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Rice Growth in a Wide Range of Environments and is Productive in many Situations

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Introduction

There are three processes that occur when N fertilizer is applied to the soil. Firstly, the fertilizer is absorbed and used by the crop plants; secondly, it is fixed by the soil, and thirdly, the fertilizer residues in the soil are lost from the paddy field into the environment. Ammonia volatilization, de-nitrification, and nitrate leaching are the main pathways of nitrogen loss, and in Jiangsu, farmers often applied a higher amount of fertilizer to maximize the grain yield in rice-based cropping system, which resulted in a low level because of rapid losses to water or the atmosphere. Ammonia volatilization and emission constituted a very large proportion lost from the paddy soil system [1]. The Mei-yu season always occurs in June and July, and it generally begins in mid-June in the Yangtze River Basin, bringing high precipitation, the amount of which determines the drought or flood conditions in the Yangtze River Basin. Nitrate is one of the most water-soluble anions, and it can be easily leached into the groundwater system. Excessive N fertilizer application to the soil has been identified as a major source of groundwater nitrate contamination, and our results showed that large amounts was applied as basal and tillering fertilizers for rice production around the Mei-yu season when precipitation and temperature reach peak yearly values in Jiangsu, which is the main reason for loss. In the past two decades, nitrate concentrations in the rivers and lakes of the Taihu watershed of Jiangsu have increased fivefold and the nitrate content of well water in this region has ranged from mg with drinking water exceeding the safety criterion [2]. Qiao showed that the nitrate concentration in leachate increased with the increase in N application rates, higher potential amounts of leachate would be engendered with a precipitation intensity of more than mm, the nitrate concentrations in leachate could increase with the increase of air temperature. These reasons could also contribute to an increase in ammonia volatilization and emission in the uplands and low lands. Our results indicate that the rice plants can be easily increased by applying nearly less mineral fertilizer compared to, resulting in a significant increase in grain yield. Furthermore, the soils were gradually leached into the deeper soil layers, and the leaching potential of treatment was greater than that of treatment in soil layers. Therefore, we can estimate that losses to the environment can be efficiently decreased, while rice production can be maintained at a high level by reducing the overall application rate with optimal management [3].

Discussion

To determine the optimal application rates for rice production, it was necessary to consider the production, economic and environmental benefits. Our results showed significantly improved grain yield and in all of the location field experiments and the large demonstration area experiments, which can be attributed to the integration of the following technologies, the determination to control application rate according to the China Soil Testing and Formulated Fertilization database for nutrient imbalances, the technology to apply less basal fertilizer and more panicle fertilizer, the strategy to achieve the best fertilizer management practices including fertilizer types, deep application, crop straw return and varieties with high nutrient efficiency, other management practices including planting density, irrigation measures, integrated pest management, etc [4]. In addition, the awareness of how to persistently improve soil fertility and productivity must always be incorporated into agricultural practices [5]. These technologies are currently recommended in China due to their positive effect on increasing grain yield, reducing loss and improving, while simultaneously achieving improved nutrient contributions compared. In conclusions, our results showed that higher fertilizer input rate and improper timing practiced by farmers are becoming widespread, result in lower yield and in rice production in Jiangsu, China. The HYHE agriculture model based strategies were conducted with a reduction in application rate, achieving a rice yield even when the soil properties in the different regions of Jiangsu were various. Our research could achieve an advanced nutrient contribution stage based on by regulating the N supply amount and time. The integration of appropriate nutrient management strategies with related agronomic practices are the keys to obtaining more productive, profitable and environmentally sustainable crop management practices. Based on the differences in geographic location, climatic conditions and the level of regional economic development level, kinds of counties were selected. Within each county towns were randomly selected, villages were selected in each town, and farmer households were selected in each village [6]. In total, valid questionnaires about rice planting time, fertilizer utilization amount, tillage method, irrigation amount and time, the utilization of pesticide each year were obtained. The respondents were visited and questioned by researchers to collect information about the use of chemical fertilizers in each household. The physical and chemical properties of soil layer from south, central and north Jiangsu for the period were obtained from the Soil Testing and Formulated Fertilization database of the Ministry of Agriculture, China. Measurements were checked using certified standard reference materials obtained from the Institute for environmental Reference Materials of the Ministry of Environmental Protection. Ten days after transplanting, the rice seedlings were collected from fertilizer management model experiment in Rugao, and the samples were carefully cleaned on a mesh screen. After removing the debri, scale image was acquired by digital scanning at a resolution using an image scanner and a positive film transparency unit. All of the images of rice roots were analysed to assess the morphology parameters [7]. Droughts affected rice cultivation, rice production and were responsible for pests and diseases outbreaks. Farmers in the discussion group stated that many rice areas were only cultivated for one season

