



2008  
VOL-76

社団法人 農業農村工学会

1

JOURNAL OF  
THE JAPANESE SOCIETY OF  
IRRIGATION, DRAINAGE AND  
RURAL ENGINEERING

Feature Section : Measures and Technologies for Protecting Irrigation System against Huge Earthquakes—Part I : General Concepts and Measures—

Evaluation of Quakeproof Performance for Irrigation and Drainage Canals, Based on Damages due to Large-scale Earthquakes Occurred in the Past

*MORI Takehisa, MORI Mitsuhiro, TOKASHIKI Masaru and NAKAYA Tetsuo*.....3

Earthquake Disaster Mitigation Project in Japan Water Agency

*HOSOI Kazuo*.....9

Performance Based Design of Fill Dams for Earthquake

*TANI Shigeru*.....13

Planning of Antiseismic Measures for Existing Land Improvement Facilities in Osaka Prefecture

*NAKANO Chiharu and YAMADA Rikizo*.....17

Papers

The Analysis Methods of Salt Water Intrusion and the Field Test for Dispersion Parameters in Komesu Underground Dam

*NAWA Norio, NAKAO Jin, MIYAZAKI Kenji and MURAKAMI Gen*.....21

A Mechanism to Cut Back on Carbondioxide Emissions in Agricultural and Rural Development

*TAJIMA Akihiko*.....25

A Case Study of Deteriorated Prestressed Concrete Pipeline System and Recommended Renovation Plan

*TAKENAKA Minoru, YOSHIOKA Toshiyuki and KAWADA Naomi*.....29

Effectiveness of Soil Improvement Examined by The Niigataken Chuetsu-oki Earthquake in 2007

*MORII Toshihiro and HORI Mitsunori*.....33

Technical Reports

Vegetation Covering for Cut Slope Protection in Cold District Using Native Plants

*FUKUDA Naoto, TSUJI Osamu and YOSHIHARA Hiroshi*.....38

A Farmer's Idea of Adapting the Existing Drainage System for Use as a Sub-irrigation System for Drying Up and Directly Seeding Paddy Fields

*KOGAWA Tatsuya and ABE Shinji*.....40

Construction of Irrigation Tank for Rising Irrigation Water Temperature, and its Effects on Growth of Paddy Rice

*OGURA Takahiro*.....42

Prediction of Downpour-induced Embankment Breach of Irrigation Tanks, and Prevention of Flood Damage to Downstream Area

*TANIHARA Tatsuaki*.....44

Direct Seeding Rice Cultivation in Non-tilled Paddies Using Groundwater-level Controlling Sub-irrigation System

*FUJII Masahide, NAKATSUKASA Masamichi and NAKAMURA Masanobu*.....46

Design and Construction of Large-Diameter Caisson Type Pile

*YOSHIDA Yoshihiro*.....48

Technical Word

National Seismic Hazard Maps for Japan

*INOUE Keisuke*.....50

お知らせ

- 第 298 回コンクリートセミナー 信頼される構造物に求められるコンクリートの性能と技術.....16  
○平成 19 年度農村工学研究所研究会の開催について (第 1 報) .....64



2008  
VOL-76

社団法人 農業農村工学会

2

JOURNAL OF  
THE JAPANESE SOCIETY OF  
IRRIGATION, DRAINAGE AND  
RURAL ENGINEERING

Feature Section : Measures and Technologies for Protecting Irrigation System against Huge Earthquakes—Part II : Technologies for Particular Hydraulic Structures—

Earthquake Damage and Countermeasure for Buried Pipeline

*MOHRI Yoshiyuki, FUJITA Nobuo and KAWABATA Toshinori*.....3

Seismic Performance and Verification of Embankment on Large-scale Earthquake

*OKAMOTO Daiki*.....7

Seismic Reinforcement Work of Aqueduct in Gunma Canal

*IDA Naohiro, KOBAYASHI Jun, OKAMURA Yasuhiro and NAKAGAWA Akio*.....11

Technique of Earthquake-proof Diagnosis of Barrages

*UESHIMA Namiko, ITO Yasuhiro, YAMAMOTO Chikara and UTSUNOMIYA Jun*.....17

Earthquake Resistance Improvement in Landimprovement Facilities

*SETO Taro*.....21

Papers

The Transition of Small Scale Irrigation Development in Developing Countries

*TSUJISHITA Kenji, HORINO Haruhiko and NAKAGIRI Takao*.....27

Tracing of Surface Flow Route Causing Soil Erosion Using High Resolution

Satellite Imagery

*SUZUKI Kenji*.....33

Study on the Land Readjustment Project for the Devastatingly Affected Areas by Ground

Disaster in the Mid Niigata Prefecture Earthquake

*ARITA Hiroyuki, KAZAMA Jujiro,*

*TAMAI Eiichi, YOSHIKAWA Natsuki, UCHIKAWA Yoshiyuki and MISAWA Shin-ichi*.....37

