



中国科学院南京土壤研究所

Institute of Soil Science, Chinese Academy of Sciences

When should mid-season aeration begin and HQ/DCD be applied to reduce CH_4 and N_2O emissions from rice fields

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**CH₄ and N₂O Emissions from Rice Fields as Affected by
the Timing of Mid-season Aeration**

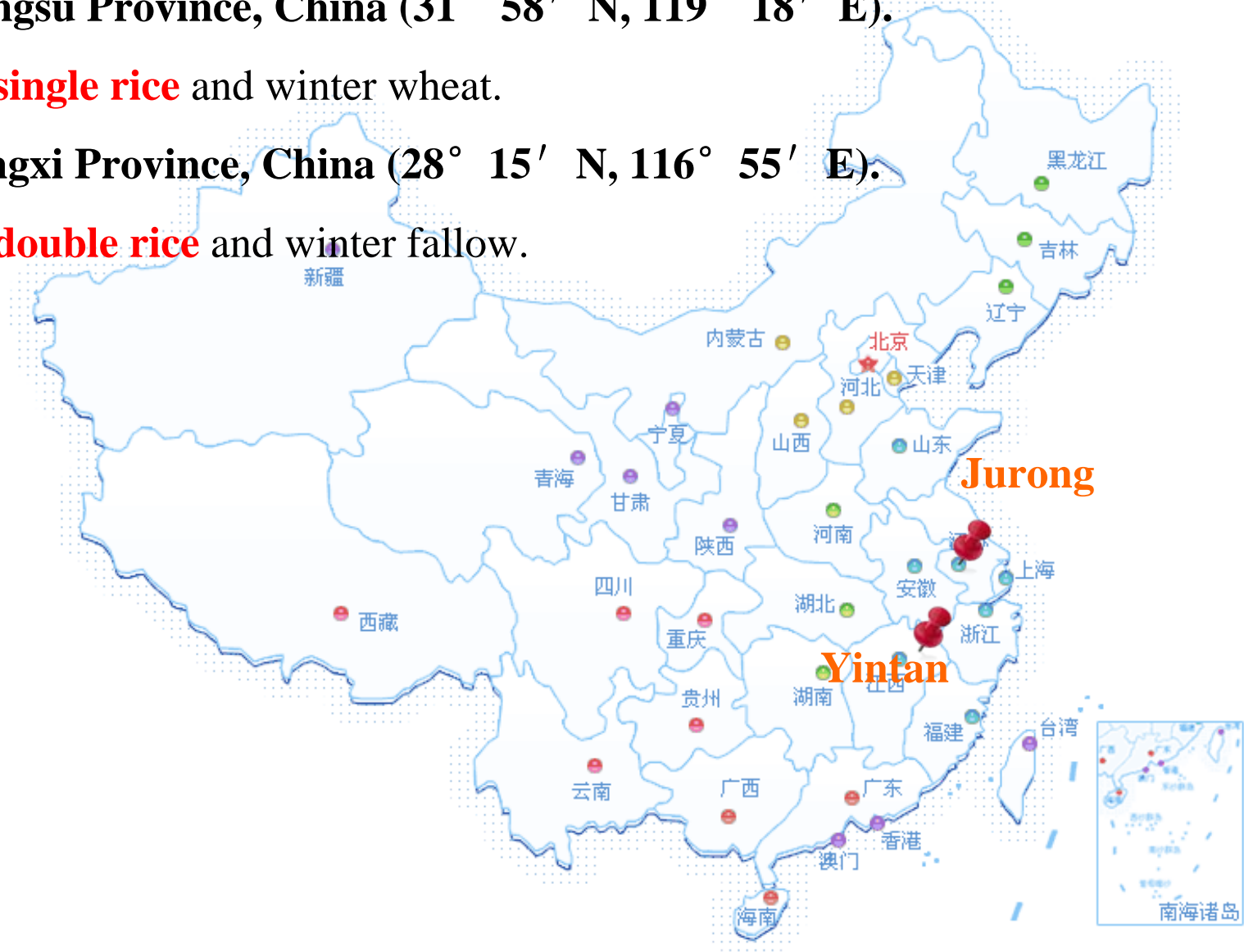
Experimental Site

- **Jurong**, Jiangsu Province, China ($31^{\circ} 58' N, 119^{\circ} 18' E$).

Rotation of **single rice** and winter wheat.

- **Yintan**, Jiangxi Province, China ($28^{\circ} 15' N, 116^{\circ} 55' E$).

Rotation of **double rice** and winter fallow.



Experimental Design

□ Timing of mid-season aeration (MSA):

Early aeration (EA); Normal aeration (NA); Late aeration (LA).

□ Straw application:

0 ; 3.2 t hm⁻².

Flooding

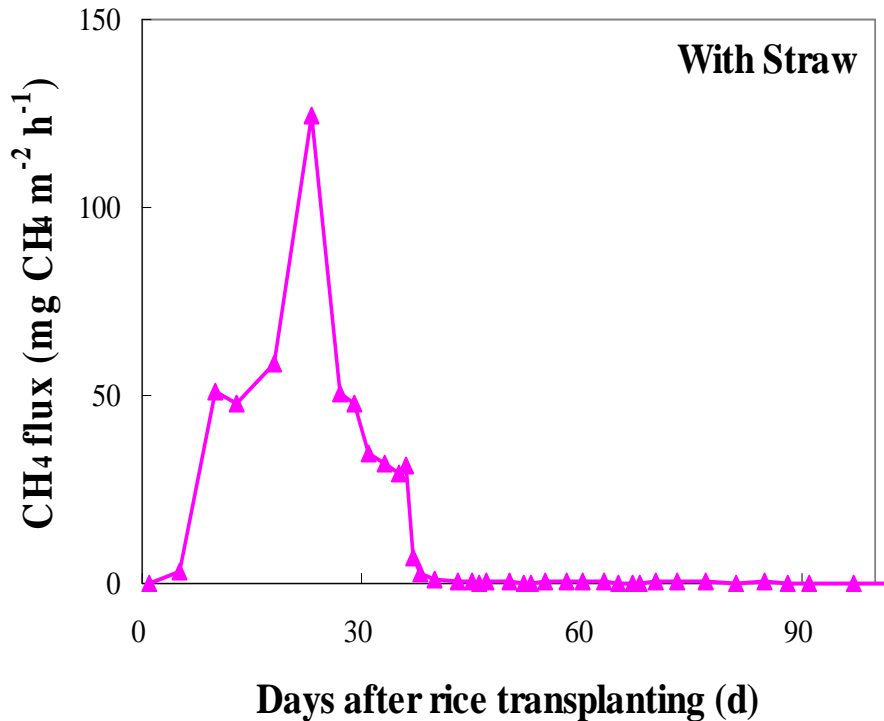
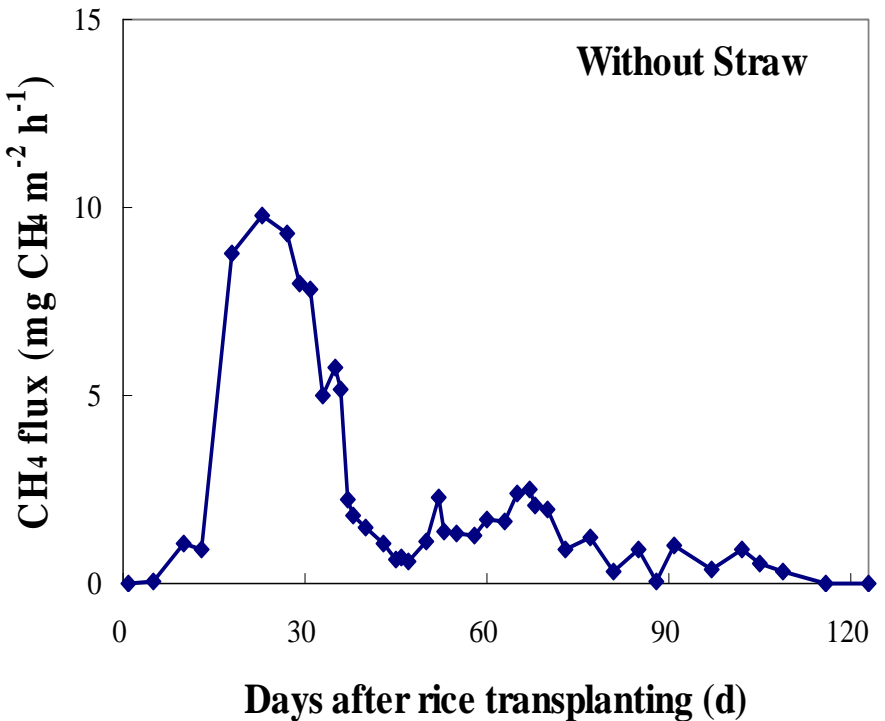


