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日本熱帯農業学会第121回講演会・総会
および60周年記念講演

Ⅰ．研究発表要旨
Ⅱ．ポスターセッション要旨
Ⅲ．日本熱帯農業学会学会賞学術賞・
　　奨励賞受賞記念講演要旨
Ⅳ．公開シンポジウム要旨

会場：日本大学生物資源科学部

2017年3月11日, 12日

日本熱帯農業学会第121回講演会・総会および60周年記念講演

期　日　2017年3月11日（土），3月12日（日）

場　所　日本大学生物資源科学部

事務局　〒252-0880　神奈川県藤沢市亀井野1866

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参加費　一般5,000円，学生3,000円（要旨代含む，当日受け付けます）

懇親会費　一般5,000円，学生3,000円（当日受け付けます）

受付　日本大学生物資源科学部本館1階（3月11日（土）8:15～，3月12日（日）9:00～）

第1日　3月11日（土）		
	第1会場 （本館4階41講義室）	第2会場 （本館4階42講義室）
9:00～ 11:00	研究発表（講演番号1～8）	研究発表（講演番号18～25）
11:00～ 12:00	ポスター発表（本館4階大講堂前通路）	
13:00～ 13:30	総会（本館4階大講堂）	
13:40～ 13:50	学術賞，奨励賞授賞式（本館4階大講堂）	
14:00～ 14:40	受賞者記念講演（本館4階大講堂）	
15:00～ 16:30	公開シンポジウム（本館4階大講堂）	
16:45～ 17:15	日本熱帯農業学会60周年記念講演 （本館4階大講堂）	
17:30～ 19:30	懇親会（本館地下1階食堂）	

第2日　3月12日（日）		
	第1会場 （本館4階41講義室）	第2会場 （本館4階42講義室）
9:30～ 12:00	研究発表（講演番号9～17）	研究発表（講演番号26～35）

11:00 -11:15	上吉原裕亮	15. 葉の形態形質の違いによるジャボチカバの系統識別および耐寒性の系統間差異に関する研究. 篠原 卓・*藤崎絢帆・本多俊介・出沼大輔・吉田沙樹・五十嵐大造（東農大学短期大学部）	バビルパチャキル	32. Assessment of water quality as affected by herbicide application in the rice field of Bangladesh. *Md. Rashedur Rahman[1]・Kazuo Ando[2]（[1]Bangladesh Agricultural University・[2]Center for Southeast Asian Studies, Kyoto University）
11:15 -11:30	真田篤史（東農大）	16. 夏季のチェリモヤの人工受粉にアテモヤ花粉を使っても結実不良は改善しない. * 松田大志・樋口浩和（京大院農学研究科）	奈島賢児（日大）	33. Livelihood Problems and Cultural Adaptation in a Southern Chin Village under Recent Economic Change in Myanmar. *Noemi-Tiina Duperies[1,2]・Kazuo Ando[2]（[1]Graduate School of Asian and African Area Studies, Kyoto University・[2]Center for Southeast Asian Studies, Kyoto University）
11:30 -11:45		17. Technological Options for Sustaining Crop Production under Changing Climate in Bangladesh. * Md Abdul Karim[1,2]・Hirokazu Higuchi[2]・Eiji Nawata[2]（[1]Bangabandhu Sheikh Mujibur Rahman Agricultural University, Bangladesh・[2]Graduate School of Agriculture, Kyoto University）		34. Sustainability Assessment of Informal Seed Supply System of Tef (*Eragrotis tef* (Zucc)), IV. Specificity of Ethiopian Indigenous Crop 'tef' in the Seed System. 根本和洋[1]・*西川芳昭[2]・Tesefaye Gemechu[3]（[1]信大農・[2]龍谷大経済学部・[3]Adami Tulu 農業研究センター）
11:45 -12:00				35. Sustainability Assessment of Informal Seed Supply System of Tef (*Eragrotis tef* (Zucc)), V. Proposing Reconsideration of 'Seed System' Approach from Ethiopian Tef Context. * 西川芳昭[1]・根本和洋[2]・T. Gemechu[3]（[1]龍谷大経済学部・[2]信大院農・[3] Adami Tulu Agr. Res. Center）

ポスター発表

P1. カンボジアの農村における小規模養豚農家の経営実態と持続可能性.