Milestones in Administration

The Basic Framework of New Farmland Policy

*UZAWA Kazuhiro, YOSHIDA Akira, TOMITA Shinji, YUTAKA Teruhisa and EBISUI Yasutaka*.....41

Technical Reports

Evaluation of Soil Physical Properties by Cylinder Intake Rate Method for

Deciding the Productivity of the Soybean in Fields Converted from Paddy Fields

*TSUKAMOTO Yasutaka, TAKEUCHI Harunobu and KITAGAWA Iwao*.....46

Reduction of Low-frequency Noise Induced by Nappe Flow over Head Work Gates

*TAKAHASHI Hiroshi*.....48

Evaluation of Rice Planting Patterns Using RADARSAT Images

*NUKUMIZU Fukumi*.....50

Follow-Up on Habitat Preservation Works for *Ninespine Sticklebacks* in Shika Town, Ishikawa, Japan

*IKEDA Senya, KUSAMITSU Noriko and HOSOKAWA Shouji*.....52

Protection and Conservation of Hygrophilous Fauna/Flora in Land Consolidation Project

*SHINDO Masaaki*.....54

Environmentally-sound Consolidation of Creeks

*ONO Rikizou, AZUMA Tokinori and NAGAMATSU Saya*.....56

Series

Basic Knowledge about Ecosystem Conservation(5) —Practice of habitat evaluation—

*KOIZUMI Noriyuki*.....59

Technical Word

Design Seismic Motion

*TATEISHI Takahiko*.....65

書評○乾燥地科学シリーズ1 21世紀の乾燥地科学—人と自然の持続性— 乾燥地研究センター監修・恒川篤史編 (笹田勝寛) .....	26
○バイオマスは地球環境を救えるか 木谷 収 (袖山義人) .....	64
○アジアの風土に学ぶ—水・土・里の再生に向けて— 真勢 徹 (稲葉一成) .....	78
お知らせ	
○富山県立大学工学部環境工学科 (仮称) 教員の公募について .....	16
○岐阜大学応用生物科学部生産環境科学課程環境生態科学コース教育職員の公募について .....	58
○平成19年度農村工学研究所研究会の開催について (第2報) .....	63



2008  
VOL-76

社団法人 農業農村工学会

3

JOURNAL OF  
THE JAPANESE SOCIETY OF  
IRRIGATION, DRAINAGE AND  
RURAL ENGINEERING

## Feature Section : Stock Management of Irrigation and Drainage Structures

Development of "Stock Management" for Irrigation Facilities and its Future Prospects

SUGIYAMA Kazuhiro.....11

Function and Performance of Irrigation Systems for Stock Management NAKA Tatsuo.....15

Investigation Techniques for Structure Function of Irrigation and Drainage Structures

MORI Takehisa, MORI Mitsuhiro, TOKASHIKI Masaru and NAKAYA Tetsuo.....19

Summary of Database for Irrigation and Drainage Facilities Information KATO Kouhei.....23

Investigation, Diagnosis and Deformation Characteristic of Existing RC Open Channel

Generating the Structural Failure SATO Shushi, OGATA Hidehiko,

UENO Hiroshi, MATSUMOTO Shinsuke and NONAKA Tsuguhiro.....29

The Inspection and Diagnostics Approach for Deteriorated Pre-stressed Concrete Pipe

MIZUSHIMA Yoshihiro, ITO Yasuhiro, TSUJIMOTO Masahiro, KOIZUMI Kazuhiro

and MOHRI Yoshiyuki.....35

## Papers

The Analysis of Salt Water Intrusion in Komesu Underground Dam

NAWA Norio, NAKAO Jin, MIYAZAKI Kenji and SUGIYAMA Shigeru.....41

The Safety Net to the Climate Change by the Rural Development in Africa

NARUOKA Michio, OHIRA Shozo and NAITO Kunihiko.....45

## Reports

5th Water Quality Conservation Plan for Kasumigaura Lake and Some Subjects for Research

TABUCHI Toshio.....51

Brief Perspective of the Professional Accreditation of Master's Program in Graduate Schools

MORII Toshihiro, UCHIDA Kazunori and HANATSUMA Yoshio.....55

## Technical Reports

Design of Oblique Labyrinth Weirs for Diversion from Sarubetsu Main Drainage Canal

HAYASHI Susumu, HARUI Kenichi and HAMAMURA Seiichi.....60

Design of Steel Plank Bridge Constructed in Steep Slope Area

KIKUCHI Kazuaki, OGINO Takao and TAKANOBU Motoyasu.....62

Prevention of Macro-cell Corrosion of Irrigation-use Steel Pipes Using Galvanic Anode

Materials

MURAMATSU Norikiyo.....64

Vegetation of Cut Slopes with Wood Chips Made from Felled Trees

YAMABE Tatsuya.....66

A Practice of Total Evaluation-based Competitive Tender for Rural Road Bridgework