MSA



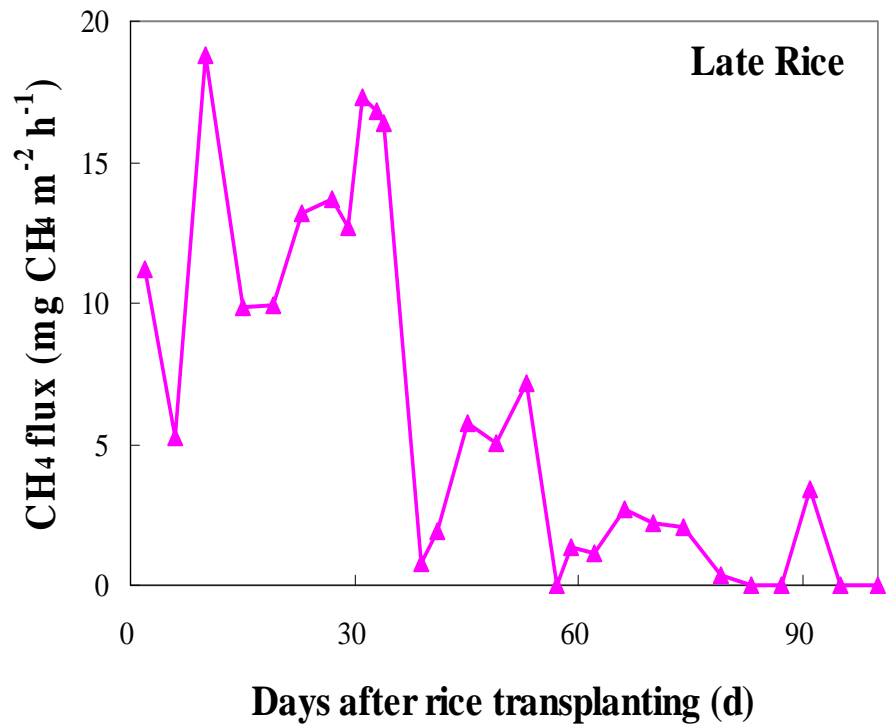
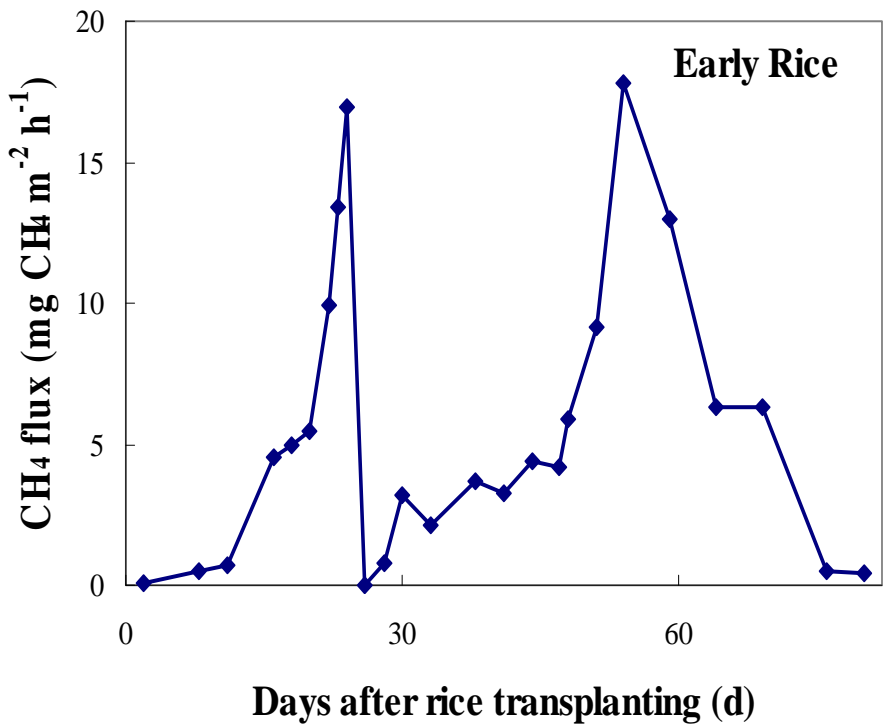
Results and Discussion

Temporal variation of CH₄ flux from single rice field (Normal aeration)



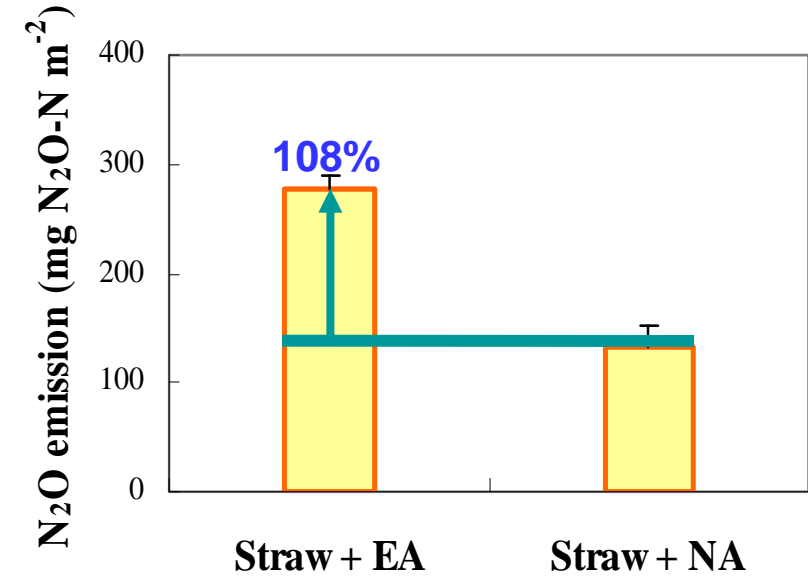
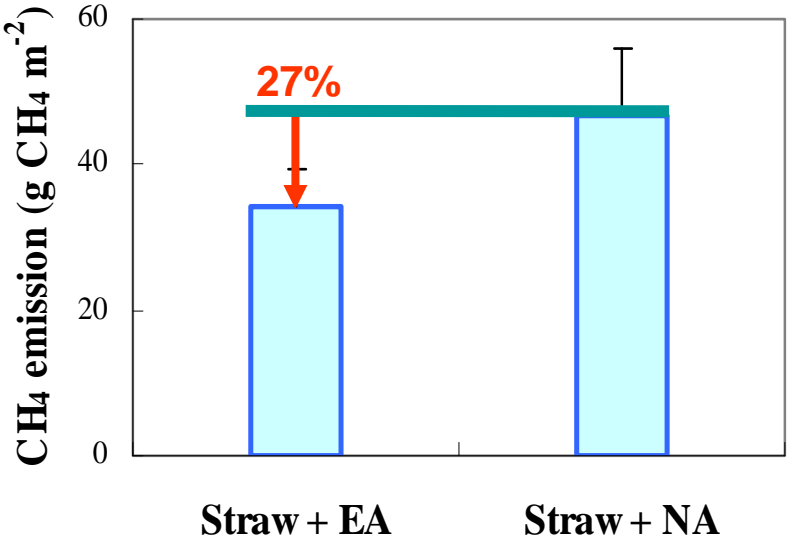
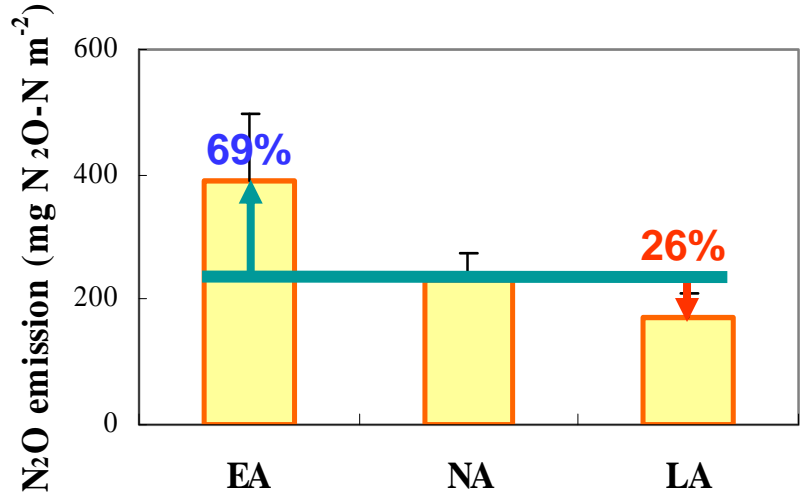
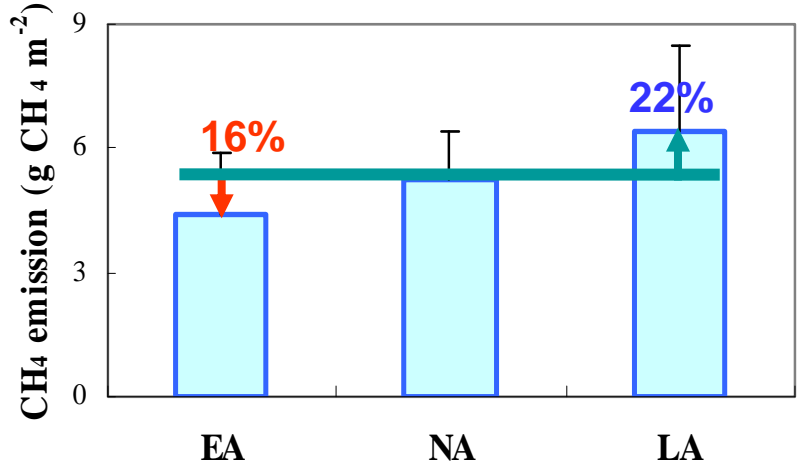
Results and Discussion

