

IRRIGATION, DRAINAGE  
AND RURAL ENGINEERING  
JOURNAL  
No.277

---

## Contents

### **Research Papers**

Evaluation of Kerosene Absorbing Ability for Peat Moss Using a Column Test	.....	OHTSUBO M., KONISHI K., MADAMA H., HIGASHI T., KANAYAMA M. and TAKADA Y. .... 1
Modeling of Basin-wide Water Circulation Incorporating Water Allocation and Management Schemes in Large Irrigated Paddy Areas	.....	YOSHIDA T., MASUMOTO T., KUDO R., TANIGUCHI T. and HORIKAWA N. .... 9
Development of a Snowmelt Model for Basins in Warm Climates and its Integration into a Distributed Water Circulation Model	.....	YOSHIDA T., MASUMOTO T., HORIKAWA N. and KUDO R. .... 21
Development of Quantitative Impact Assessment Method of Climate Change on Agricultural Water Use in Irrigation-Dominant Basins	.....	KUDO R., MASUMOTO T., YOSHIDA T. and HORIKAWA N. .... 31
Optimization of Plant Operation Considering a Dairy Load Variation of Biomethane Production Plant	.....	OHKUBO T., HIDESHIMA Y., SHUDO Y. and OHMIYA K. .... 43
Separation Method of Cement Paste Data from EPMA Data	.....	MORI M., TOKASHIKI M., MORI T. and NAKAYA T. .... 51
Restoration and Location Characteristics of Unrestored Plots of Koi Breeding Ponds after the Mid-Niigata Prefecture Earthquake in 2004	.....	SAKATA Y., YOSHIKAWA N. and MISAWA S. .... 59

### **Technical Papers**

Application of TDR to Measurement of Average Water Level in Periodic Wave	.....	ITO Y., KORIYAMA M., MIYAMOTO H., SEGUCHI M. and CHIKUSHI J. .... 65
Impact of On-Farm Pond on Agricultural Diversification in Rainfed Agricultural Area in Northeast Thailand	.....	FUJII H., SUPHANCHAIMAT Nongluck, ODA M. and FUJIHARA Y. .... 73

IRRIGATION, DRAINAGE  
AND RURAL ENGINEERING  
JOURNAL  
No.278

---

## Contents

### Research Papers

Effect of the Presence or Absence of Influent Water on the Heat Budget and Temperature Environment of a Reservoir — Case study of Hoonoki reservoir —	KURASHIMA E. and HARASHINA K. ... 1
Development of Diagnosis System of Irrigation Tunnel under Water Servicing	MORI M., MORI T., TOKASHIKI M., NAKAYA T., FUJIWARA T. and SAITO Y. ... 9
Effects of the Use of Drainage Canal as Fish Ladder on the Management of Irrigation and Drainage Water in a Paddy Plot — A case study of lowland paddy fields in Hikone City, Shiga Prefecture —	NAKAMURA K., HORINO H. and NAKAGIRI T. ... 19
Study on Characteristics of Functional Overlaying Sand Using Waste Roof-tile	FUKUOKA T., HYODO M., SATO S. and NONAKA T. ... 31
Changes in Rainfall-Runoff Characteristics of Small Watersheds due to Cultivation Conditions of Hilly Paddies	YOSHIDA T., MASUMOTO T. and HORIKAWA N. ... 39
A Study on Utilization of Paper Sludge as Admixtures for Air Mortar	ABE T. and KITATSUJI M. ... 47
The Colloidal Stability of Imogolite and Their Breakthrough Behavior in Toyoura Sand Packed Column	SHIMURA T., SHIRATORI K. and ADACHI Y. ... 57
Immobilization of Arsenic in Natural Soils by Gypsum Powder, Mechanistic Interpretations	TSUNEMATSU S., UEMATSU E., SAITO K. and TAMURA H. ... 63
Estimation of Gas Fluxes Using the Energy Balance Flux Ratio Method	ODANI H., KANEKI R., SUDO M., IWAMA K. and MINAGAWA A. ... 73
Predatory Behavior and Foraging Site Selection of the Grey-Headed Lapwing in Paddy Field Area	KANESHIMA K., SENGE M., ITOU K., OHNISHI T. and HIRAMATSU K. ... 81
Estimation of Return Level of Daily Rainfall Using Peak Over Threshold Theory	CHIKAMORI H. and NAGAI A. ... 89
Movement of Tail Beats and Swimming Speed of Fingerling Masu Salmon ( <i>Oncorhynchus masou masou</i> ) Using River Water	IZUMI M., KIKUCHI M., KATO K. and AZUMA N. ... 99
A Proposal: Spatial Formation through Reconstruction of Farmland and Agricultural Facilities Damaged by Large-scale Earthquake	ARITA H. and HASHIMOTO S. ... 109

