

JSTA 日本熱帯農業学会

熱帯農業研究

第13巻 別号2

日本熱帯農業学会第128回講演会
研究発表要旨
(zoomによるオンライン開催)



2020年11月7日

日本熱帯農業学会第 128 回講演会

開催日 2020 年 11 月 7 日（土）

開催方法 On-line 開催

事務局 （発表・参加申し込み）

龍谷大学

運営委員長 西川芳昭 運営委員会事務局 大門弘幸 落合雪野 坂梨健太

E-mail : tarunov20@gmail.com

（講演会当日）

日本熱帯農業学会事務局 E-mail : jsta@trop-agri.jp

Tel : 03-5477-2406

参加費 一般：3,000 円、学生：2,000 円（PDF 版要旨集代含む）

運営委員会へ申し込みいただいた後、学会事務局より参加費の振り込み方法についてご案内の連絡を致します。

参加方法 参加費をお振込みいただいた後、学会事務局より当日の on-line 講演会へ参加するための URL をご連絡致します。

日 程 2020 年 11 月 7 日（土）

10 時～ 講演会（口頭発表）

*懇親会は開催しません。

日本熱帯農業学会第128回講演会プログラム

講演会 (発表12分、質問2分30秒) ◎印は学生優秀発表賞審査対象

11月7日(土)

開始時刻	座長	番号	講演題目
10:00	松田大志 国際農研	1	◎ 沖縄県宮古島の天然資源を活用した温湯処理によるマンゴー (<i>Mangifera Indica</i> L.) の長期保存の可能性について *筒井友喜・真田篤史・志和地弘信・菊野日出彦
10:15		2	◎ 人工受粉に用いる花粉親品種の違いがレイシの結実性に及ぼす影響 *廣寄真由・樋口浩和
10:30	山本宗立 鹿児島大学	3	◎ カンボジア東部および南部収集トウガラシ(<i>Capsicum</i> spp.)遺伝資源の評価 *小原正史・畠山佳奈実・車田翔平・南峰夫・根本和洋・松島憲一
10:45		4	◎ 開発途上国における有機農業普及の実態と課題ーフィリピン・アンティケ州での実践からー 生駒忠大
11:00		5	◎ ケニア共和国ビヒガ・カウンティにおけるホームガーデンの農業多様性 *伏見和子・原健太・広瀬水流・Patrick Maundu・Esther Odera・Kennedy Otiende・入江憲治・森元泰行
11:15	休憩		
11:30	篠原 卓 東京農業大学	6	◎ SSRマーカーを用いたエンサイ野生種と栽培種の遺伝的類縁関係の解析 石崎優美・倉内伸幸・加藤太・佐々木大・菊池真司・武藤千秋・高垣美智子・Pariyanuj CHULAKA
11:45		7	◎ ダイジョ (<i>Dioscorea alata</i> L.)における共生細菌叢のメタ16S解析 *木原駿太・山本紘輔・志波優・朱家成・高田花奈子・Ouyabe Michel・パチャキル バビル・菊野日出彦・田中尚人・志和地弘信
12:00		8	◎ Effect of Environmental Stress on Growth and Yield of Chili Pepper *Rathnayaka R.M.S.M.B, S.P.Sudasinghe, Kazuhiro Nemoto, Kenichi Matsushima
12:15		9	◎ Metagenomic Analysis of Nitrogen-Fixing Bacteria in Six Accessions of White Guinea Yam (<i>Dioscorea rotundata</i> Poir.) Ayodeji Peter IDOWU, Kosuke YAMAMOTO, Yuh SHIWA, Minenosuke MATSUTANI, Kanako TAKADA, Michel OUYABE, Babil PACHAKKIL, Hidehiko KIKUNO, Asrat ASFAW, Ryo MATSUMOTO, Hironobu SHIWACHI
12:30	休憩		
13:30	香西直子 鹿児島大学	10	マンゴー'アーウイン'の加温ハウス栽培における秋季の夜間冷房による発蕾期の早進化 *内野浩二・濱島朗子・熊本修
13:45		11	マンゴー品種'リベンス'の果皮褐変障害の発生要因と対策技術の検討 *伊波 聡・安次富 厚・井上裕嗣
14:00		12	沖縄本島におけるコンテナ栽培のドリアン樹の生育および果実品質 *田代亜紀羅・下地俊充・澤岬明彦・端山 武・稲田幸太・具志堅江梨子・高江洲雄太・前田隆昭
14:30	宮崎 彰 高知大学	13	マラウイ高地におけるリンゴ栽培技術の開発と普及-中部州デッサ県を事例に- *福田聖子・Simon Mng'omba
14:45		14	ブルキナファソ中央台地で水土保全施設に植栽したアンドロポゴンの初期生育 *團 晴行・南雲不二男・ダビンガ ジョナス・バロ アルベール
15:00		15	Growth and Yield of Rainfed Lowland Rice Varieties in Different Soil Types in Cambodia *Chanthol Uch, Yurdi Yasmi, Buyung A. R. Hadi, Kea Kong, Sarom Men, Lyda Hok, Chhourn Orn, Seang Layheng, Mana Kano-Nakata, Akira Yamauchi and Hiroshi Ehara