Temporal variation of CH₄ flux from double rice field (Normal aeration)



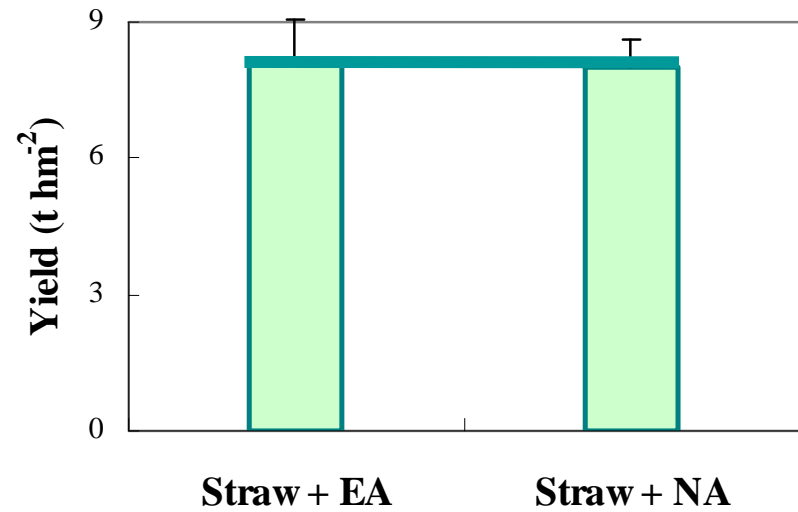
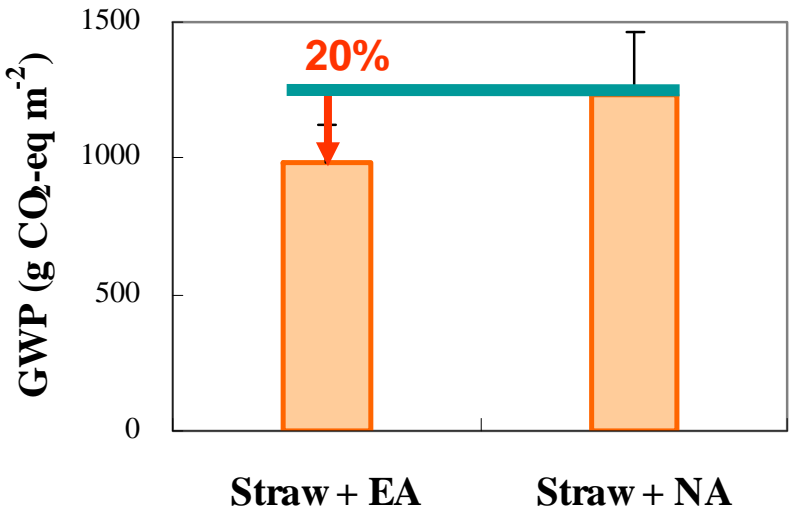
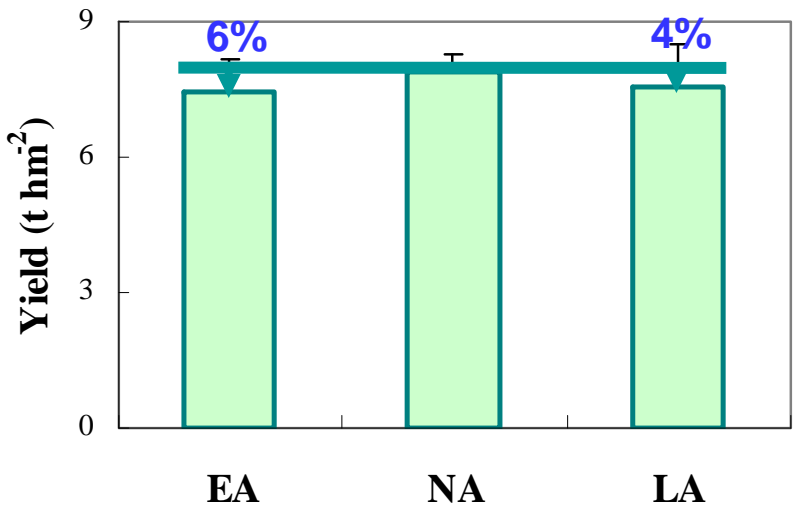
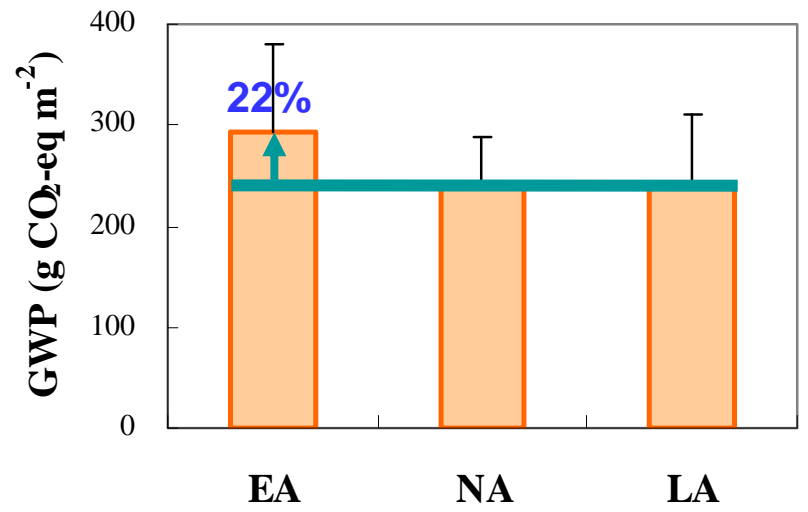
Results and Discussion