KANBA Kazuhiko and OHISHI Shinji.....68

A Technique for Reducing Low-frequency Noise Generated by Fully Opened

Bottom-hinged Tilting Gate

MURAKAWA Masami and OTOMASU Hiroshige.....70

## Technical Word

Stock Management

USHIJIMA Sakae.....72

書評○イワナをもっと増やしたい！ 中村智幸（水谷正一） .....	50
○事例に学ぶ農業の技術者倫理 水谷正一他編（内田一徳） .....	92
お知らせ	
○富山県立大学工学部環境工学科（仮称）水循環工学講座教員の公募について .....	34
○富山県立大学工学部環境工学科（仮称）環境デザイン工学講座教員の公募について .....	40
○平成20年度バイオトップ管理士セミナー開催について .....	84



社団法人 農業農村工学会

2008  
VOL-76

4

JOURNAL OF  
THE JAPANESE SOCIETY OF  
IRRIGATION, DRAINAGE AND  
RURAL ENGINEERING

## Papers

Water Quality Management for Salinity in Komesu Underground Dam

*NAWA Norio, TAMADA Shinichi, MIYAZAKI Kenji and SUGIYAMA Shigeru*.....35

The Installation of Irrigation Facilities and its Consequential Benefit of

Sannoukai Irrigation Project

*MIWA Hajime, SUZUKI Shunsei and GOKO Masaharu*.....39

Monitoring and Feedback on Model Project in Ethiopia

*NARUOKA Michio, INADA Kozo, OHIRA Shozo and YAMANAKA Isamu*.....45

Present Situation and Challenges of Joint Irrigation Management by

the Government and Farmers in Sri Lanka

*HIRAIWA Masahiko*.....51

## Milestones in Administration

Measures of the Rural Development Bureau for Expansion of Domestic

Biofuel Production

*OMORI Shigeki and MORII Hideyuki*.....57

## Technical Reports

An Approach to Improve the Method of Irrigation to Celery

*HORI Kazuyoshi, TOMIZAWA Yuiko and NAKATUJI Toshiro*.....62

Consolidation of Terraced Farm Lands in Siginoyachi Area

*YAHAGI Wataru and ONOZAKI Koki*.....64

Turning-over and Land-leveling Method, and Direct Seeding Culture of

Paddy Rice on Well-drained Paddy Fields

*MURANAKA Kenichi*.....66

Safety Testing for Designing and Constructing Extraordinarily Large-Diameter

Pipelines System

*SHIMURA Kazunobu, TAMURA Hiroyuki, NAKASHIMA Hirohumi and OTSUKA Naoki*.....68

Economic Operation of Aeration Device to Prevent Water Quality

Deterioration in Dam Reservoir

*KYODA Nobuyuki and KATAYAMA Masahiko*.....70

Use of Value Engineering (VE) Processes in Design of Structures

*KOBAYASHI Koji and SONODA Koji*.....72

## Technical Word

Robust Optimization

*UNAMI Koichi*.....74

### お知らせ

- 富山県立大学工学部環境工学科 (仮称) 環境デザイン工学講座教員の公募について.....98
- 富山県立大学工学部環境工学科 (仮称) 資源循環工学・環境政策学講座教員の公募について .....108



社団法人 農業農村工学会

2008  
VOL-76

5

JOURNAL OF  
THE JAPANESE SOCIETY OF  
IRRIGATION, DRAINAGE AND  
RURAL ENGINEERING

**Feature Section : Messages from Irrigation Sector to the forthcoming G8 Hokkaido Toyako Summit after the 1st Asia-Pacific Water Summit**

From 1st Asia-Pacific Water Summit toward G8 Hokkaido Toyako Summit

*SEIYAMA Kenji and WATANABE Shiro*.....3

Environmental Flows in Asia

*LAZARUS Kate*.....7

Environmental Flows : Moving from Concepts to Application

*BHARATI Luna, ERIYAGAMA Nishadi and SMAKHTIN Vladimir*.....11

Hydrologic Environment in the Mekong River Basin and Roles of Paddy Fields

*MASUMOTO Takao*.....15

Discussions on Agricultural Water Policy Related to 'Water for the Environment' in a Paddy-Irrigated Basin

*TANAKA Hideaki, MAEDA Kazuyoshi, TSUCHIDA Yuriko and MIYAGAWA Masahiko*.....21

**Papers**

Prospective of Distillation Process for Methane Fermented Liquid Supernatant

*YAMAOKA Masaru, YUYAMA Yoshito, NAKAMURA Masato and UEDA Tatsuki*.....25

Method of Functional Diagnosis on Irrigation Facilities in Southeast Asia

*NAKAMURA Yoshifumi, MINAKAWA Takeshi, SHIRAYAMA Kouichi and TORIGOE Kazutaka*.....29