---

## Technical Papers



## Note

- ## Influence of Water Depth Condition in Winter Ponding Paddy Fields on the Survival Rate of Overwintering Fishes ..... TAKEMURA T., WATABE K., MORI A., KOIZUMI N., MINETA T. and NISHIDA K. 153

IRRIGATION, DRAINAGE  
AND RURAL ENGINEERING  
JOURNAL  
No.279

---

## Contents

### **Research Papers**

Life History of <i>Tanakia lanceolata</i> in Irrigation Channel Network of the Iwaki River Basin in Northern Japan	SATO M., KUMAGAI M. and AZUMA N. ... 1
Influence of Difference in Cadmium Polluted Thickness on the Cadmium Concentration, the Growth and the Yield of Rice Plants in Cadmium Polluted Paddy Fields	SASAKI C., MATSUYAMA N., KUBOTA M., NODA K. and KADONO M. ... 13
Study on Characteristics and Design, Operational Consideration on Nitrogen Removal in Rural Sewerage Facilities with Intermittent Aerobic Suspended-Growth Processes	NAKANO T. and YASUMOTO J. ... 21
A Simple Model for Estimating Phreatic Surface Location and Seepage Discharge through a Small Homogeneous Earth Dam on Inclined Foundation	YOSHITAKE Y., FUJIHARA M., KOBAYASHI N., NISHIYAMA T. and IZUMI T. ... 29
Salt Accumulation above Shallow Ground Water Table at Songnen Plain, Heilongjian, China	NISHIMURA T., ISHIHAMA Y., SEKI K., IMOTO H., MIZOGUCHI M. and MIYAZAKI T. ... 35
Development of Automatic Counting System for Loaches Using Paddy Field Fishways	SAITO K., MISAWA S., YOSHIKAWA N., SATO T., GONDA Y. and MIYAZU S. ... 45
Farmland Resource Preservation through Planned and Institutional Farmland Consolidation	ARITA H. ... 51

### **Technical Papers**

An Analysis of Introduction of Public Irrigation Management System and Its Impacts in Korea	SHIN Moono, SATOH M., KIM Taicheol and ISHII A. ... 57
Causes and Effects of the Payment for Community-Collaborative Activities to Conserve Land, Water Resources and the Rural Environment — An analysis by causal modeling based on municipality data —	SAITO M., TANAKA R. and KOSAKA K. ... 65

### **Note**

Prototype of Reasonable Water-level Logger for Ecosystem Monitoring in Rural Area	WATABE K., MORI A., KOIZUMI N. and TAKEMURA T. ... 71
---	---

---

IRRIGATION, DRAINAGE  
AND RURAL ENGINEERING  
JOURNAL  
No.280

---

## Contents

### **Research Papers**

Evaluation of the Migration Environment of Ayu under the Different Flow Conditions — A case of the Eino weir in the Hatto River, Sendai River system —	..... TAKAHASHI N., KITAMURA Y. and SHIMIZU K. .... 1
Study on Measurement Method of Surface Roughness of Concrete Canal by Three Dimensional Image Processing	..... OTAGAKI K., HASEGAWA Y., SUZUKI T., MATSUMOTO S. and SATO S. .... 7
A Model for Estimating Capital Stocks of Main Irrigation and Drainage Facilities with Consideration of Stock-Management Measures	..... KUNIMITSU Y. and NAKATA S. .... 15
Habitat Use of Vegetation Area and Different Depth by Fishes and Freshwater Prawn in a Farm Pond	..... TSUNODA H., TAKIGUCHI A., YAMAMOTO Y. and MITSUO Y. .... 23

### **Technical Papers**

Study on the Behavior of Crack and Repression Effects on Crack Stretching of Repair Material for Agricultural Concrete Canal	..... HASEGAWA Y., SUGIYAMA M., SATO S. and NONAKA T. .... 29
Estimating the Annual Changes in Soil Moisture Content and Drought Frequency in Fields Using a Tank Model — The case of pasture lands in Okunakayama Highland, Iwate Prefecture —	..... ARIMORI M., ENDO Y. and HAYASHI H. .... 37
A Study on Management by Diverse Participants and the System of Collecting Levy from Non-farmers in Agricultural Water Facilities	..... KATSUYAMA T., UCHIMURA M. and TARUYA H. .... 45
Enhancement of a Model for Planning Transportation and Application of Digested Slurry to Farmlands — Utilization of plural vacuum trucks and intermediate tanks —	..... YAMAOKA M., YUYAMA Y., NAKAMURA M. and ORITATE F. .... 53

### **Critical Review**

Current Status and Issues Found in Studies of Fishes in Rice Paddy Irrigation Networks — Necessity of evaluation for conservation and improvement of habitat —	..... TAKEMURA T., MIZUTANI M., MORI A., KOIZUMI N., WATABE K. and NISHIDA K. .... 63
---	---