CH₄ and N₂O emissions from single rice field as affected by the timing of MSA



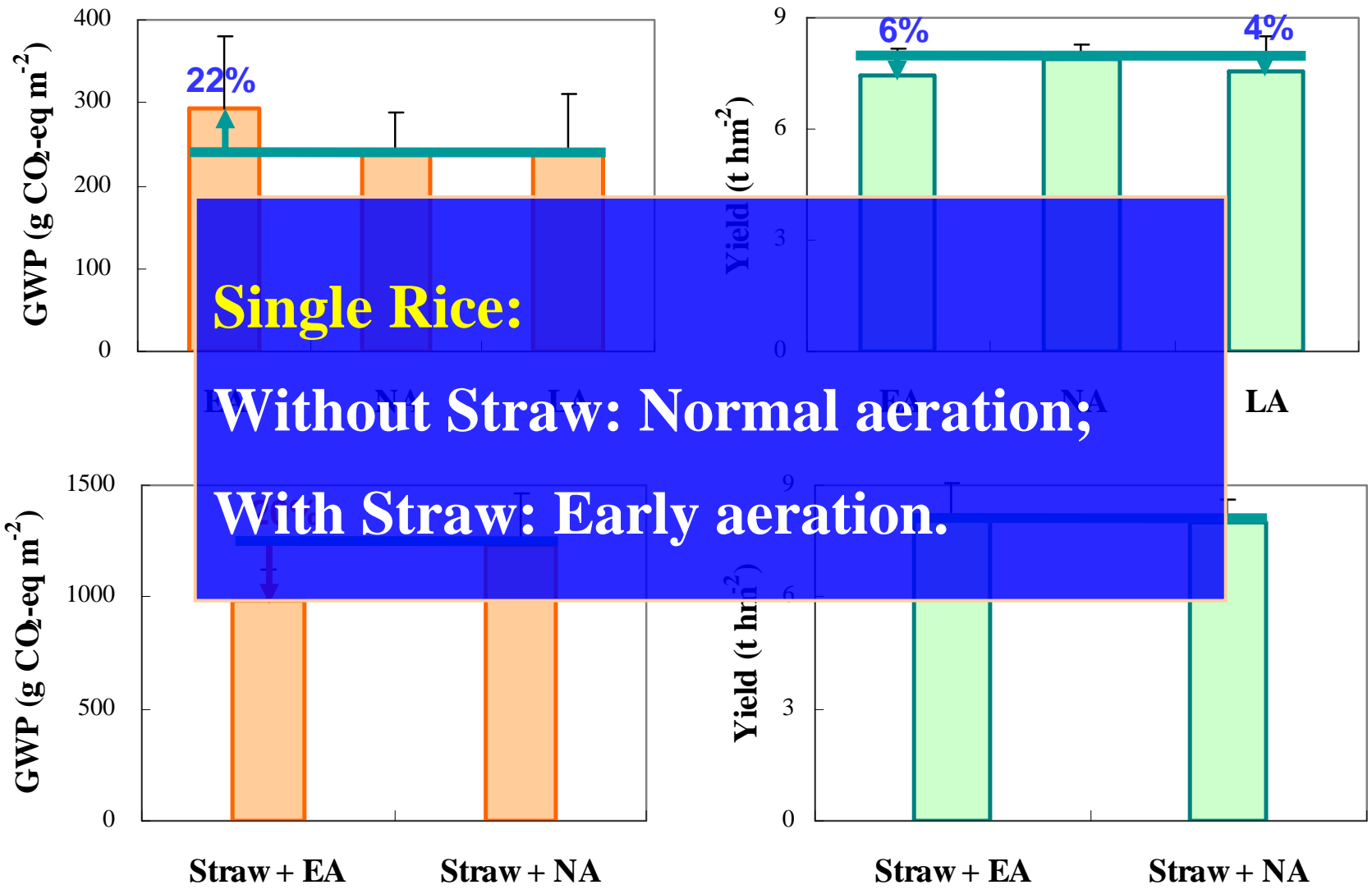
Results and Discussion

GWP and yield of single rice as affected by the timing of MSA



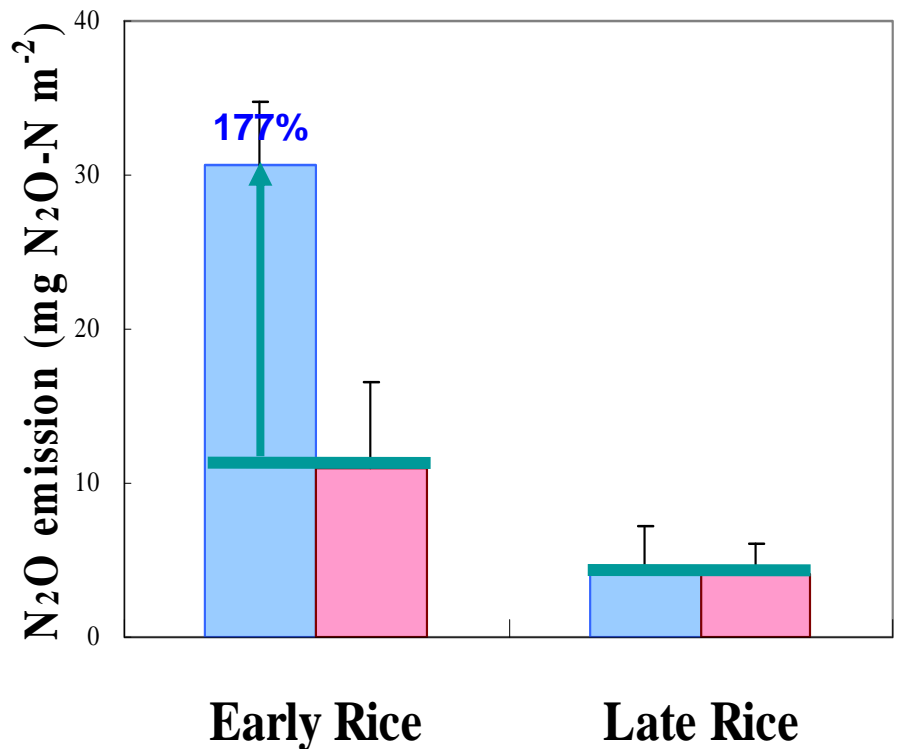
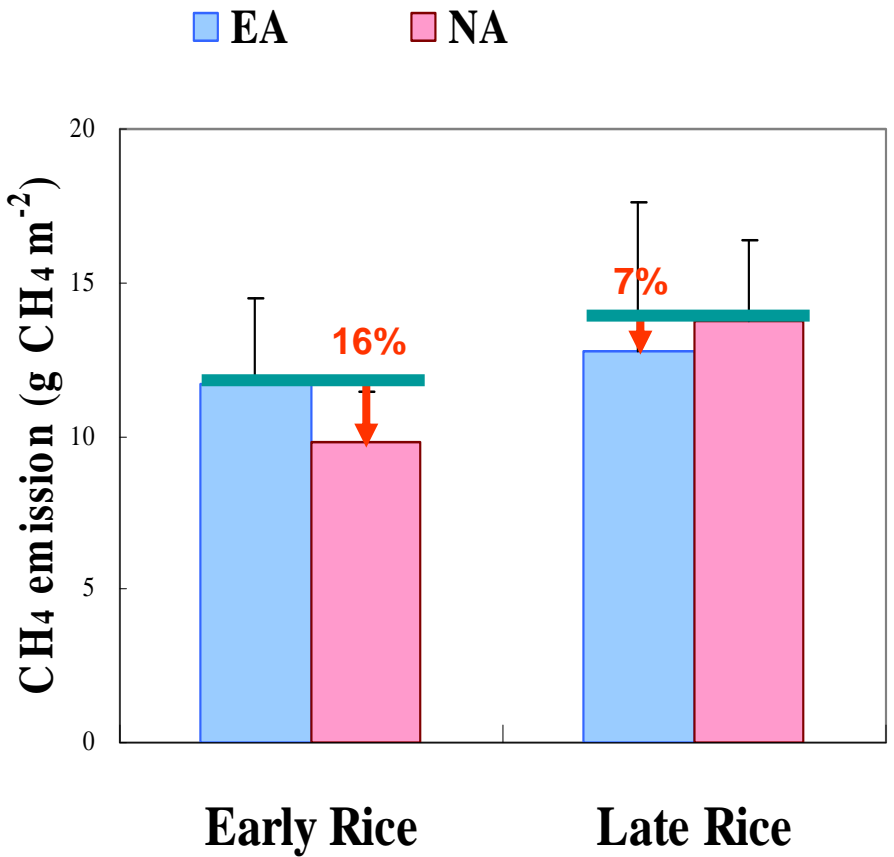
Results and Discussion