Issues on Administrative Function in the Restoration Stage of a Local Government

Stricken of the Mid Niigata Prefecture Earthquake

*ARITA Hiroyuki, TAMAI Eiichi and IIDA Shigetoshi*.....35

A Report on the Conference of the Policy for Global Warming Countermeasures on the Agricultural Infrastructure Improvement and Rural Development

*HONMA Taizo, HORIHATA Masazumi, SEIYAMA Kenji and MATSUMOTO Naoya*.....39

**Technical Reports**

Recycling Use of Dairy Cattle Dung Resource with Biogas Plant

*SUGIYAMA Youichi*.....44

Development of Apparatus and Method for Refilling Underdrains with Rice-husk

Filter Materials

*IWASA Ikuo, SUGAWARA Tsuyoshi and CHIDA Tomoyuki*.....46

Vegetation Recovery Works for Slope Protection in Farmland Consolidation Project

*KIKUCHI Katsuyuki and TAMAKI Kouga*.....48

On-Site Solidification of Sedimentary Muddy Soils in Ashinomachi-ike Irrigation Tank

*OKAMURA Yuji and KUNIBA Ichiro*.....50

Hydraulic Model Tests for Rehabilitation of Irrigation Tank Spillway

*YOSHIMOTO Masateru*.....52

Evaluation of Effects of Soil Erosion Prevention Measures Based on On-Site Investigations

*IRAHA Naoto, TOMISAKA Mineto and NOHARA Hirotake*.....54

**Technical Word**

Environmental Flow (E-flow)

*MOMOZAWA Yasushi*.....56

**お知らせ**

- 公益信託柴山大五郎記念合併処理浄化槽研究基金募集要項について.....43
- 平成20年度(財)日本建設情報総合センター研究助成応募要領について.....62
- 茨城大学農学部地域環境科学科准教授公募について.....68
- (独)国立環境研究所公開シンポジウム2008開催について.....86



2008  
VOL-76

社団法人 農業農村工学会

6

JOURNAL OF  
THE JAPANESE SOCIETY OF  
IRRIGATION, DRAINAGE AND  
RURAL ENGINEERING

Feature Section : Progress of Water Utilization and Land Improvement in Tohoku Region

History of Irrigation and Land Reclamation in Aomori Prefecture: Inaogawa Canal

TAKANO Haruo.....3

Progress of Irrigation and Land Reclamation in the Isawa Plain, Iwate, Japan

ASHI Chouki and ITOU Keiji.....7

Inspection of Hachirogata Land Reclamation Project for Extended Effect around  
the Beneficial Area

SETA Bunji, MABUCHI Seiji, SAITO Koichi and KUSUBAE Shinichi.....11

History of Irrigation and Land Reclamation in Miyagi Prefecture: Iwadeyama-ozeki Canal

OTOMO Kennichirou.....17

History of Irrigation and Land Reclamation in Yamagata Prefecture: Tenpouzeki Canal

KAWAMURA Tsutomu.....21

History of Land Improvement Facilities in Fukushima Prefecture

HIROHI Yuichi.....25

Paper

Issues in the Reconstruction Process of a Local Government Stricken by  
the Mid Niigata Prefecture Earthquake

ARITA Hiroyuki.....29

Technical Reports

Evaluation of Water-purification Function of Drainage Canal System in Betsukai Area

HANYUU Tetsuya, AIZAWA Toshiya and MACHIDA Mika.....34

Irrigation Tank Repair Work Friendly to Wild Animals Including Migratory Birds

SATO Hiromi.....36

Rural Road Bridgework Using Composite Prestressed Concrete Beam/Slab TATEISHI Yuzo.....38

Engineering Practices for Environmentally-sound Farm-roads Construction HINE Naoya.....40

Asbestos Removal Work for Agricultural-use Pump Shed

KAWASAKI Haruyuki.....42

Efficacy of Upland Crop Filed Irrigation

TOMOMORI Atsuko.....44

Technical Word

Riffle-Pool and Bars (Gravel Bars)