*中野尚輝[1]・伊藤香純[2]・浜野 充[1]（[1]信大農, [2]名古屋大農学国際協力研究センター）㊚

P2. Diurnal Change in Leaf Gas Exchange Characteristics of Sago Palm Seedlings (*Metroxylon sagu* Rottb.).

*Aidil Azhar[1]・Hitoshi Naito[2]・Daigo Makihara[1]・Hiroshi Ehara[1]（[1]Nagoya University・[2]Kurashiki University of Science and The Arts）㊚

P3. Effects of Biochar from Rice Husk and *Chromolaena odorata* on Water Spinach Growth in Acidic Upland Soils of Cambodia.

*Vicheka Lorn[1]・Haruo Tanaka[2]・Yosei Oikawa[2]（[1]United Graduate School of Agricultural Science, Tokyo University of Agriculture and Technology・[2]Institute of Agriculture, Tokyo University of Agriculture and Technology）㊚

P4. 塩ストレス抵抗性の異なるササゲ属植物の光合成速度および関連形質の比較.

*吉田純子[1]・友岡憲彦[2]・内藤 整[3]・江原 宏[4]（[1]三重大院生物資源学研究科・[2]農業・食品産業技術総合研究機構遺伝資源センター・[3]倉敷芸術科学大生命科学部・[4]名古屋大農学国際教育協力研究センター）㊚

P5. Estimation of Under-ground Biomass of *Rauvolfia serpentina* and *Amorphophallus bulbifer* in a Karen Swidden System in the Bago Mountains, Myanmar.

*Ei・Yasuyuki Kosaka・Shinya Takeda（Graduate School of Asian and African Area Studies, Kyoto University）

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Assessment of water quality as affected by herbicide application in the rice field of Bangladesh

Md. Rashedur Rahman[1] and Kazuo Ando[2]

[1]Department of Agronomy, Bangladesh Agricultural University, Mymensingh, Bangladesh and [2]Center for Southeast Asian Studies, Kyoto University, Japan

Key words: Water quality, herbicide, rice field, Bangladesh

Introduction

Herbicide application in rice field is not a new concept in the world but for Bangladesh farmers', especially the farmers in the central-north of Bangladesh, it is rather a new technology for weeding in the rice field. More than 100 pesticide companies in Bangladesh are either producing or importing different kinds of herbicides with various degree of toxicity, having both residual and non-residual effect to water environment. These companies are trying to motivate the local farmers to apply these herbicides in their rice field. Though the farmers only think of an easy removal of weed from the rice fields but they are not concerned in the negative impact of the herbicides to the water quality of rice field as well as surrounding water bodies. Therefore, this study is aimed to report the farmers' perception about the herbicides and simple water quality characteristics after application of herbicides in the rice field as a preliminary study.

Methodology

The study was conducted in two phases. At first phase, the perception and knowledge of local farmers about use of herbicides was collected through questionnaire survey. Thirty farmers were randomly selected and interviewed from two villages of Mymensingh district of Bangladesh. At second phase, water samples were collected from the rice field where only pretilachlor was used to control the weeds in both winter and summer seasons. The samples were collected in a regular interval (6 times) as following. After transplanting rice seedlings, the first time samples were collected at the day of herbicide application (3 days after transplanting). The second, third, fourth, fifth and sixth time samples were collected at 3, 5, 10, 20 and 30 days after application of herbicide, respectively. After collection of water samples, chemical elements were analyzed; pH, DO (Dissolved Oxygen), BOD (Biological Oxygen Demand), TDS (Total Dissolved Solid), Chlorine (Cl), Nitrogen (N), Phosphorus (P), Potassium (K), Sulphur (S), Boron (B) and Microbial activities (CFU/ml). The analysis was conducted in the central laboratory of Bangladesh Agricultural University, Bangladesh. Water samples were also collected from control rice field where no herbicide was applied.

Results and discussion

Farmer's perception of using herbicide

In the study area the local farmers used to apply herbicides to control weeds for the last few years (5-7 years). Before that they used to do it by hand pulling or Japanese rice weeder. However, usually they apply herbicide in the rice field three to five days after transplantation of rice seedlings. There are several types of herbicides found in the local market namely Rifit (pretilachlor), Ronstar (oxadiazon), Granite (penoxsulam) etc. of which pretilachlor was extensively used by 85% of the local farmers. The interview with the farmer using herbicide explained that the dose recommended by a company would be followed but, in reality, they overdose with herbicide, which may cause deterioration of water quality.