GWP and yield of single rice as affected by the timing of MSA



Results and Discussion

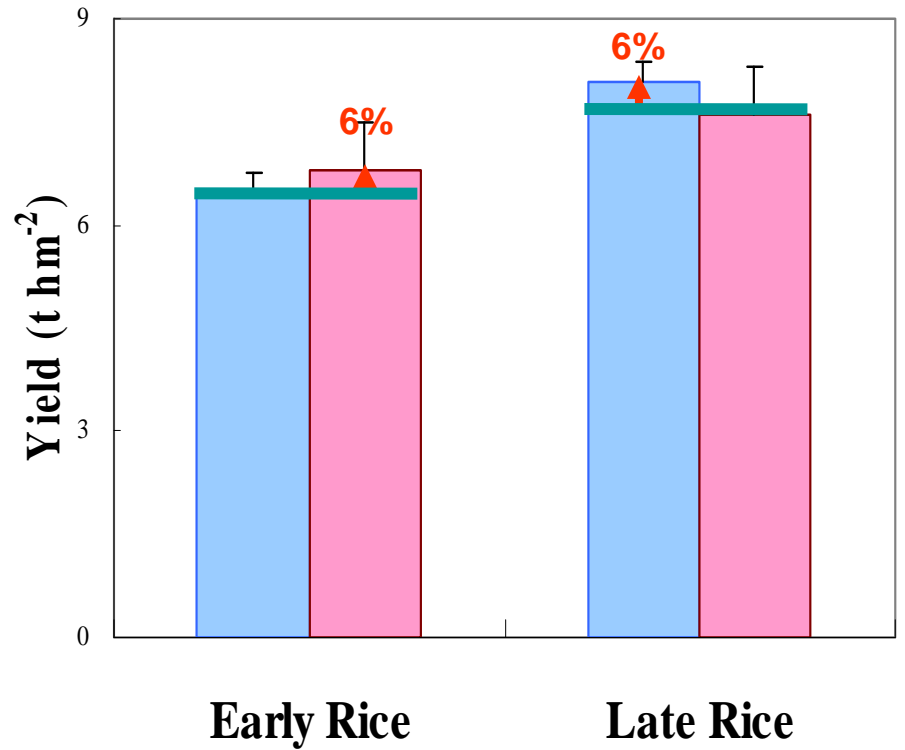
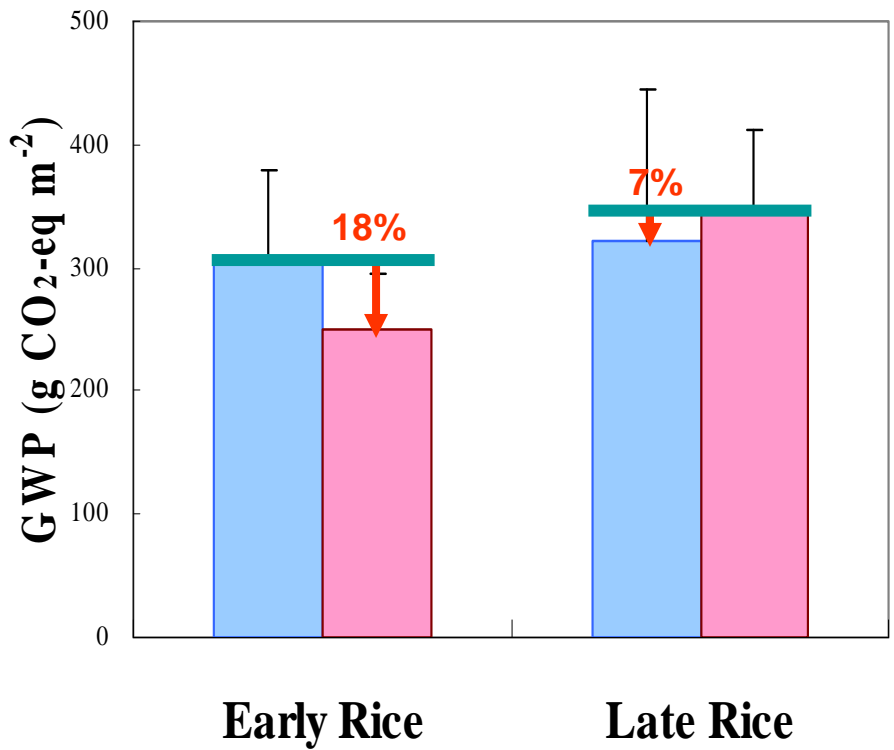
CH₄ and N₂O emissions from double rice field as affected by the timing of MSA



Results and Discussion

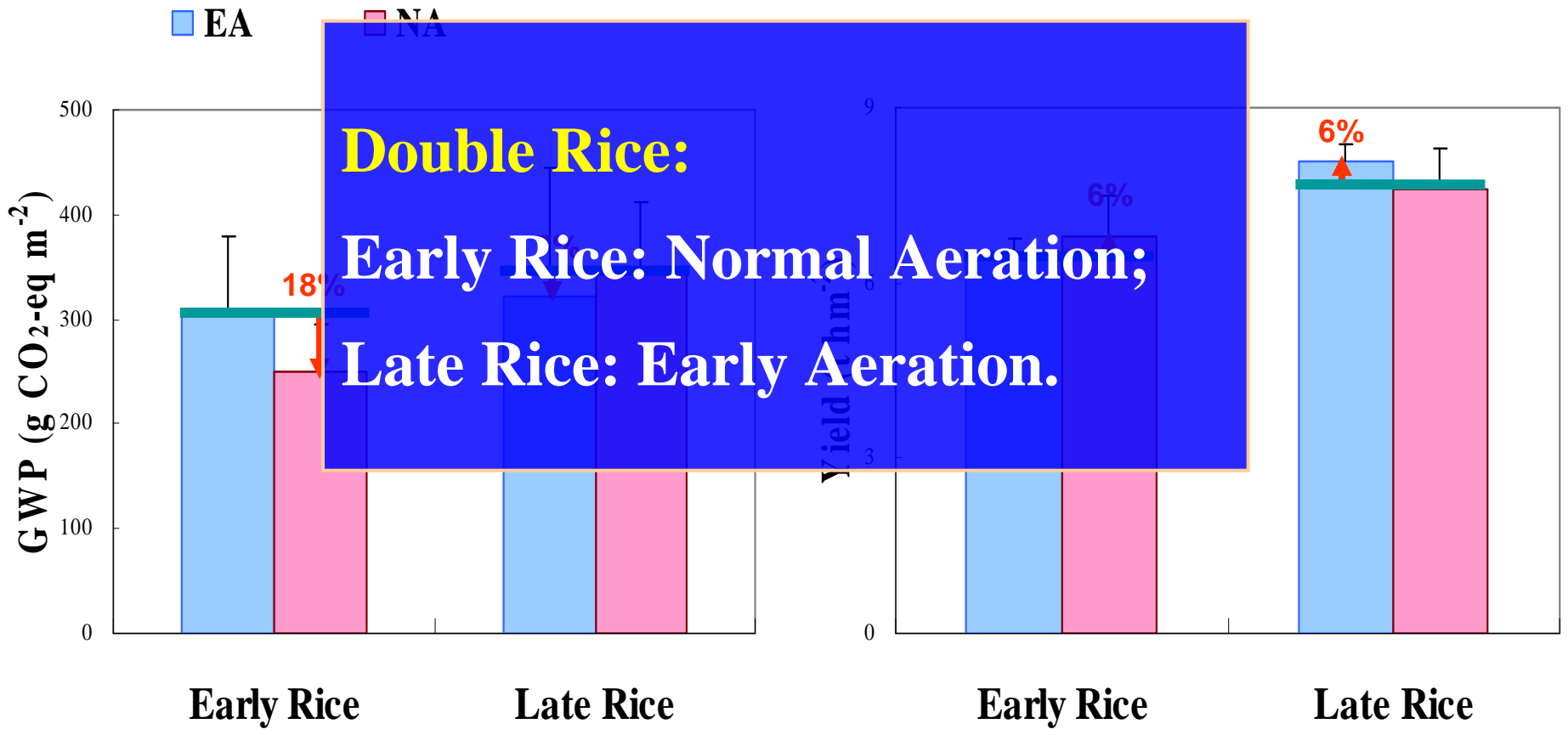
GWP and yield of double rice as affected by the timing of MSA

