

2. 研究業績 / Research Achievements (April 2020 - March 2021)

2. 1 論文・著書 / Journal Articles/Books/Book Chapters

Journal Articles

- Abdelgader, A. Z., Musa, L.M.A., Jawasreh, K.I., Saleem, A.O., El-Hag, F.M. and Ahmed, M-K.A.: G1 point mutation in growth differentiation factor 9 gene affects litter size in Sudanese Desert Sheep. *Veterinary World*, 14: 104-112, doi:10.14202/vetworld.2021.104-112 (Jan., 2021)
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- Abdelrahman, A.M., Endo, T., Maegawa, T., Mamedov, A. and Yamanaka, N.: Effectiveness of organic amendment and application thickness on properties of a sandy soil and sand stabilization. *Journal of Arid Environments*, 183: Article104273, doi: 10.1016/j.jaridenv.2020.104273 (Dec., 2020)
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- 加藤颯真・Simpson, W. R.・Johnson, R.D.・児玉基一郎・石井孝佳・宇部尚樹・辻本壽：人工接種によるエピクロエ・エンドファイトの共生がコムギの形態や代謝物に与える影響。第15回ムギ類研究会（オンライン開催）（2020年12月）
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- 加藤綾乃・井上佳子・原田和泉・市川伸次・中島大賢・安萍・柏木純一：北海道の春播き環境における多様なコムギ系統の栽培・収量特性に関する研究。日本作物学会支部会（札幌市）（2020年12月）
- 木村玲二：乾燥地の土地劣化の現状と監視。日本沙漠学会2020年度秋季シンポジウム（東京）（2020年11月）
- 糺妙子・山崎裕司・岩田洋佳・佐々木剛志・石森元幸・高梨秀樹・辻本壽：マルチスペクトルカメラを用いた *Phedimus* 属 F1 雑種集団の表現型解析。第12回中国地域育種談話会岡山大会（オンライン開催）（2020年12月）
- 松永幸子・アリザメグミ・山崎裕司・明石欣也・辻本壽：生育時の高温処理がパンコムギの高温発芽能力と脂肪酸組成に及ぼす影響。第12回中国地域育種談話会岡山大会（オンライン開催）（2020年12月）
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- 成瀬敏也・Khuynh1, B.・高橋宏和・平野恒・戸田悠

- 介・大森良弘・津田麻衣・辻本壽・山崎裕司・澤田有司・平井優美・藤原徹・岩田洋佳・Pradal, C.・松岡信・中園幹生：鳥取砂丘圃場を利用したダイズの根系フェノタイピング. 日本育種学会第138回講演会（オンライン開催）（2020年10月）
- 岡田眞銀・Barras, C.・戸田悠介・大森良弘・山崎裕司・高橋宏和・高梨秀樹・津田麻衣・平優美・辻本壽・加賀秋人・中園幹生・藤原徹・岩田洋佳：深層学習によるUAVリモートセンシング画像に基づくダイズバイオマス予測. 日本育種学会第138回講演会（オンライン開催）（2020年10月）
- 岡田眞銀・Barras, C.・戸田悠介・大森良弘・山崎裕司・高橋宏和・高梨秀樹・津田麻衣・平井優美・辻本壽・加賀秋人・中園幹生・藤原徹・岩田洋佳：UAVリモートセンシング画像の深層学習により抽出されたバイオマス関連特徴量の遺伝的解析. 日本育種学会第139回講演会（オンライン開催）（2021年3月）
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- 大西志全・神谷岳洋・妻鹿良亮・藤原徹・辻本壽・佐藤優美・森田耕一：葉面温度、イオノームおよび炭素同位体比により明らかになった北海道の小麦多収品種・系統の特徴. 日本育種学会第139回講演会（オンライン開催）（2021年3月）
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- 辻本壽：野生種遺伝資源を利用した高温・乾燥耐性コムギ育種. 山口大学生物資源環境科学セミナー（2020年9月）
- 塚田美佐子・辻本壽：パンコムギの高温発芽能力に及ぼす遺伝子及び環境の影響. 第12回中国地域育種談話会岡山大会（オンライン開催）（2020年12月）
- 宇部尚樹・勝山由郁・假谷佳祐・手林慎一・武田真・上野琴巳・石原亨：オオムギにおけるフラボノイド型ファイトアレキシン. 日本農芸化学会2020年度中四国支部大会第57回講演会（オンライン開催）（2020年9月）
- 宇部尚樹・勝山由郁・假谷佳祐・手林慎一・武田真・上野琴巳・石原亨：オオムギの新たなフラボノイド型ファイトアレキシン. 植物化学調節学会第55回大会（オンライン開催）（2020年11月）
- 内田孝三・辻本壽：チップ栽培を利用したコムギのスピードブリーディングについて. 第12回中国地域育種談話会岡山大会（オンライン開催）（2020年12月）
- 山崎裕司・Gorafi, Y. S. A.・Tahir, I. S. A.・辻本壽：未利用遺伝子源由来の高リン利用効率コムギ系統の特徴. 日本育種学会第139回講演会（オンライン開催）（2021年3月）
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Invited Lectures（招待講演）