Water quality parameters as affected by herbicide use

In the collected samples of water, both winter and summer seasons, it was resulted that in winter season the DO was 3.1 mg/L at day 1 whereas in the controlled field it was 3.3 mg/L which was higher than the herbicide applied rice field. In summer season the DO (2.6 mg/L) was much less in

herbicide applied rice field than controlled one (4.7mg/L). However, in both seasons, DO seemed to be inclined to increase accordance with progress of time. It has been observed that the BOD was fluctuating throughout the sampling period during both the seasons and did not show significant differences with the controlled field, to which was not applied the herbicide. Considering the microbial activities, it was found that in both the seasons the microbial activities became lower at the first day of herbicide application but in accordance with progress of time the microbial activities increased gradually during sampling period. It was higher in summer season than in winter season (Figure 1). This is hypothetically considered due to the higher water temperature in summer season and residual effect of the herbicides.

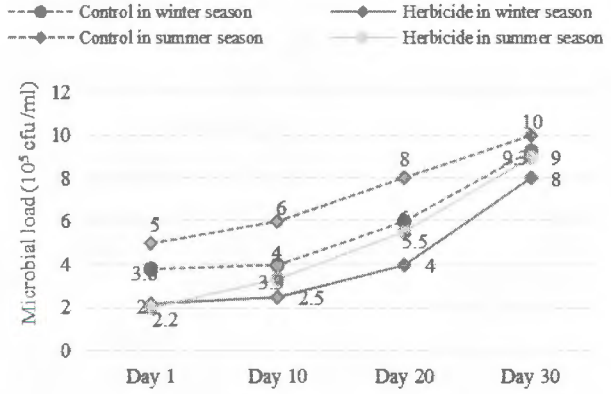

Figure 1: Microbial activity in summer and winter season after application of herbicide in the rice field

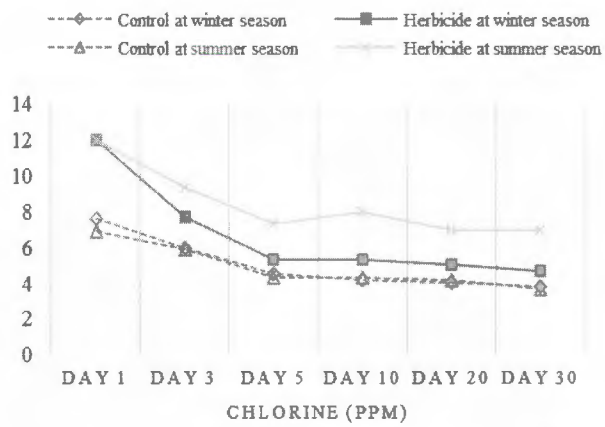

Figure 2: Chlorine content in water after application of herbicide in the rice field

The water pH was rather high in both seasons in herbicide applied fields compared to the controlled field. The water pH increased in accordance with progress of time after herbicide application. The S, P and B content in herbicide applied fields decreased with progress of time in comparison to the controlled field. However, the B content might be reduced due to increasing of pH, because B content and pH are negatively related (BARC, 2012). The Cl content became higher in the herbicide applied fields just after application of herbicide compared to the controlled rice field. This phenomenon occurred in both seasons. The high amount of Cl content in water of the rice field may hypothetically cause injury to rice leaf, which could affect growth of rice (Timothy et al. 2014).

Conclusion

The present study tried to find out farmer's knowledge and perception about herbicide uses and found that they were not very much concerned in the negative impact of herbicide on rice field environment. They were just being motivated by the local herbicide companies' businessmen and used to apply herbicide in rice fields. After chemical analysis of water samples, it was found that the microbial activities were decreased at the early stage of rice growth and higher amount of chlorine was present in the water (Figure 2) of rice fields after application of herbicide. Therefore, the follow-up studies should be undertaken especially in the coastal area and southern hilly are to find out the status of herbicide use and its impact on soil and water quality.

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