EA NA



Results and Discussion

GWP and yield of double rice as affected by the timing of MSA



**CH₄ and N₂O Emissions from Rice Fields as Affected by
the Timing of Application of HQ/DCD**

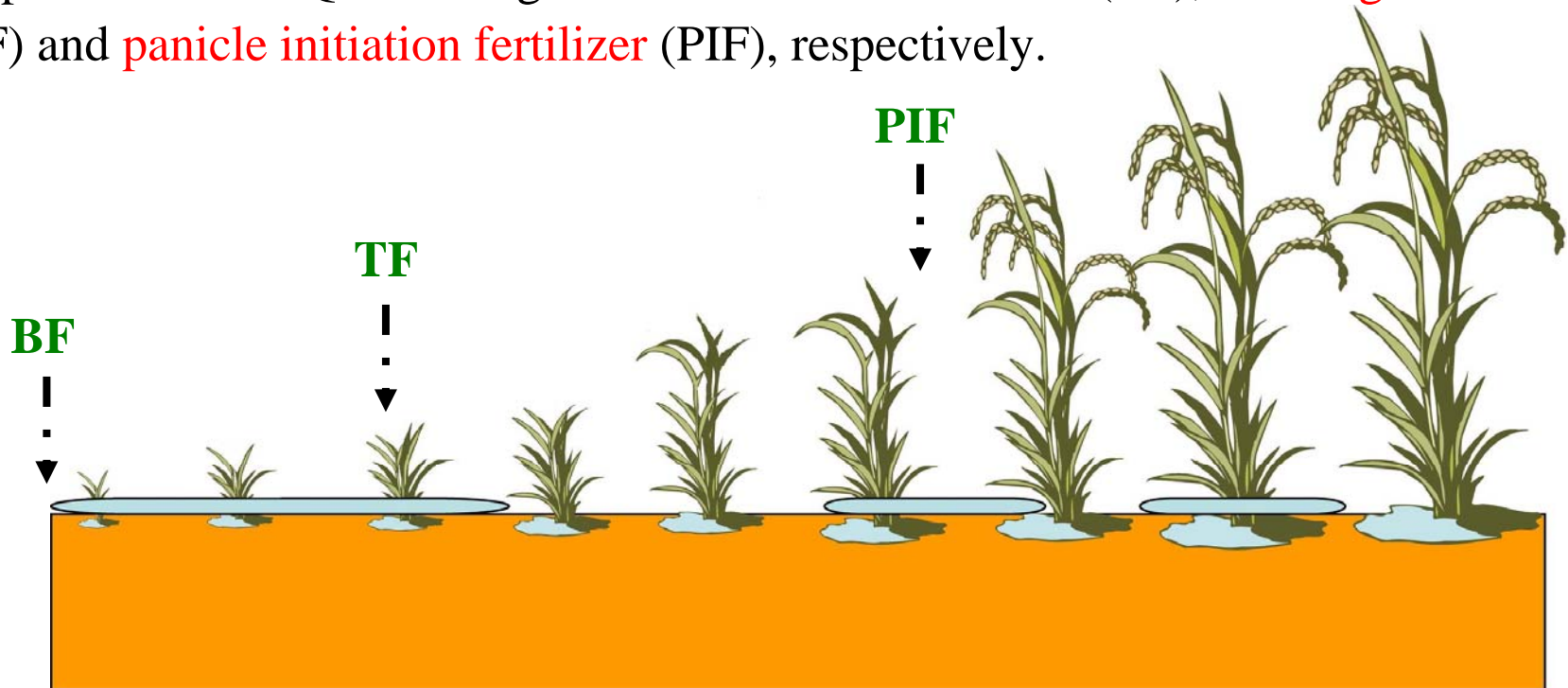
Experimental Design

□ Experimental site:

Jurong, Jiangsu Province, China ($31^{\circ} 58' N$, $119^{\circ} 18' E$; Rotation of **single rice** and winter wheat); **Yintan**, Jiangxi Province, China ($28^{\circ} 15' N$, $116^{\circ} 55' E$; Rotation of **double rice** and winter fallow).

□ Timing of application of HQ/DCD:

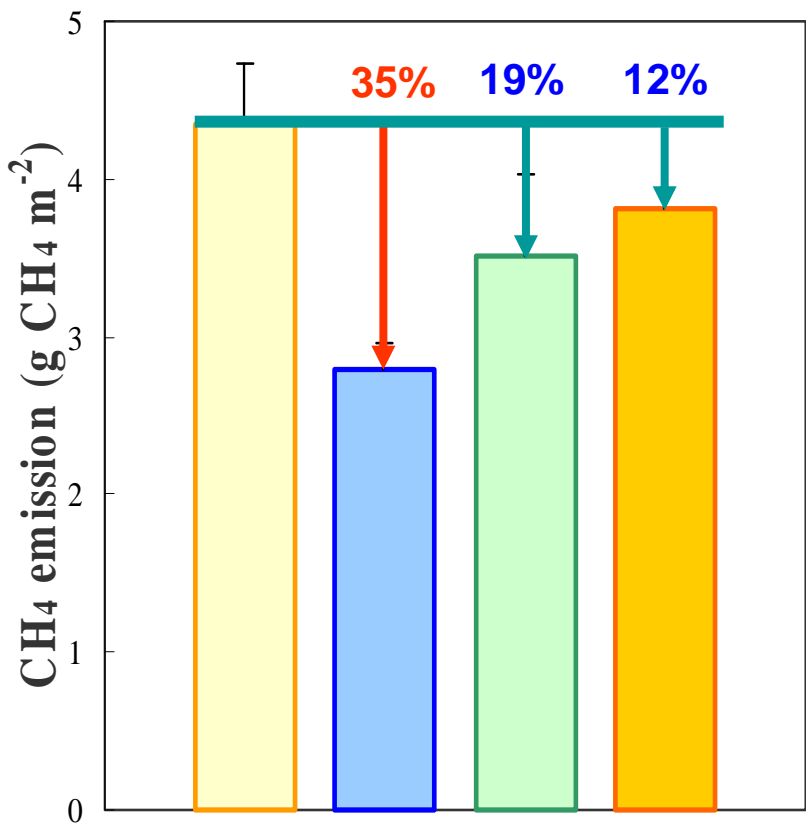
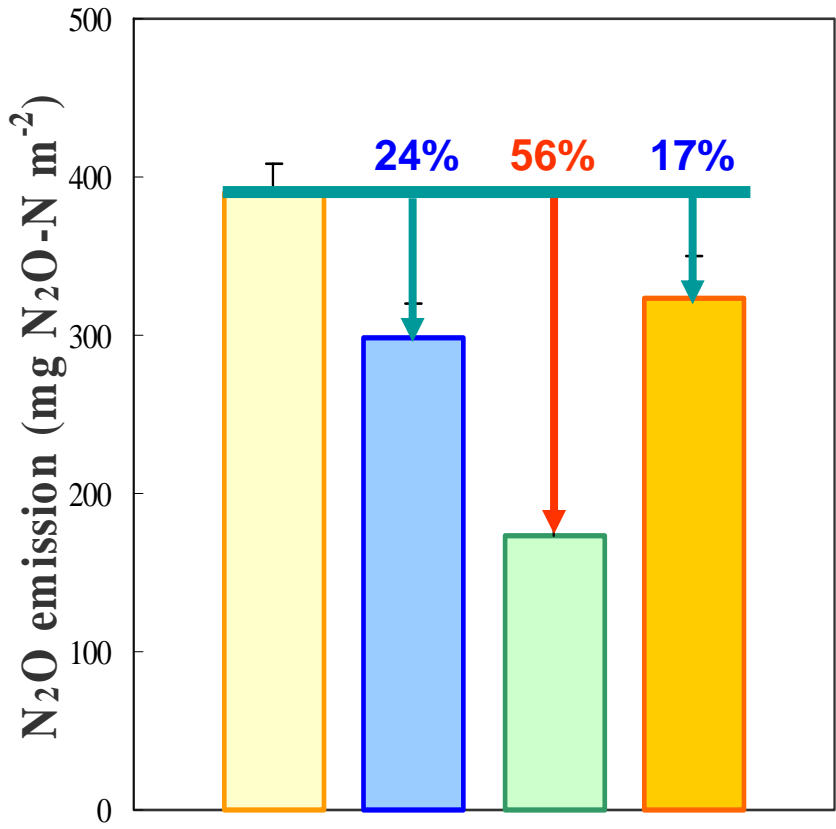
Application of HQ/DCD together with **basal fertilizer** (BF), **tillering fertilizer** (TF) and **panicle initiation fertilizer** (PIF), respectively.