- Abd El Baki, H.M.: Determination of Irrigation Depths Using Irrigation Prices, Weather Forecasts, and Numerical Simulation. Kyushu University, Fukuoka, Japan. (Mar., 2021)
- Abd El Baki, H.M.: Various Numerical Irrigation Schemes to Determine Irrigation Depths Using the WASH 2D Model. Saga University, Saga, Japan. (Mar., 2021)
- 石井孝佳：RNA-guided endonuclease in situ labelling (REGN-ISL) 法：CRISPR/Cas9による新規細胞遺伝学技術の開発. 第92回日本遺伝学会（熊本）（2020年9月）

Ube, N.: Evolutionary changes of defensive specialized metabolites in the genus *Hordeum*. IPSR International web-Forum 2020 on Plant Science and Genetic Resources. Online (Oct., 2020)

Research Center, Tottori University

鳥取大学乾燥地研究センター・外国人研究員（客員教授）

2. 3 報告書/Reports

Tsujimoto, H.: Gene-Mining Asian Wheat to Feed the Population in the 21st Century. *Plant and Cell Physiology*, 62: 1-2, doi: 10.1093/pcp/pcaa158, (Dec., 2020) [辻本壽：21世紀の人々に食糧を与えるための東アジアコムギの遺伝子探索. *Plant and Cell Physiology*, 62: 1-2 (2020年12月)]

Tsujimoto, H.: Greetings from the new Editor-in-Chief of *Breeding Science*. *Breeding Science*, 70: 515, doi: 10.1270/jsbbs.70.515, (Dec., 2020) [辻本壽：Breeding Science新編集委員長からのご挨拶. *Breeding Science*, 70 : 515 (2020年12月)]

2. 4 公開セミナー /Open Seminar

1) Open seminar

1. Phenotypic effects of genome diversity in nascent synthetic polyploids (Jul. 16, 2020)

Kentaro YOSHIDA 吉田 健太郎

Associate Professor, Graduate School of Agricultural Science, Kobe University

神戸大学農学研究科 准教授

Shigeo TAKUMI 宅見 薫雄

Professor, Graduate School of Agricultural Science, Kobe University

神戸大学農学研究科 教授

2. Towards low-nitrifying agricultural production systems - Role of Biological Nitrification Inhibition. (Jul. 15, 2020)

Guntur V. Subbarao

Senior Researcher, BNI research team, Japan International Research Center for Agricultural Sciences (JIRCAS)

国立研究開発法人国際農林水産業研究センター
主任研究員

2) Colloquium

24th Colloquium (Oct. 9, 2020)

(1) Soil carbon flux studies in Asian region

Munemasa TERAMOTO 寺本 宗正

Tenure Track Assistant Professor, Arid Land Research Center, Tottori University

鳥取大学乾燥地研究センター・テニュアトラック助教

(2) Climate change adaptation options for dryland livestock farming in Sudan

Faisal Mohamed Ahmed ELHAG

Foreign Research Scholar (Visiting Professor), Arid Land

25th Colloquium (Mar. 15, 2020)

(1) Identification of inducible defensive metabolites in pathogen-infected and drought-treated wheat

Naoki UBE 宇部 尚樹

Specially Appointed Assistant Professor, Arid Land Research Center, Tottori University

鳥取大学乾燥地研究センター・特命助教

(2) Soil biodiversity in C depleted soils in Zambia

Toru HAMAMOTO 濱本 亨

Specially Appointed Assistant Professor, Arid Land Research Center, Tottori University

鳥取大学乾燥地研究センター・特命助教

2. 5 受賞、特許

(1) 受賞

賞の名称：日本育種学会功労賞

受賞者：辻本壽

受賞年月日：2021年3月20日

授与団体：日本育種学会

賞の名称：鳥取大学長表彰

受賞者：恒川篤史

受賞年月日：2021年1月4日

授与団体：鳥取大学

業績の名称：エチオピアにおける持続可能な土地管理 (Sustainable Land Management: SLM) フレームワークに関する研究が国際的に高い評価

賞の名称：鳥取大学・科学研究業績表彰

受賞者：石井孝佳

受賞年月日：2021年3月2日

授与団体：鳥取大学

研究タイトル：ササゲの動原体機能における2種類の CENH3の不均等な貢献

賞の名称：Top-ten Excellent Articles Award

受賞者：Dagnenet Sultan、恒川篤史、Nigussie Haregeweyn、Enyew Adgo、坪 充、Derege Meshesha, T、増永二之、Dagnachew Aklog、Ayele Fenta, A、Kindiye Ebabu