NAGAYOSHI Takeshi.....46

お知らせ

○中山間地域フォーラム設立2周年記念シンポジウム「過疎地域の現在・過去・未来—ポスト過疎法を  
見据えて」の開催について.....33



2008  
VOL-76

社団法人 農業農村工学会

7

JOURNAL OF  
THE JAPANESE SOCIETY OF  
IRRIGATION, DRAINAGE AND  
RURAL ENGINEERING

## Feature Section : Reduction and Prevention of Abandoned Farmlands

### Cases of the Crops Introduced into Abandoned Farmlands

*YOSHIDA Akira and YUTAKA Teruhisa*.....3

### Partnership between Rural Communities for Restoration of Abandoned Farmlands

*FUKUYO Narufumi*.....7

### Case Study of the Continuity of Using Abandoned Farmlands to the Allotment Gardens

*KUKI Yasuaki*.....13

### Revitalization of Rural Area and Laying its Foundation for Reduction Project of Abandoned Farmlands

*AGO Hideo, ISHIZUTSU Satoru and NAKAGIRI Takao*.....19

### Soil Physical Analysis on Abandoned Farmlands to Manage its Foundations

*AODA Tadao and HAYATSU Tsubasa*.....23

## Papers

### Issues for Asset Management of Main Irrigation Infrastructure

*KITAMURA Koji and HOMMA Shinya*.....27

### Formation Factors in Rotational Irrigation System and Development of Tamura Canal

*MASHINO Mitito, OKAZAWA Hiromu and NAKAMURA Yoshio*.....31

### Survey of Biotic Distribution and Diversity in Paddy Irrigation Canals through Public Participation

*TANAKA Hideaki, SATOU Tatsuya, NAGAYAMA Masamichi, KOUMOTO Tomohiro,  
YAMAGUCHI Tomoki and KAWASHIMA Hisayoshi*.....37

## Reports

### Damage and Restoration of Rural Sewerage by the Niigataken Chuetsu-oki Earthquake in 2007

*WATANABE Hitoshi and TAKAHASHI Norio*.....43

### Feasibility Survey on Integrated Farming System in the Uplands of Lao PDR

*FUKUDA Shinji and Manythong Chanhsonm*.....47

## Technical Reports

### Influence of Water Inlet Location on Incipient Irrigation Water Requirement for

#### Readjusted Large Paddy Lots

*KUBO Masatoshi and CHIBA Yoshihiko*.....52

### Embankment Design for Repair of Senganishi Irrigation Tank

*FUJIKAWA Naoto*.....54

### A Cost-effective Replacement of Rural-community Sewage Treatment Plant to Reduce

#### Hydrogen Sulfide Gasification

*YOSHIDA Satoru*.....56

### N-value Reduction Due to Stress Release in Fill-dam Foundation Ground

*HAGIO Toshihiro*.....58

### Design of FRP-unit Rural-Community Sewage Treatment Plant Using Membrane

#### Bioreactor (MBR) Technology

*SHIBUYA Syuuji and KIYOTOU Naohito*.....60

### Total Evaluation-based Competitive Tender for Farm Pond Construction Work

*NISHIZONO Kazuto and NISHIKUBO Hiroaki*.....62

## Technical Word

### The Present State of Abandoned Farmlands

*SUMIDA Syusaku*.....64



2008  
VOL-76

社団法人 農業農村工学会

8

JOURNAL OF  
THE JAPANESE SOCIETY OF  
IRRIGATION, DRAINAGE AND  
RURAL ENGINEERING

## Special Reports : Damages of Farmlands and Hydraulic Structures in the 2008

Iwate-Miyagi Nairiku Earthquake: An Interim Field Survey Report

Emergency Action to the Iwate-Miyagi Nairiku Earthquake in 2008 by Tohoku Regional  
Agricultural Administration Office *SUDA Naoya*.....3

General Outline of the 2008 Iwate-Miyagi Nairiku Earthquake Damage in Iwate Area  
*CHIBA Tadasu*.....5

General Outline of the 2008 Iwate-Miyagi Nairiku Earthquake Damage in Miyagi Area  
*ISHIGAKI Toshihiro*.....6

Investigation Report of Aratozawa Dam, Koda Dam and Large-scale Landslide at the  
Upstream of Aratozawa Dam *MASUKAWA Susumu and NAKAZATO Hiroomi*.....7

## Feature Section : Activities for Considering the Environment in Agricultural Infrastructure Improvement and Rural Development

Environmental Conservation at the Time of Weeding Operation in "Komaba-Kita" District,  
Akita Prefecture *TAKEMURA Takeshi, JINGUJI Hiroshi and MIYAZAWA Yasuhito*.....11

Protection Measures for Genji Fireflies upon Renovation of the Zenkoji Irrigation  
*KAI Takamitsu*.....15

Water Corridor Is Regenerated by the Revival Project of Water Network *TERADA Kenji*.....19

A Comprehensive Evaluation of an Eco-friendly Canal Design Executed for the Gente River  
*HIROSE Shinichi and TAKIMOTO Hiroshi*.....23

Problems of Measures for Conservation of Ecological Environment from a Viewpoint of  
Maintenance in ISAWA-Nanbu Land Consolidation Project *HIROTA Jun-ichi*.....27

## Papers

Engineering Feature of Rehabilitation Method of Old Earth Dam Embankment by  
Cement-mixed Muddy Soil *TANI Shigeru, FUKUSHIMA Shinji, KITAJIMA Akira,  
GONOI Jyun and NISHIMOTO Kouji*.....31

Influence on Civil Execution Management Qualification by the Subject Change  
*MASUYAMA Kiyoto*.....37

Residents' Perceptions of Sub-branch Canals with Environment-conscious Sections  
*HORINO Haruhiko and NAKAGIRI Takao*.....41