Results and Discussion

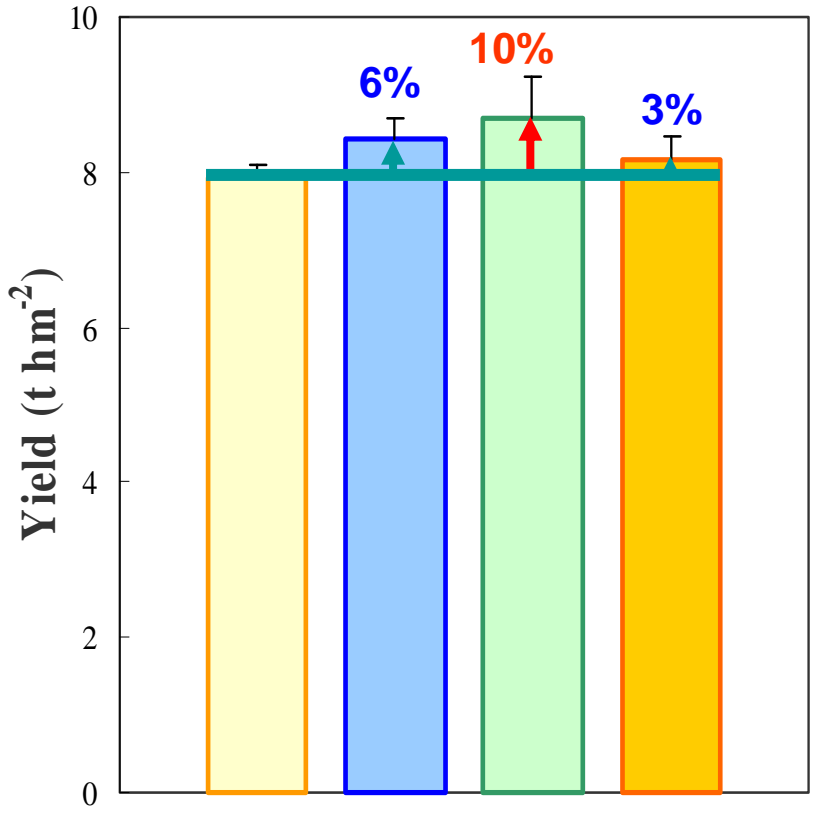
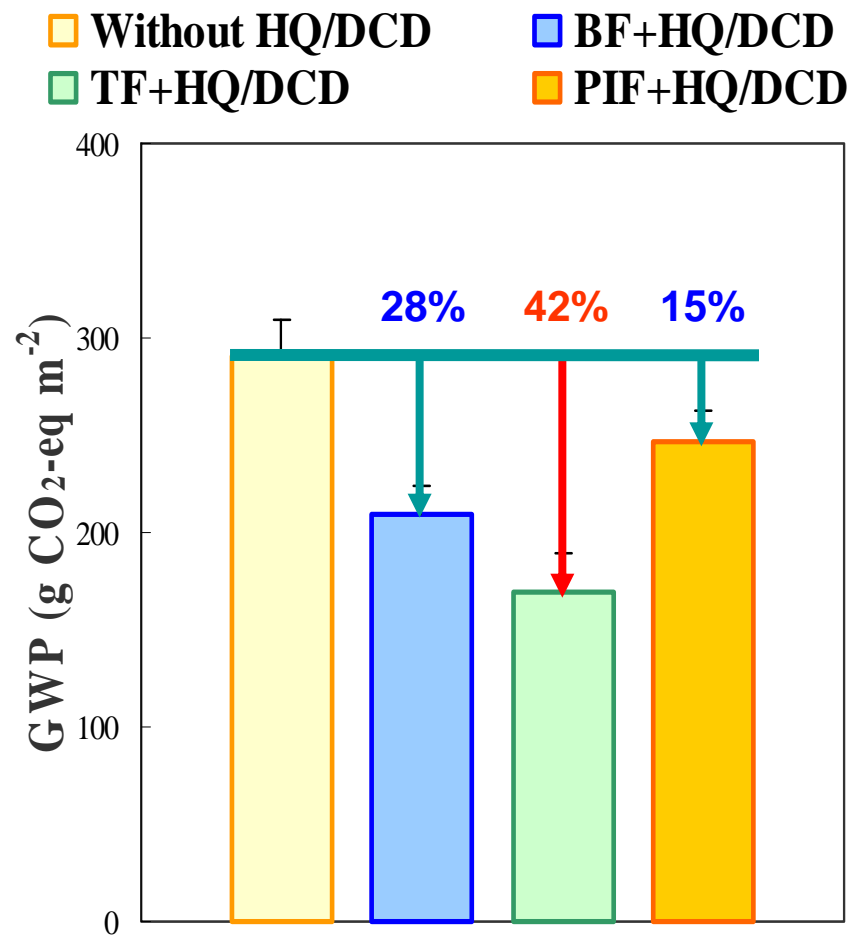
CH₄ and N₂O emissions from single rice field as affected by the timing of application of HQ/DCD