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and then had to be fallowed in the following season due to drought occurrences. According to participants, winters were not as cold as it was before and that the summers were getting hotter. These temperature increase contributed to droughts which in turn caused negative impacts or effects on rice production. Furthermore, farmers stated that that they received less rain during the rice growing seasons. For example, rainstorms and monsoons did not occur in the month of March. These March rainstorms were a major source of water for both rice growth and development. Water shortage also leads to pest diseases which directly contributed to low rice yield [8]. The findings of study exposed that average seasonal rainfall and temperature can be considered as explanatory climate parameters for two rice seasons in Nam Dong district, Vietnam. While, rainfall had positive effect on rice yield, the maximum temperature was negative to rice yield in two growing seasons. Whereas, average seasonal minimum temperature was statistically significant and positively related to rice yield, but not significant in SA season. In addition, the information of the group discussion also supported that many changes in climate, especially drought, were identified by farmers of having the most negative impacts on their individual rice production. It is clearly that rice yield and food are connected to climate variability trends [9]. Hence, it is important to invest in mountainous agricultural research and development in order to supply farmers with more drought-tolerant, storm-tolerant crop varieties, and educate those farmers with efficient production practices which are effective and resilient in various climate conditions. Moreover, the consideration of enhancing or perfecting techniques needed to improve the seasonal climate forecasts while simultaneously disseminating current climate conditions and predictions are necessary requirements to help sustain, improve and increase the agricultural development in the Central lands. The research results provide valuable information to assist local governments in rural socio-economic development plans to minimize the impacts of adverse climate conditions. Moreover, Meteorological Stations, agricultural and extension units will also benefit from this data to help improve their communication methods when disseminating to the farmers current or accurate climate conditions, climate predictions and climate patterns. Climatic factors are key determinants to crop production processes; solar radiation, rainfall and temperature fluctuations lead to water deficit, flood, changing in soil moisture content, pest and diseases outbreak that constraint crop growth and can account for 15 - 80% of the variation of inter-annual yield resources. In Vietnam, rice production plays a crucial role in the country economy. Nearly 80% Vietnamese farmers cultivate rice which is a major staple crop of ethnic minorities in the highland areas. Rice production contributes to income security, alleviate poverty, and strengthen food security for ethnic minorities. However it tends to have strongest rice yield decreased under both dry and wet climate change scenarios in the Central Highland of Vietnam. Moreover, also indicated that a decline of rice yield ranging may be observed in all climate change scenarios in Vietnam in 2030s.In the face of climate change, understanding climatic impacts on rice production is crucial to identifying solutions that will improve current food production and to increase the adaptability of these systems in the future. In Vietnam, particularly in the Central Highlands of Vietnam, studies on the impact of climate variability of rice production have been very minimal. The objective of this paper is to assess the impact of climate variability on rice production. Accordingly, recommendations will be made to help improve the current agricultural production systems in an effective and efficient adaptation to future climate variability. The monthly maximum temperature, monthly minimum temperature, and monthly total rainfall data during 1900s period were taken from Thua Thien Hue Hydro-meteorological Station. The information gathered was used to determine the relationship between rice yield and climate parameters. A focus group discussion was conducted involving local rice farmers to understand their opinions, and their experiences with climate variability and its impact on rice production using the Participatory Rural Appraisal (PRA) tools such as time line trend. In depth interview was held with agricultural extension officers with regard to the impacts of climate variability on rice production.

Conclusion

In conclusion, we can state that studying stress response in rice remains a vivid, rewarding and stimulating argument of research, with important consequences at both environmental and social levels in consideration of the on-going global climate change and the predicted increase of the world population.

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Conflict of Interest

None

References

1. Atanassova B (1999) Functional male sterility (ps-2) in tomato (Lycopesicon esculentum Mill.) and its application in breeding and hybrid seed production. Euphytica EU 107:13-21.
2. Martion CS,Farina WM (2015) Honeybee floral constancy and pollination efficiency in sunflower (Helianthus annuus) crops for hybrid seed production. Apidologie EU 47:161-170.
3. Ravi D,Prakash A (2012) Production and applications of artificial seeds: a review. Int Res J Biological Sci USA 1:74-78.
4. Sharma Y, Sharmal S N (2005) Chemical hybridizing agents (CHA)–a tool for hybrid seed production–a review. Agric Rev IND 26:114-123
5. Drechsel P, Dongus S (2009) Dynamics and sustainability of urban agriculture: Examples from sub-Saharan Africa. Sustain Sci UN 5: 69-78.
6. Smit J,Nasr J (1992) Urban agriculture for sustainable cities: using wastes and idle land and water bodies as resources. Environ Urban US 4:141-152.
7. Ferichani M, Prasetya DA (2017) System of rice intensification increases rice productivity on saline soil. Paddy Water Environ EU 15:649-657.
8. Siwar C, Idris NDM, Muhammad Y, Morshed G (2014) Issues and Challenges Facing Rice Production and Food Security in the Granary Areas in the East Coast Economic Region (ECER), Malaysia. TJASR MY 7: 711-722.
9. Hanif N (2017) The Involvement of Extension Agent in Planning, Implementing and Monitoring Activities Base on the Rice Check at Iada Peka, Pahang. PSASIR MY 1-43.