受賞年月日：2021年1月21日

授与団体：Journal of Arid Land (Springer社)

論文タイトル：エチオピア・青ナイル川上流域における 土壌・水保全策

(2) 特許

特許番号：2020-187279 (出願番号)

特許権者：東京都立大学、鳥取大学、明治大学

発明者：岡本龍史、マリエンティ テティ、石井孝佳、矢野健太郎

発明の名称：配偶子融合を用いた細胞質雑种植物の作出法

出願日：2020年11月10日

特許番号：2020-192786 (出願番号)

特許権者：鳥取大学

発明者：劉佳啓、木村玲二

発明の名称：無指向飛砂量計測装置

特許出願日：2020年11月19日

2. 5 Honors and Awards, Patent

(1) Awards

Name of Prize: Distinguished Service Award of the Japanese Society for Breeding

Name of Recipient: Hisashi Tsujimoto

Date: Mar. 20, 2021

Name of Offering Organization: Japanese Society of Breeding

Name of Prize: Tottori University President Award

Name of Recipient: Atsushi Tsunekawa

Date: Jan. 4, 2021

Name of Offering Organization: Tottori University

Name of Achievement: Research on the sustainable land management (SLM) framework in Ethiopia has received international acclaim.

Name of Prize: Tottori University Scientific Research Performance Award

Name of Recipient: Takayoshi Ishii

Date: Mar. 2, 2021

Name of Offering Organization: Tottori University

Reserch Title: Unequal contribution of two paralogous CENH3 variants in cowpea centromere function

Name of Prize: Top-ten Excellent Articles Award

Name of Recipient: Dagnenet Sultan, Atsushi Tsunekawa, Nigussie Haregeweyn, Enyew Adgo, Mitsuru Tsubo, Derege Meshesha, T, Tsugiyuki Masunaga, Dagnachew Aklog, Ayele Fenta, A, Kindiye Ebabu

Date: Jan. 21, 2021

Name of Offering Organization: Springer, Journal of Arid Land

Thesis Title: Efficiency of soil and water conservation practices in different agro-ecological environments in the Upper Blue Nile Basin of Ethiopia

(2) Patent

Patent Number: 2020-187279 (application number)

Patentee: Tokyo Metropolitan University, Tottori University, Meiji University

Inventor: Takashi Okamoto, Tety Maryenti, Takayoshi Ishii, Kentaro Yano

Title of the Invention: PRODUCTION OF CYTOPLASMIC HYBRID PLANTS USING GAMETE FUSION

Registration Date: Nov. 10, 2020

Patent Number: 2020-192786 (application number)

Patentee: Tottori University

Inventor: Jiaqi Liu, Reiji Kimura

Title of the Invention: WIND EROSION DETECTION DEVICE

Registration Date: Nov. 19, 2020

2.6 外部資金 / External Funds

令和2年度科学研究費補助金／Grants-in-Aid for Scientific Research in FY2020

研究種目 Research categories	研究代表者 Principal Investigator	研究課題名 Research Title
基盤研究 (B) Scientific Research(B)	辻本 壽 Tsumimoto, Hisashi	高温耐性コムギ系統の QTL 解析と選抜マーカーの開発 QTL analysis of high-temperature tolerant wheat lines and development of selection markers
基盤研究 (B) Scientific Research(B)	木村 玲二 Kimura, Reiji	乾燥地における土地劣化計測システムとモニタリング手法の開発 Development of observation and monitoring system for land degradation in arid regions
		研究分担者 Co-Investigators
国際共同研究加速基金 (国際共同研究強化 (B)) Fund for the Promotion of Joint International Research (Fostering Joint International Research (B))	藤巻 晴行 Fujimaki, Haruyuki	土壌塩分輸送シミュレーションモデルを用いた除塩用水量の最適化 Determination of leaching depth using a numerical simulation model of salt movement
		研究分担者 Co-Investigators
基盤研究 (C) Scientific Research(C)	谷口 武士 Taniguchi, Takeshi	根部内生微生物群集の形成プロセスを介した乾燥地植物の適応度向上に関する研究 Research on improvement of dryland plant adaptability through the community assembly process of root endophytic microbes
若手研究 Early-Career Scientists	山崎 裕司 Yamasaki, Yuji	パンコムギのキャノピー温度関連形質とその多面発現効果の遺伝育種的解析 Breeding analysis for pleiotropic effects on canopy temperature and related traits in bread wheat
若手研究 Early-Career Scientists	Fenta, Ayele Almwaw	Development of precision estimation method of rainfall erosivity for better understanding of soil erosion in data-sparse regions
若手研究 Early-Career Scientists	石井 孝佳 Ishii, Takayoshi	イネ科亜科間交雑での染色体脱落:染色体脱落を制御している雄側因子の特定 Chromosome elimination in sub-family distance wide hybridization in poaceae species: elucidate the paternal factor X in chromosome elimination
研究活動スタート支援 Research Activity Start-up	宇部 尚樹 Ube, Naoki	コムギにおける脂質および二次代謝を介した乾燥耐性機構の解明 Drought tolerance via secondary metabolism and lipid in wheat
研究活動スタート支援 Research Activity Start-up	濱本 亨 Hamamoto, Toru	サブサハラアフリカ農地の炭化物と有機物の併用による炭素蓄積効果とその安定性の解明 Effects of biochar and organic amendment on soil C dynamics in sub-Saharan Africa
研究活動スタート支援 Research Activity Start-up	寺本 宗正 Teramoto, Munemasa	乾燥地における放牧が土壌からの CO ₂ 排出量におよぼす影響の評価 Evaluation of the influence of grazing on soil CO ₂ efflux in arid land
特別研究員奨励費 JSPS Research Fellows	中原 浩貴 Nakahara, Hiroki	非病原性細菌による植物への病害抵抗性と耐塩性の誘導モデルの構築 Development of induction models for disease resistance and salinity tolerance in plants by avirulent bacteria

