41
Numerical Investigation for Piping Failure of Embankments Using Cell Automaton	KOBAYASHI N., YOSHITAKE Y. and ANDO A.	47
Subsurface Irrigation with Saline Water at Two Depths in a Sandy Soil	YAMAZAKI S., INOUYE M., YAMAMOTO T. and MORI Y.	57
Estimation Model of Lake Level in Lake Ikeda – Hydrologic budget of a lake as a water resources –	ITO Y., MOMII K., NAKAGAWA K. and TAKAGI A.	65
Soil Conditions and Durability Suitable for Digging Underdrain by Trencher Type Excavator without Envelope	KITAGAWA I., TAKEUCHI H. and YOKOI Y.	73
Effect of temperature and light on egg hatching of <i>Sympetrum frequens</i>	JINGUJI H., TSUYUZAKI H. and SATO T.	79
Permeability and Nitrogen Removal Ability of Sludge Layer – Consideration for Purification of Wastewater Contaminated with Nitrate Nitrogen –	YAMAOKA M., SHINOGI Y. and UEDA T.	85

Technical Papers

Recent Land Use Change and Watershed Environmental Conservation in Cidanau Watershed, Indonesia	YOSHINO K. and ISHIOKA Y. ... 95
Decaying state of "the Pore System Formed by Roots" and its Classification in the Middle & Lower Pleistocene Series in Volcanic Ash Soil Formation in the Northern Region of Iwate Prefecture	SATO K., TOKUNAGA K., SASAKI C. and SASE T. ... 101
Behavior of Soil Water Consumption and Capillary Supply in the Orchard Reclaimed	TANIGAWA T. and YABE K. ... 113
Changing of Carbon and Nitrogen Stable Isotope Ratios of Terrestrial Organic Matter Supplied from Village Forests to <i>Yatsuda</i> Canals	MORI A., MIZUTANI M. and MATSUZAWA S. ... 121

Notice about photocopying

In order to photocopy any work from this publication, you or your organization must obtain permission from the following organization which has been delegated for copyright for clearance by the copyright owner of this publication.

Except in the USA

Japan Academic Association for Copyright Clearance (JAACC)
41-6 Akasaka 9-chome, Minato-ku, Tokyo 107-0052, Japan
Phone : 81-3-3475-5618 FAX : 81-3-3475-5619 E-mail : kammori@msh.biglobe.ne.jp

In the USA

Copyright Clearance Center, Inc.(CCC)
222 Rosewood Drive, Danvers, MA 01923 USA
Phone : (978)750-8400 FAX : (978)750-4744 www.copyright.com

TRANSACTIONS OF THE JAPANESE SOCIETY OF IRRIGATION, DRAINAGE AND RECLAMATION ENGINEERING

No.244

Research Papers

Contents

Study on Salinity Intrusion Characteristics in Mekong Northeast Distributaries	KWON Sungill, KUBO N. and Hoang Ngan Giang	1
The Development and Challenges of Water Markets for Irrigation – The case of New South Wales in Australia –	KINOSHITA Y. and Lin CRASE	11
Study on Characteristics and Design · Operational Considerations on BOD Removal in Rural Sewerage Facilities with Intermittent Aerobic Suspended - Growth Processes	NAKANO T.	21
Development of Distributed Rainfall-Runoff Model Incorporating Soil Moisture Model	ALAM Abul Hasan Md. Badiul, TAKEUCHI J. and KAWACHI T.	29
Effect of Water Management and Tillage Practices on Rice Yield, Water Use Efficiency and Physical Properties of Paddy Soil in the Nile Delta	ABOU EL HASSAN Waleed, KITAMURA Y., INOSAKO K., SHIMIZU K. and NISHIYAMA S.	39
Effects of an Artificial Pond Connected to a Small River and Paddy Field-Ditches on Fish Fauna – Case study on the Yagawa River system, Tochigi Pref., Japan –	SUGIHARA C. and MIZUTANI M.	49
Fundamental Study on the Utilization of Floatable Phosphorous Adsorption Concrete as a Water Environment Restoration Material	ABE K., SATO S., KUWABARA T. and NONAKA T.	59
Water Management in Unimproved Paddy Fields Connected with Dual-purpose-channel and Those State of Use by Fishes	MINAGAWA A., NISHIDA K., FUJII C. and SENGA Y.	65
Mechanism of Phosphorus Removal Capacity Improvement at High Temperatures Based on Chemical Composition Model of Electric Arc Furnace Oxidizing Slag	KONDO M., KAJISA T. and ISHIGURO S.	73
Effect of Halloysite in Bottom Mud on the Appearance of Milky Water in Lake Kasumigaura	KARUBE J. and TAMURA A.	81
Characteristics of the Treated Wastewater of Rural Sewerage by Oxidation Ditch Process for the Agricultural Use	HARUTA S. and SAKURAI Y.	87
Influences of Treated Wastewater on Surface Water Quality of an Irrigation Pond and the Paddy Field Irrigated with the Surface Water	SAKURAI Y. and HARUTA S.	97
Water Quality Property in the Irrigation Pond Supplied with Treated Wastewater of Rural Sewerage	HARUTA S. and SAKURAI Y.	107
Effects of Supplying Rural Sewerage Treated Wastewater into Irrigation Pond to Pond's Bottom Water Quality	HARUTA S. and SAKURAI Y.	117
Suitable Paddy Field System for Deep Ponding Cultivation of Rice – Study based on a survey of farmers and land improvement districts in a deep ponding water management implementation area –	ARITA H., KUMAGAI K. and MISAWA S.	125
Drip Irrigation Schedules with Saline Water for Sorghum under Greenhouse Condition	OULD AHMED Bouya Ahmed, YAMAMOTO T., INOUE M. and ANYOJI H.	133
Monitoring of Soil Erosion Using Digital Camera Under Simulated Rainfall	MORITANI S., YAMAMOTO T., Andry Henintsoa and MURAKI H.	143
Research on Migration and Dispersal Range of Freshwater Fish that Reproduce in Temporary Water Area – Case study of Mukojima-channel in Hino-city and Fuchu-channel in Kunitachi-city, Tokyo –	NISHIDA K., FUJII C., MINAGAWA A. and SENGA Y.	151