15:15	休 憩	
15:30	樋口浩和 京都大学	16 鹿児島県島嶼部および沖縄県の在来カンキツの調査とその保存 *山本雅史・寺本さゆり・喜多正幸・北島 宣・香西直子
15:45		17 ミャンマーにおける植物資源の民族植物学的研究（2） *藤川和美・Thant Shin・Aung Zaw Moe・内山寛
16:00		18 マーシャル諸島ミリ環礁におけるトウガラシ属植物の利用 山本宗立
16:15		19 Weeding or Growing Konagi (<i>Monochoria vaginalis</i>): Learning and Practice from Tropical Asian Rice Culture Kazuo Ando

研究発表要旨

2020年11月7日(土) 10時00分 – 16時30分

zoomによるオンライン開催

(発表時間12分、質疑応答2分30秒)

Weeding or Growing Konagi (*Monochoria vaginalis*): Learning and Practice from Tropical Asian Rice Culture

Kazuo Ando (CSEAS, Kyoto Univ. and GSBS, Nagoya University)

1. Introduction

Konagi (*Monochoria vaginalis*) (Fig.1) is the worst harmful weed in Japanese rice cultivation. It is noticed that some individuals of *Konagi* acquire herbicide resistance recently. *Konagi* appears just after transplanted rice fields and it grows faster than a rice seedling. It is more important for rice cultivation of agro-chemical free, particularly, herbicide-free, how to protect rice from *Konagi* problem in accordance

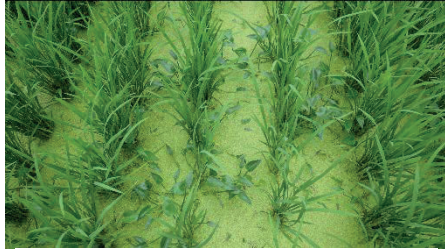


Fig.1 *Konagi* in the rice field (July 11, 2020).

with the extension of organic farming in Japan. In 2017, 2018, and 2019, it appeared many in my rice fields in Nagoya. I thought of the reason for increasing *Konagi* as follows; 1) the ridges of my rice fields could not keep the irrigated water well, 2) the herbicide I used could not work on *Konagi*. I, therefore, repaired the ridge of rice fields to keep the irrigated water, but, for the 2020 rice growing season, I could not decide how to protect *Konagi* by the herbicide or other technologies including “mechanical weeding”, even manual weeding because I doubted the herbicide performance in my rice fields. Finally, I chose “mechanical”, “ecological” and “manual” weeding practices instead of the herbicide. Because of the non-application of the herbicide, I could know the potentiality

of *Konagi* as a new leaf vegetable and ethnobotanical interesting characteristics for appealing to the Japanese consumers in the market in comparison with the farmer’s rice technologies in Bangladesh and food use of *Konagi* in Laos, Thailand, and Vietnam. This paper aims to report my rice cultivation of 2020 in my rice fields in Nagoya.

2. Materials and Methodologies

The action research with existentialism has been conducted at the author’s private rice fields in the 2020 rice cultivation season. The rice fields are located in the suburbs of Nagoya City. The acreage of total research fields is about 25 a (9plots). The 7 rice fields are irrigated with two small electric submerged pumps and two rice fields are irrigated with gravity irrigation. The tractor and the walking type of rice planter were applied for land preparation and transplanting the rice seedlings were purchased from Agricultural Cooperative. After harvesting the rice in the first week of October 2019 by a small combine harvester. The dropped cut straws were immediately mixed with lime nitrogen by the tractor for quick decay. The name of the rice variety is *Asahi no Yume*; this is the recommended variety in the early variety group in Aichi prefecture. This variety has resistance against leaf blast, ear blast, white leaf blight, and striped leaf blight. Usually, the transplanting date is the end of May, and harvesting of the first of October. Four-time of plowing had been applied between November 2019 and March 2020. As basal fertilizer and top dressing, the chemical compound fertilizer namely *Hitomaki-Kun* (N-P-K %, 14-9-7 with magnesium line 2.5%) and fully ripen poultry manure were applied 60Kg per 10a and 45kg per 10a respectively. A small amount of insecticide namely *Oncol 5* granules (benfuracarb 5%) was applied at each mat nursery of seedling, 30g for a planting tray of the machine transplanter. The manual weeding by a chain, a *Kumade* (a small rake), a Japanese weeder, and hand-pulling were applied. No herbicide was applied. *Taboshi*: rice field drying after the establishment of rice seedlings) for 4 days and *Nakaboshi*; the rice fields were dried for one week in the half of late July.