## Technical Reports

Slope Failure Prevention Technique Using Combined MOYAI-Drain-Mat and Natural Vegetation  
in Cold Region *FUKUDA Naoto and YOSHIHARA Hiroshi*.....46

Engineering Cares to Conserve Fish and Shellfish Habitats in Repair Work for  
Nabekawa Irrigation Tank *NARA Minato and KIMURA Kosuke*.....48

Gate-type Selection Process in Planning Repairs of Matsugatazeki Diversion Weir  
for Irrigation *YAMAMOTO Teruyuki*.....50

Post-earthquake Repair of Pipeline Systems Damaged by the Niigataken Chuetsu-oki  
Earthquake *MIYAJIMA Masato*.....52

Disaster Restoration Design for Irrigation Tank with Foundation Damaged by Excess  
Pore Water Pressure *HORI Seiji and KATAOKA Kouichi*.....54

## Technical Word

Evaluation Technique of Rural Ecosystem *MORIYAMA Takumi*.....56

### お知らせ

- 岡山大学大学院環境学研究科教員の公募について.....10
- 農業農村整備のための実用新技術説明会の開催について.....18
- 富山県立大学工学部環境工学科（仮称）環境デザイン工学講座教員の再公募について.....36





2008  
VOL-76

社団法人 農業農村工学会

9

JOURNAL OF  
THE JAPANESE SOCIETY OF  
IRRIGATION, DRAINAGE AND  
RURAL ENGINEERING

Feature Section : Application of Electromagnetic Sensing Technique for Agricultural and Rural Engineering

Application of Electromagnetic Wave to Rural Engineering *SATO Motoyuki*.....3

Application of Nuclear Magnetic Resonance Surface Scanner to Agricultural Engineering  
*NAKASHIMA Yoshito and UTSUZAWA Shin*.....7

Wireless Measurement System Using Low Frequency Electromagnetic Wave  
*HAYASHIDA Yoichi, KOHGO Yuji, ASANO Isamu,  
MASUKAWA Susumu and TAGASHIRA Hidekazu*.....13

Simultaneous Monitoring of Soil Water Content and Nutrient in the Tea Fields Using Time Domain Reflectometry  
*HIRONO Yuhei and NONAKA Kunihiko*.....17

Application of Ground Penetrating Radar for Diagnosis of Agricultural Irrigation and Drainage Tunnels  
*MORI Mitsuhiro, SAITO Yutaka, TAKAIWA Tsunehiro and INAGAKI Masaharu*.....21

Papers

Soil Moisture of Rotational Paddy Fields with Controlled Water Level in Underdrain  
*KANMURI Hideaki, CHIBA Katsumi, ISHIKAWA Takeshi and KATO Makoto*.....25

The Frost Damage of Reinforced Concrete Canals  
*OGATA Hidehiko, TAKADA Ryuichi, NONAKA Tsuguhiro and HATTORI Kunio*.....31

Quantitative Evaluation for Forecast of Irrigation Canal Abrasion  
*KITAMURA Koji, HOMMA Shinya, KATO Takashi*.....35

Technical Reports

Construction Control of Asphalt Facing Repair for Futaba Dam  
*SEGUCHI Katsuji, SASAKI Takahiro and ITOU Sadayoshi*.....42

Analysis of Canal Leakage Potential in Ukedogawa Irrigation Area  
*KAJIHARA Yoshinori, KETA Kenichi and SAKAI Toshiaki*.....44

Hydraulic Model Tests for Checking Outlet Discharge Diverted from Main Drainage Canal  
*MURAKAMI Mitsuhiro*.....46

Cut-Slope Protection in Farm Road Construction by Vegetation-growth Facilitating Press-shot Work Using Chips of Felled Construction Byproduct Trees  
*NAGATANI Nobuya*.....48

Application of Canal Design Support System  
*JIANG Huaying*.....50

Foundation of Large-Diameter Flexible Pipelines in Soft Ground  
*IMAMURA Daisuke and SAKAI Takaomi*.....52

Technical Word

Synthetic Aperture Radar *YONEZAWA Chinatsu*.....54

お知らせ

- 物理探査学会創立 60 周年記念シンポジウムおよび学生参加イベントのお知らせ .....57  
○鹿島学術振興財団 2008 年度研究助成候補者募集について .....67



2008  
VOL-76

社団法人 農業農村工学会

10

JOURNAL OF  
THE JAPANESE SOCIETY OF  
IRRIGATION, DRAINAGE AND  
RURAL ENGINEERING

Feature Section : Reconsolidation of Rice Paddies and Structuralization of Agricultural Production Activities in Hokkaido

“Transformation from Yield to Eating Quality” Hokkaido Rice and Agriculture in Nanporo-Town  
*NONAKA Masafumi, ARAAKE Minoru and MANO Hiroshi*.....3