Land Consolidation Project for Huge Rice Paddy Plots in Case of the Community Farming System	ISHII A. ... 165
Burst speed of Japanese Dace (<i>Tribolodon hakonensis</i>) with a Stamina Tunnel Using Natural River Down-flow Water	IZUMI M., YATAYA K., AZUMA N. and KUDO A. ... 171
Verification of Effectiveness for Lightweight Thrust Restraint Method of Buried Bend and Mechanism of Lateral Resistance by Model Tests	KAWABATA T., SAWADA Y., MOHRI Y. and UCHIDA K. ... 179
Analysis of Affecting Factors on Water Quality in Creeks of the Shiroishi Plain, Kyushu, Japan	OHGUSHI K., HIMENO Y., YUYAMA Y. and NAKANO Y. ... 187
Confidence Interval in LQ Regression – In the estimation of effluent soute flux from a small forested catchment –	TADA A., TANAKAMARU H. and HATA T. ... 197
Real-time Flood Forecasting Considering Flood Routing of Upstream Dam Release Flow	LI Hongyu, NAGAI A. and CHIKAMORI H. ... 207

Technical Papers

Technical Evaluation of the Borehole Project in Mahajanga Region of Madagascar and Its Effect on Rural Development	RAVOLONANTENAINA Andry Henintsoa, RAKOTONDRAINIBE Jean Herivel, YAMAMOTO T., ENEJI Anthony Egrinya, and YASUDA H. ... 215
The Effects of Using Carbon Fiber as Contact Medium on Biofilm Treatment	SHIBATA T., TAKAHASHI T., TANAKA T. and OZAKI M. ... 227
Effect of Salinity and Sodicity on Water Retention of Montmorillonite	Muhammad Munir AHMAD* and KARUBE J. ... 237
Railway Noise Impact on Residents Living in Small Towns – In case of Gomen-Nahari Line, Kochi Prefecture –	SHAO Xiaoqing, MATSUMOTO S. and SHINO K. ... 243
The Durability and Maintenance of Fascine Bank Protection Work in the Ecological Canal – A case study at Tsukayama district in Niigata prefecture –	NAKAMURA T., YANO K., WATANABE K. and MATUNO H. ... 251
Nitrogen Removal in an Experimental Paddy Plot with Gravity Flow	KATO T., SHIKAZAKI T., KURODA H. and NAKASONE H. ... 257
Fluctuations of the Carbon Dioxide Concentration in the Soil Air influenced by Hydrological Characteristics in a Snowy Mountain Area	TSUKADA K., SUGIYAMA H., WHITAKER Andrew C and ZHANG Yu ... 263
Comparison of Farmers' and Project-Promotion Members' Perception and Evaluation of an Upland Irrigation Project – A case study of Nansatsu district in Kagoshima –	KADOMATSU T., MOMII K., HIYAMA H. and SHOJI J. ... 271

Notice about photocopying

In order to photocopy any work from this publication, you or your organization must obtain permission from the following organization which has been delegated for copyright for clearance by the copyright owner of this publication.