The following research activities were conducted: 1) daily record of practice, 2) observation of the rice plants and the physical conditions of rice fields, 3) searching the reports and research papers available on the internet, 4) referring to my own experiences of rice cultivation in Bangladesh.

3. Result and Discussion

3-1 Common countermeasures to protect the weeds including *Konagi* in my rice fields

It is well recognized that the deepwater after transplanting rice seedlings and several plowing during the winter season are easy and common countermeasures to control the weed growth. The good ridges are necessary to keep the water nearly one week after transplanting rice seedling so that the herbicide can work well. The ridges of the rice fields were manually repaired by myself in the winter of 2019/20. It is practically known that the frequent plowing during winter is effective particularly to control *Konagi*. These countermeasures were taken in the winter season of 2019/2020. At the time of transplanting, it is also known that well muddy rice-field can control the growth of weeds. The frequent plowing and leveling in

the irrigated rice fields, therefore, were conducted with the tractor.

3-2. Spot-billed ducks came to the rice fields, chain weeding and *Taboshi*

After transplanting rice seedlings, a couple of spot-billed duck (Fig.2) came the rice fields, and I have decided no application of herbicide this year. The chain weeding tool (Fig.3,4) is now popular in Japan,

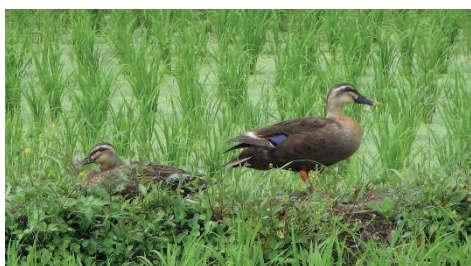


Fig.2 Spot-billed ducks in the rice field (June 26, 2020).

especially for killing the young plant of *Konagi*. The chain can remove the *Konagi* young plants from the soil and they float on water surface in rice fields. I had known the chain weeding tool and its performance through the internet but had hesitated to apply this tool within one week after transplanting rice seedlings. In Japan, we have the proverb of *Nae Hansaku* (*Nae* means Seedling, *Hansaku* means half of total cultivation). *Nae Hansaku* means growing the seedling is the same as finishing the half of the total rice cultivation because healthy seedling can quickly establish themselves to get significant healthy tillering. The chain weeding tool surely disturbed the establishment of seedlings.

However, I remembered my experience with the underground water irrigated MV (Modern Varieties) rice cultivation during the dry season in Bangladesh.

In Dakshin Chamuria village, the leaves of MV rice seedlings changed into yellow in the dried-up seedling bed at the time of transplanting at the end of January, but these rice seedling could recover well in the second half of the growth stage. I observed the similar technology of the chain weeding tool (Fig5). The



Fig.3 Homemade chain weeding tool (June 13, 2020).



Fig.4 Chain weeding tool application (June 12, 2020).

bamboo hallow was applied in the transplanted MV rice -growing field, and then they could also grow well finally. These experiences in Bangladesh, this time, made me apply the chain tool for a trial. However, this time the rice seedlings stopped their growth for a few days, just like the symptom of root-suffocation. I took the countermeasure of *Taboshi* immediately ten days after transplanting rice seedling. I have dried up the rice-field for 3 days. The rice seedling could be revitalized again.



Fig.5 Bamboo harrow in Bangladesh (March, 1987).



Fig.6 *Konagi* transplanted for blocking *Ashikaki* (July 24, 2020).

However, *Nakaboshi* accelerated the weed emergence at my rice fields including *Konagi*. I have decided to apply the

Japanese weeder which used to be applied in Bangladesh. Instead of weeding *Konagi* plants, I have found on the internet that *Konagi* is eatable and was recorded as a cultivated vegetable in *Engi-Shiki* (10th century, a set of ancient Japanese governmental regulations). It had been cultivated up to the *Edo* period (17-19c) in Japan and also, at the present, is eaten and sold in the market in Thailand, Laos, and Vietnam. In Bangladesh, it is also considered to be eatable. Therefore, I have tried to eat it and sell it in *Asaichi* (Farmers' morning market). The common cooking menu is *Sumiso-Ae*.

3-3. Ecological weed control by *Konagi*

In the early July 2020, the dense *Ashikaki* (*Leersia japonica*) appeared along the ridges of some rice field. *Ashikaki* invaded the rice fields from the corner to the center. I tried to control *Ashikaki* with the fence of *Konagi*; *Konagi* does not invade and just grow at one place (Fig.6). This ecological countermeasure was effective until the harvest.

熱帯農業研究 第13巻別号2

2020年11月7日発行

編集：日本熱帯農業学会第128回講演会運営委員会
龍谷大学

印刷：佐藤印刷株式会社

日本熱帯農業学会第128回講演会運営委員会

運営委員長：西川芳昭

運営委員会事務局：大門弘幸・落合雪野・坂梨健太

Japanese Society for Tropical Agriculture

***Research for
Tropical Agriculture***

Vol.13, Extra issue 2



November 7, 2020