Land Readjustment of Peaty Paddy Field for Improvement  
*KAWABATA Akira, SEKINE Tadataka, HIRAI Katsuhisa and FUJITA Akio*.....9

Organization of Agricultural Production and the Future Prospects  
*KIKUCHI Makoto, HAMAGUCHI Hiroshi, YASUI Shoji and TUJISAKI Tooru*.....15

Consolidation of Paddy Field and Fostering Principal Farmers  
*ISHIJIMA Mitsuo and KASHIMA Hironori*.....21

History and Role of Farm Land Consolidation in Hokkaido  
*MORI Tomohide*.....25

Papers

Activities Helping for the Right Rural Development Engineers by Chugoku-Shikoku Branch  
*SUZUKI Toyoshi*.....29

Support for Synthetic Education in Yasugawa River Basin Area  
*NAITO Kaoru, ICHISAKA Kuniyoshi, HAGIWARA Daisuke and TANAKA Toshiharu*.....33

Asset Management of Irrigation Infrastructure in Australia  
*KITAMURA Koji and NAKAYA Tetsuo*.....37

Evaluation of Meteorological and Hydrological Phenomena for Addressing Global Warming in the Fields of Irrigation and Drainage  
*TAKAHASHI Junji, KATO Takashi, KITAMURA Koji and KOYAMA Jun*.....43

Reports

The Examination of the Possibility of Freshwater Clam Farming Fishery Using the Resting Rice Field  
*KUWABARA Tomoyuki, SATO Shushi and HYODO Masahiro*.....49

Gas Advection and Dispersion Phenomena in Soil  
*HAMAMOTO Shoichiro, SHIMOWADA Yoshiki and SUGIMOTO Yuichi*.....53

Technical Reports

Functional Diagnoses and Inspections of Irrigation and Drainage Structures in Chitose River Area, Hokkaido  
*FUJITA Osamu*.....56

Design and Construction of Water Conveyance Tunnel in Cracked Bedrock  
*KANKE Yuutarou, KUROSU Masayuki, WATANABE Takeshi and SAITHOU Tsuyoshi*.....58

Rehabilitation of Water Conveyance Tunnel while Supplying Water for Winter Irrigation  
*MIYAUCHI Shizuo, MURAKAMI Kazuki and GOTOU Tadashi*.....60

Underground Hollow Space Surveys After Pipeline Laying Works by Pipe Jacking Method  
*OKUMURA Tozo and TSUCHIKAWA Yuji*.....62

Repair of Canal Revetments Using Anchored Dry Masonry  
*HOSOKAWA Nobuyoshi and OKAMOTO Kouichi*.....64

Numerical Investigations of Intake Water Salinities in Subsurface Dam for Prevention of Sea Water Encroachment  
*IDEHARA Katsuzumi*.....66

Technical Word

Agricultural Legal Person  
*MORI Hirotaka*.....68

お知らせ

- 全国環境公共セミナー開催について.....14
- 平成 21 年度「きれいな川と暮らそう」基金募集について .....20
- 日本沙漠学会乾燥地農学分科会平成 20 年度講演会の開催について .....20
- 物理探査学会創立 60 周年記念シンポジウムおよび学生参加イベントのお知らせ（第 2 報） .....42



2008  
VOL-76

社団法人 農業農村工学会

11

JOURNAL OF  
THE JAPANESE SOCIETY OF  
IRRIGATION, DRAINAGE AND  
RURAL ENGINEERING

## Feature Section : A Prevention of Global Warming and Irrigation, Drainage and Rural Engineering

Conceptual Analysis on a New Irrigation Policy that Could Respond to Global Warming  
*SHOBAYASHI Mikitaro and SUEMATSU Hiroyuki*.....3

Aquifer Thermal Energy Storage for Global Warming Mitigation  
*ISHIDA Satoshi, INAMOTO Akira, KOBAYASHI Ikuo and IMAIZUMI Masayuki*.....9

GHG Emission Mitigation Effect by Methane Fermentation System  
with Digested Liquid to Utilize as Fertilizer  
*NAKAMURA Masato, YUYAMA Yoshito, YAMAOKA Masaru, FUJIKAWA Tomonori and SHIMIZU Natsuki*.....13

Small Scale Hydropower Generation in Agriculture and Rural Area  
*FURIHATA Hideki*.....17

## Papers

Countermeasures for High Salt Concentration of Treated Wastewater for Irrigation  
*YAMASHITA Tadashi, YAMAGUCHI Sinji and ISHIHARA Shoichi*.....21

Possibility of Producing Good Eating Quality Rice with Special Reference  
to Water Quality in Noto  
*HAYASE Yoshio*.....27

Measurement of the Velocity of Water Flow through the Vegetation in a Canal  
*HIROSE Shinichi, TAKIMOTO Hiroshi and HAMADA Akira*.....31