Except in the USA

Japan Academic Association for Copyright Clearance (JAACC)
41-6 Akasaka 9-chome, Minato-ku, Tokyo 107-0052, Japan
Phone : 81-3-3475-5618 FAX : 81-3-3475-5619 E-mail : kammori@msh.biglobe.ne.jp

In the USA

Copyright Clearance Center, Inc.(CCC)
222 Rosewood Drive, Danvers, MA 01923 USA
Phone : (978)750-8400 FAX : (978)750-4744 www.copyright.com

TRANSACTIONS OF THE JAPANESE
SOCIETY OF IRRIGATION, DRAINAGE
AND RECLAMATION ENGINEERING
No.245

Contents

Research Papers

Influence of Sediment Flushing from Dam on Growth of Rice	..... Hori M., Tanonaka A., Wakabayashi H. and Kojima T. 1
Analysis of Water Requirement Rate in Tilled and No-puddled Paddy Plots under Direct Seeding Culture - A case study in Hohonji District, Ibaraki Prefecture -	..... Taniguchi T. and Satoh M. 9
Improvement of a Sub-irrigation System using Unglazed Porous Pottery Tube - Practicality of intermittent irrigation and effect of root restriction seat -	..... IWAMA K., KANEKI R., TANIGAWA T. and YABE K. 19
Influence of Porous Materials on Water Supply Characteristic of Sub-irrigation Method	..... IWAMA K., TANIGAWA T., KANEKI R. and YABE K. 25
Nitrogen Removal Capability in Wetland Soils under Light Condition	..... HIRANO M., KURODA H., KATO T. and NAKASONE H. 31
Reduction of Murky Water Load by Cyclic Irrigation	..... HAMA T., NAKAMURA K. and MITSUNO T. 39
Colloid Filtration through Glass Beads and Kanuma Soil: A Study Based on Electrokinetic Measurement	..... YAMASHITA Y. and ADACHI Y. 47
Ascending Fishes and Hydraulic Characteristics of the Full-cross-sectional Overflow Stepped-pool Type Fishway in the Iwaki River Diversion Weir of the Iwaki River	..... IZUMI M., ITO R., YATAYA K. and AZUMA N. 55
Flocculation Mechanisms of Colloidal Particles with Polyelectrolytes - Bridging vs. Charge Neutralization -	..... AOKI K. and ADACHI Y. 65
Recharge Area of Distributed Springs in Kushiro Wetland Estimated from Hydrogen and Oxygen Stable Isotope Ratios and Tritium Concentration	..... TSUCHIHARA T., II H., ISHIDA S. and IMAIZUMI M. 73

Technical Papers

An Organizational Structure for Effective Farmer Participatory Irrigation Management in Irrigation Projects in Ghana SATO M. and SATOH M. 85
--	------------------------------------

Fundamental Study on Thermal Conduction Analysis of Asphalt Pavement in Snowy and Cold Region	..... TAKEUCHI Y., OKAZAWA H., EMUKAI T., BABA R. and MAKI T. ... 95
Watertight Performance and Durability of Developed Joint Repair Method of Concrete Canal	..... ISHIGAMI A., NATSUKA I., TOKASHIKI M. and MORI M. ... 101

Critical Review

Estimation Method of Effluent Load from Catchment and its Uncertainty TADA A., TANAKAMARU H. and HATA T. ... 109
---	--

Notes

Influence of Upstream Migration Fishes through Newly Built Fish-ways on Fish Fauna in a Irrigation Stream	..... MORIYAMA T., FUJISAKU M., MIZUTANI M. and GOTO A. ... 123
Reducing of Methane Fermented Liquid Supernatant by Vacuum Distillation	..... YAMAOKA M., YUYAMA Y. and NAKAMURA M. ... 125

Notice about photocopying

In order to photocopy any work from this publication, you or your organization must obtain permission from the following organization which has been delegated for copyright for clearance by the copyright owner of this publication.

Except in the USA

Japan Academic Association for Copyright Clearance (JAACC)
41-6 Akasaka 9-chome, Minato-ku, Tokyo 107-0052, Japan
Phone : 81-3-3475-5618 FAX : 81-3-3475-5619 E-mail : kammori@msh.biglobe.ne.jp

In the USA

Copyright Clearance Center, Inc.(CCC)
222 Rosewood Drive, Danvers, MA 01923 USA
Phone : (978)750-8400 FAX : (978)750-4744 www.copyright.com