他機関からの研究分担者／Co-Investigator

研究種目 Research categories	研究分担者 Co-Investigator	研究課題名 Research Title	研究代表者 Principal Investigator
基盤研究 (A) Scientific Research(A)	木村 玲二 Kimura, Reiji	北アフリカ乾燥地域における持続可能な 地下水利用システムの構築 Development of the sustainable underground water use in arid regions of North Africa	岩崎 えり奈 (上智大学) Iwasaki, Erina (Sophia University)
基盤研究 (B) Scientific Research(B)	藤巻 晴行 Fujimaki, Haruyuki	農業工学とコロイド化学の融合を基軸と する土壌・水環境保全技術の展開 Development in soil and water technology with integrating agricultural engineering and colloid science	小林 幹佳 (筑波大学) Kobayashi, Motoyoshi (University of Tsukuba)
基盤研究 (B) Scientific Research(B)	中原 浩貴 Nakahara, Hiroki	トマトの難防除土壌伝染性病害である青 枯病と半身萎凋病に対する新しい防除法 の確立 Establishment of a new control method for bacterial wilt and <i>Verticillium</i> wilt of hardly controllable soil-borne diseases in tomato	松添 直隆 (熊本県立大学) Matsuzoe, Naotaka (Prefectural University of Kumamoto)
国際共同研究加 速基金 (国際共同 研究強化 (B)) Fund for the Promotion of Joint International Research (Fostering Joint International Research (B))	石井 孝佳 辻本 壽 Ishii, Takayoshi Tsujiimoto, Hisashi	日本のコムギ研究リソースと国際農業研 究機関の連結による新遺伝資源創出と育 種展開 New genetic resource development and advanced breeding through connecting the Japanese wheat research resources to a renowned international agricultural research institute	松岡 由浩 (福井県立大学) Matsuoka, Yoshihiro (Fukui Prefectural University)
基盤研究 (C) Scientific Research(C)	木村 玲二 Kimura, Reiji	風食発生の指標となるごく薄い地表面の 土壌水分モデルの開発 Development of soil moisture model of extremely thin ground surface which is an indicator and influence for occurrence of wind erosion	鈴木 純 (信州大学) Suzuki, Jun (Shinshu University)
基盤研究 (C) Scientific Research(C)	木村 玲二 Kimura, Reiji	景観保全活動が天然記念物鳥取砂丘の砂 移動および植生分布の変動に与える影響 の評価 Evaluation of effectiveness to rehabilitate sand movement and curb grassland encroachment by landscape conservation activities at the Tottori Sand Dunes natural monument	高山 成 (大阪工業大学) Takayama, Naru (Osaka Institute of Technology)
基盤研究 (C) Scientific Research(C)	藤巻 晴行 Fujimaki, Haruyuki	物理センサ群を用いた土壌・樹木・大気 連続系における物質移動・貯留特性の解 明 Clarification of mass transfer-storage characteristic of trees in soil-plant- atmosphere continuum using physical sensors	齊藤 忠臣 (鳥取大学) Saito, Tadaomi (Tottori University)
挑戦的研究 (萌 芽) Challenging Research (Exploratory)	石井 孝佳 Ishii, Takayoshi	交雑受精卵の作出およびゲノム動態制御 による C3-C4 光合成細胞質置換 C3-C4 cytoplasmic swapping by production of cross-fertilized eggs and control of genome dynamics	岡本龍史 (東京都立大学) Okamoto, Takashi (Tokyo Metropolitan University)