## Milestones in Administration

Rural Environment Conservation Policy : An Interim Report of the Research Committee  
*HONMA Taizou, HORIHATA Masazumi, SEIYAMA Kenji and NISHINO Atsunori*.....37

## Technical Reports

A Gently Sloping Screen for Trapping Drifting Algae and Aquatic Plants in Irrigation Canals  
*HANZAWA Yukihiro and KURAGUCHI Tomohiro*.....44

Improvement of Fish Passage at Ozeki Headworks on Mogami-oguni River  
Using Half-cone Fishway  
*SHIMOYAMA Tomohiro and TAKAHASHI Kenichi*.....46

Riverfront Revitalization in Saitama Prefecture  
*YOSHIDA Masahiro*.....48

Plants Relocation Practices for Conservation of Declared Rare Floras  
in Implementation of Farmland Consolidation Project  
*MIKI Hiroshi*.....50

Groundwater Level Reduction by Drainage Tunnel Construction in Nakamura-Daio-Kami  
Landslide Area  
*NAGASE Kenji and KONNO Michiaki*.....52

Canal Design for Protection of a Critically Endangered Freshwater Fish: Hinamoroko  
(*Aphyocypris Chinensis*) in Land Consolidation Project  
*TANAKA Kazuo*.....54

## Technical Word

Remote Water Management System  
*TAKAKI Kyoji*.....56

書評○地球温暖化と農業 地域の食料生産はどうなるのか? 渡邊紹裕編(北村義信).....	43
○農村公共事業の経済評価-マイクロデータによる事後評価手法と実践- 國光洋二(吉田謙太郎).....	92
お知らせ	
○多摩川およびその流域の環境浄化に関する基礎研究, 応用研究, 環境改善計画のための研究・活動助成の募集について.....	26
○第19回 SHITA シンポジウム『植物工場のニューウェーブ“ビジネススキームとイノベーション”』開催について.....	35



2008  
VOL-76  
社団法人 農業農村工学会

12

JOURNAL OF  
THE JAPANESE SOCIETY OF  
IRRIGATION, DRAINAGE AND  
RURAL ENGINEERING

**Feature Section : The Present Conditions and the Problem of Small Scale/the Aging Village**  
Present Conditions and Issues of Depopulated Noto Area

*TAKAHASHI Tsuyoshi, MURASHIMA Kazuo and SAKATA Yasuyo*.....3  
Regional Vitality and Public Services in Depopulating and Aging Rural Amenity in  
the Tohoku Region

*TAKAHASHI Junji, SAITO Shinya and ISHIKAWA Keigi*.....7  
Vegetable Local Cultivar and Agricultural Land Use at Mountainous Village Shimoguri,  
Iida City, Nagano Prefecture

*UCHIKAWA Yoshiyuki, KIMURA Kazuhiro, OHI Michio and KEGASAWA Daisuke*.....11  
Rural Engineering Approaches for Revitalization of Marginal Farming Settlements

*TAKAHASHI Satoru, SUZUKI Shinji, OKAZAWA Hiromu and WATANABE Fumio*.....15

**Papers**

Integrated Agricultural Development for Conservation of Natural Environment and  
Poor Farmers in Thailand *YAMAZAKI Akira*.....19

Suppression of Greenhouse Gas Emissions by Controlling Wildland Fires  
*KUSHIDA Keiji*.....23

Technical Report on Design and Applied Engineering Works for  
Slope Corruption Protect in Reservoir of the KIHOKU DAM  
*ARAKI Fimio, SEKI Masanori, ANAN Chikashi and CHIHARA Eiji*.....27

**Report**

Trend of Quantitative Figures of Recent Years Related to Agricultural Drought in Australia  
*KITAMURA Koji and NAKAYA Tetsuo*.....33

**Technical Reports**

Headworks Repair in Cold Districts  
*HIRANO Tomohiro, ARAKI Hiroyuki and YOKOSAWA Shinji*.....38

Possible Reformation and Simplification of Local Observation System in  
Designated Landslide Prevention Areas  
*KONNO Akihiro and ITO Yu*.....40

Emergency Reconstruction of Water Supply and Drainage Pumping Stations in Inbanuma Area  
*INOUE Yoshihiro and HASHIMOTO Takashi*.....42

The Renewal of Overage Irrigation and Drainage Facilities and the Improvement of  
Water Quality in Basin *HARAYAMA Akihiko and HOKOYAMA Tsutao*.....44

Development of Micro-Hydropower Generation System in Tottori Prefecture  
*SHIMAZAKI Toshihiro and NOJIMA Kengo*.....46

A Support System for Cooperative Activities in Implementation of  
Farmland-Water-Environment Conservation Reinforcement Project  
*HAJI Seisuke and SHOBAYASHI Hiroyuki*.....48

**Technical Word**

Strategic Rural Reorganization *HAYASHI Naoki*.....50

お知らせ

○筑波大学大学院生命環境科学研究科教員公募について.....54