TRANSACTIONS OF THE JAPANESE
SOCIETY OF IRRIGATION, DRAINAGE
AND RECLAMATION ENGINEERING
No.246

Contents

Research Papers

Influence of Environmental Factors on Fish Fauna Distribution in Hill-bottom Valleys – Case study of the upper stream of the Kokai River –	KAKINO W., MIZUTANI M., FUJISAKU M., and GOTO A. ... 1
Long Term Strength Development of Massive Concrete	HATTORI K., SATO S., OGATA H. and NONAKA T. ... 9
Impact of Irrigation Water Stability on On-farm Water Distribution in a Paddy Field	TANIGUCHI T. and SATOH M. ... 17
Consideration of the Estimating Method of Crack Depth of Concrete by Ultrasonic Pulse Method	OGATA H., HATTORI K. and HIRASHI T. ... 25
Analysis of Zero Flux Plane Behavior under Periodical Water Supply	KHALIL Magdi, SEKI K., MIYAZAKI T., MIZOGUCHI M. and SAKAI M. ... 33
Leachability of Heavy Metals and Soluble Ions in the Incineration Ash by Serial Batch Test	YAMAOKA S., MORISHITA T., OHTSUBO M., HIGASHI T. and HAGIO T. ... 41
Compaction Control in Paddy Field Consolidation for Information Technology	OSARI H. and ONODERA T. ... 49
Economic Evaluation of Food Security Benefits from Farmlands	TERADA K. and YOSHIDA K. ... 57
Evaluation of Fracture Mechanics Parameters of Dam Concrete	ISHIGURO S. ... 63
Classification and Investigation of Applicability of Biomass for Producing Fertilizer Nutrients Adjusted Compost	NAKAMURA M. and YUYAMA Y. ... 73
Water Budget and Mass Balance in Small Ponds – Research study on small farm pond and regulation pond –	TADA A., KUDARA M., TANAKAMARU H. and HATA T. ... 83
Development of an Integrated Environment for Particle Methods to Analyze Rapidly Varied Open Channel Flows with Large Deformation of Free Surfaces	TANAKA Y., SHIMA T., MUKAI A., TARUYA H. and NAKA T. ... 95
Characteristic of Autogeneous Shrinkage of the Dam Concrete that used the Coarse Aggregate of the Full Size	OGATA H., HATTORI K., NATSUKA I., ASAOKAWA T. and AOYAMA S. ... 103
Periodic Variability of Precipitation Characteristics in the Region of Niigata Prefecture	ZHANG Yu, TANAKA K., SUGIYAMA H. and WHITAKER Andrew C. ... 115

On Prediction of Compression Strength for Porous Concretes	..... ASANO I., KOHGO Y. and HAYASHIDA Y. ... 123
A Proposed Effective Management System for Non-cultivated Paddy Fields	
– Based on a survey on the feature of fallow paddy fields' maintenance of Niigata Prefecture, Japan –	..... ARITA H., YAMAMOTO M. and ENDO K. ... 131
Short-term Prediction of Dissolved Oxygen in Eutrophic Lake by Local Approximation Method Incorporated with Wavelet Analysis	..... HARADA M., FUKUDA M., SAI K., YOSHIDA I., HIRAMATSU K. and MORI M. ... 139
Numerical Flow Modeling over Semi-Spherical Obstructions in a Series	
– Toward a numerical modeling of nature-like fishways embedded with stones –	..... FUJIHARA M. and CHHATKULI Subas ... 151
Fertilizer Efficiency and Nitrogen Behavior after Application of Rural Sewage Sludge-rice Husk Compost to <i>Brassica rapa</i> var. <i>peruviridis</i>	..... NAKAMURA M., MORI A. and YUYAMA Y. ... 161

Technical Papers

Use of Visual Images for the Disclosure of Cultivation History Information, and the Effect of the Information on Producers and Consumers	
– Research on food safety and the use of traceability information –	..... KATO K. and KATAYAMA H. ... 169
Management and Conservation of Paddy Fields in Hilly and Mountainous Area in Case of the Community Farming System with a Full-time Farm Worker	..... ISHII A. and SAKUMA T. ... 175
Support Systems for Sustainable Conservation of Rehabilitated Rice Terraces in Maruyama-Senmaida	..... ISHII A. and SAKUMA T. ... 181
Flow Analysis and Occurrence Condition of Streaming Flow in Pool and Weir Type Fishway with Walls of Inclined Top	..... NAMIHIRA A., GOTO M. and TSUNESUMI N. ... 189
The Background and Present Prospects of Irrigation Modernization	..... MATSUSHIMA S. ... 197

Notice about photocopying

In order to photocopy any work from this publication, you or your organization must obtain permission from the following organization which has been delegated for copyright for clearance by the copyright owner of this publication.

Except in the USA

Japan Academic Association for Copyright Clearance (JAACC)
41-6 Akasaka 9-chome, Minato-ku, Tokyo 107-0052, Japan
Phone : 81-3-3475-5618 FAX : 81-3-3475-5619 E-mail : kammori@msh.biglobe.ne.jp

In the USA

Copyiright Clearance Center, Inc.(CCC)
222 Rosewood Drive, Danvers, MA 01923 USA
Phone : (978)750-8400 FAX : (978)750-4744 www.copyright.com