IRRIGATION, DRAINAGE  
AND RURAL ENGINEERING  
JOURNAL  
No.281

---

## Contents

### **Research Papers**

Effect of Road Inclination on the Choice of the Most Fuel-saving Route for the Short Distance Food Transport	NAGASHIMA M. and NAGANO T. ... 1
Method to Distinguish Land Cover of Paddy Fields from High Resolution Satellite Data	FUKUMOTO M. and YOSHISAKO H. ... 9
Measurement and Evaluation of the Flood Mitigation Capacity in Dry Terrace Field	TSUJI H., SHIOZAWA S. and NISHIDA K. ... 17
Coupling Scheme of Inundation Processes into a Basin-wide Hydrological Model for Low-lying Rivers	YOSHIDA T., MASUMOTO T., HORIKAWA N., AKUTSU H., Vinlam BOUNLOM and Boulaythong KOUMPHONH ... 27
Velocity of Sand Particles Transported by Upward Seepage Flow during Sand Boil	FUJISAWA K., NISHIMURA S., NAKATANI A. and MURAKAMI A. ... 35
Oxidation Capability of Intermittently Loaded Vertical Flow Constructed Wetlands Set in Planted Canal Circulation Water	TSUJI M., YAMADA K., HIRATSUKA A. and KIKUCHI F. ... 43
Risk Evaluation in Neighboring Work Using Data Assimilation	WAKABAYASHI T., MURAKAMI A. and SHUKU T. ... 51
Influence of Particle Sizes of Ground Materials on Seepage Failure of Foundations under Weirs	OKAJIMA K., HIGASHITANI K. and ISHIGURO S. ... 63

### **Technical Papers**

An Attempt to Create Depths for Fish Wintering in an Agricultural Canal during a Non-irrigation Period	MINAGAWA A., TAKAKI K., SUDO M., ODANI H., IWAMA K. and KANEKI R. ... 71
Analyzing the Structure of Non-farmer Participation in Activities to Maintain Irrigation/Drainage Canals — Focus on factors to raise the level of participation by external approaches —	ONIMARU T. ... 81

IRRIGATION, DRAINAGE  
AND RURAL ENGINEERING  
JOURNAL  
No.282

---

## Contents

### **Research Papers**

The Effects of Grass Cutting at Paddy Levee on Food Habit of <i>Fejervarya limnocharis</i>	..... ITO K., TORII M. and SENGE M. .... 1
Inverse Modeling for Variably Saturated Water Flow Coupled with Heat Transport in Field Soil	..... IZUMI T., FUJIHARA M., TAKEUCHI J. and KAWACHI T. .... 7
Development and Application of Evaluation Model for Interior Flood Damage Mitigation Effect of a Paddy Field Dam	..... MIYAZU S., YOSHIKAWA N., ABE S., MISAWA S. and YASUDA H. .... 15
Expansion of Farmland Heavy Metal Contamination in Taiwan	
— Identification of societal background of the contamination and limits of existing countermeasures —	
..... HUANG Wan-hui, HASHIMOTO S., HOSHINO S. and KUKI Y. .... 25	
Analysis of Return Flow of Irrigation Water at Test Paddy in the Tedori River Alluvial Fan Area	..... YOSHIDA M., MARUYAMA T., NOTO F., TAKASE K. and TAKIMOTO H. .... 35
Effects of Intermittent Irrigation with Different Intervals on Greenhouse Gas Emissions and Rice Yield	..... KUDO Y., NOBORIO K., KATO T. and SHIMOOZONO N. .... 43
Moving Distance of <i>Nipponocypris sieboldii</i> , the Host Fish Species of Unionid Mussels	..... KONDO M., ITO K. and SENGE M. .... 51
Effect of Small-Scale ‘Crashing and Compaction Method’ on Controlling Water Percolation in Paddy Fields with Volcanic Ash Soil	..... YOSHIDA S., KISAKA Y., NISHIDA K. and SHIOZAWA S. .... 59

### **Technical Papers**

Reducing Dry Andisol Paddy Field Permeability of Direct-seeding Rice Cultivation Using Plowing and Compaction	..... KANMURI H., OTANI R. and CHIBA K. .... 69
Method to Predict Soil Cd Concentration Changes by Phytoextraction with <i>Arabidopsis halleri</i> ssp. <i>gummifera</i> in a Cd-contaminated Andisol Field	..... KAMEYAMA K., TANI S., SHIONO T. and MIYAMOTO T. .... 79
Stability Indices of Refuse Landfill in Tokyo Port	..... MORI H. .... 85
Radioactive Cesium Decontamination and Strategic Farmland Resource Conservation	..... ARITA H., HASHIMOTO S., YOSHIKAWA N., HARADA N., YASUTAKA T., NONAKA M., IWASAKI Y. and MIYAZU S. .... 91