- Without HQ/DCD
- TF+HQ/DCD
- BF+HQ/DCD
- PIF+HQ/DCD



Results and Discussion

GWP and yield of single rice as affected by the timing of application of HQ/DCD



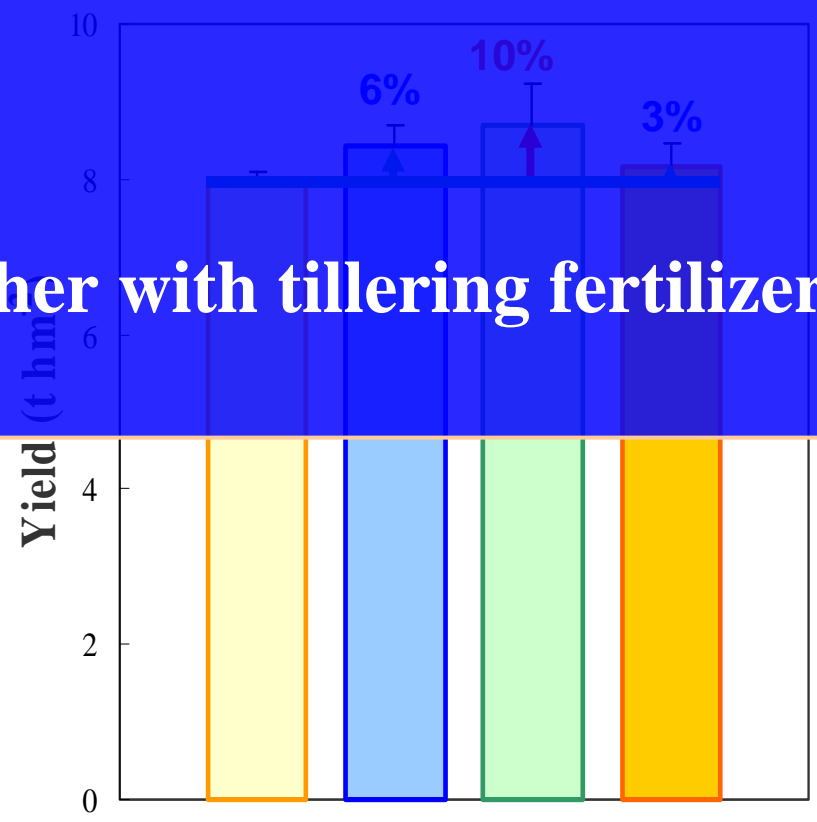
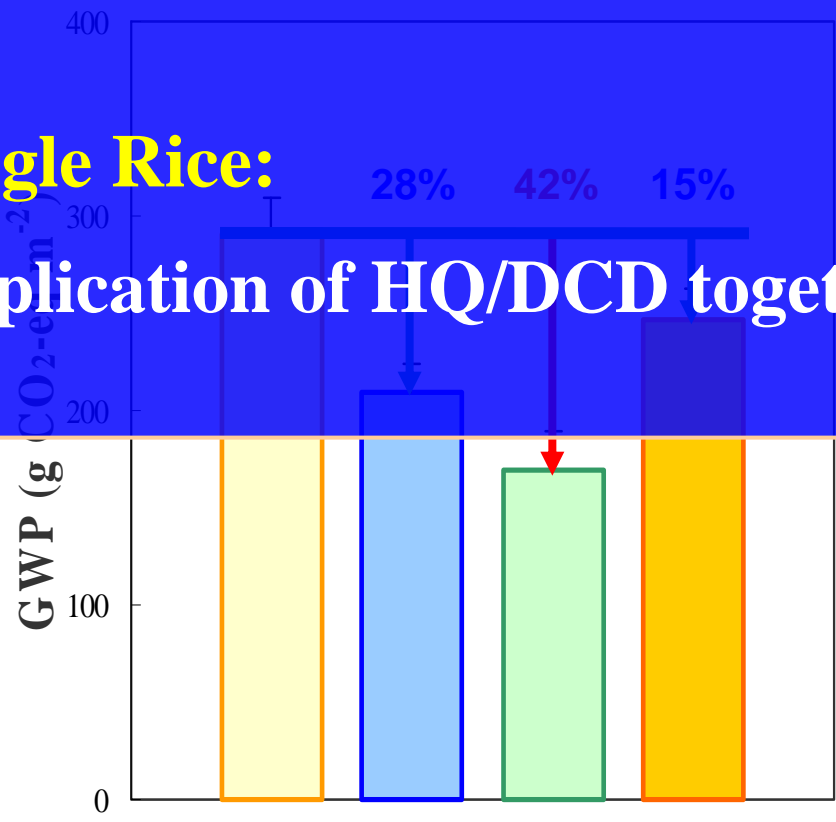
Results and Discussion

GWP and yield of single rice as affected by the timing of application of HQ/DCD

- Without HQ/DCD
- TF+HQ/DCD
- BF+HQ/DCD
- PIF+HQ/DCD

Single Rice:

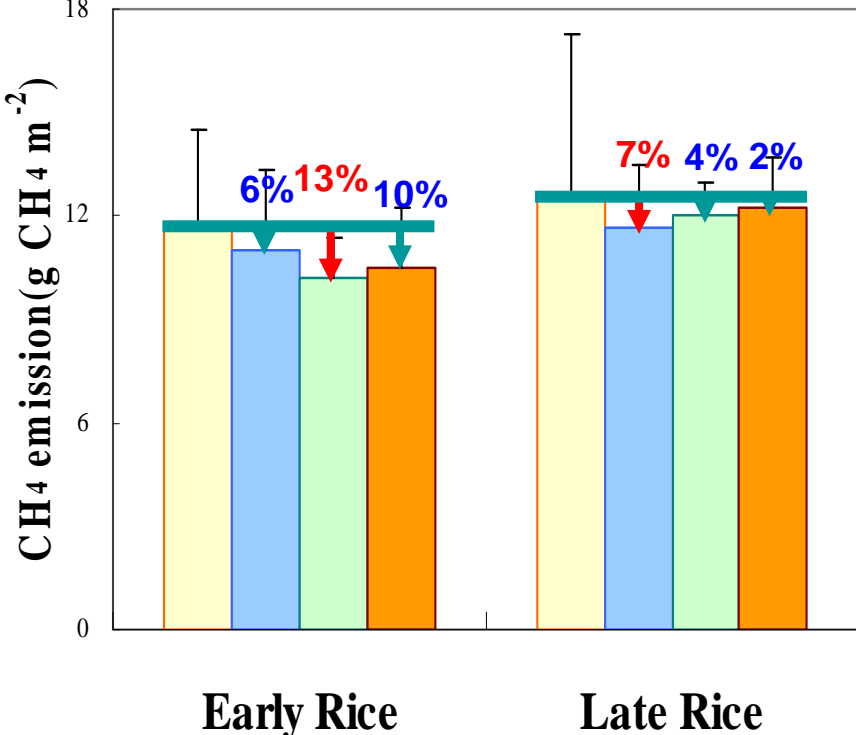
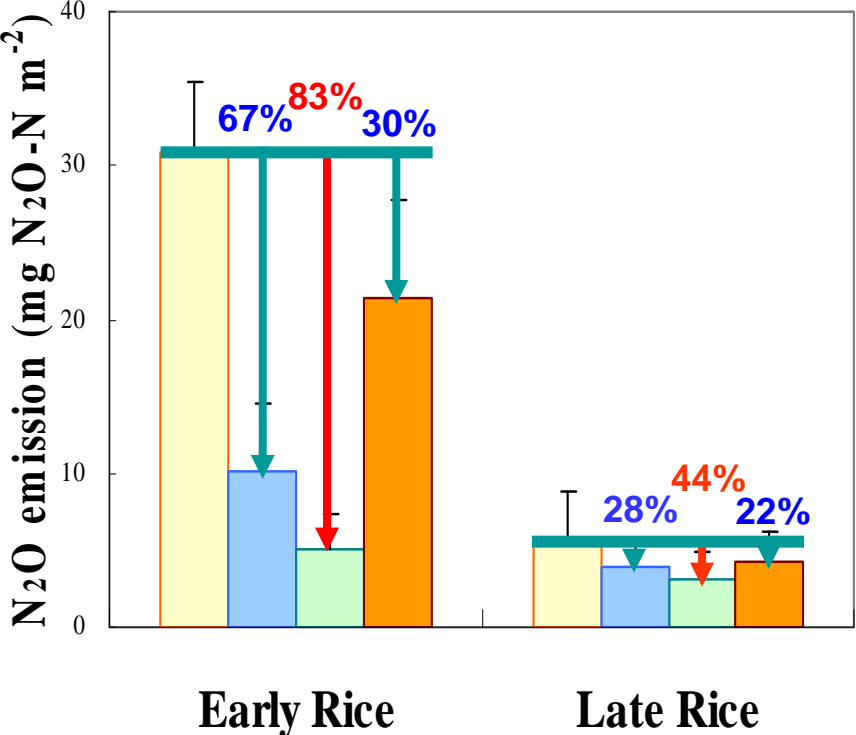
Application of HQ/DCD together with tillering fertilizer.



Results and Discussion

CH₄ and N₂O emissions from double rice field as affected by the timing of application of HQ/DCD

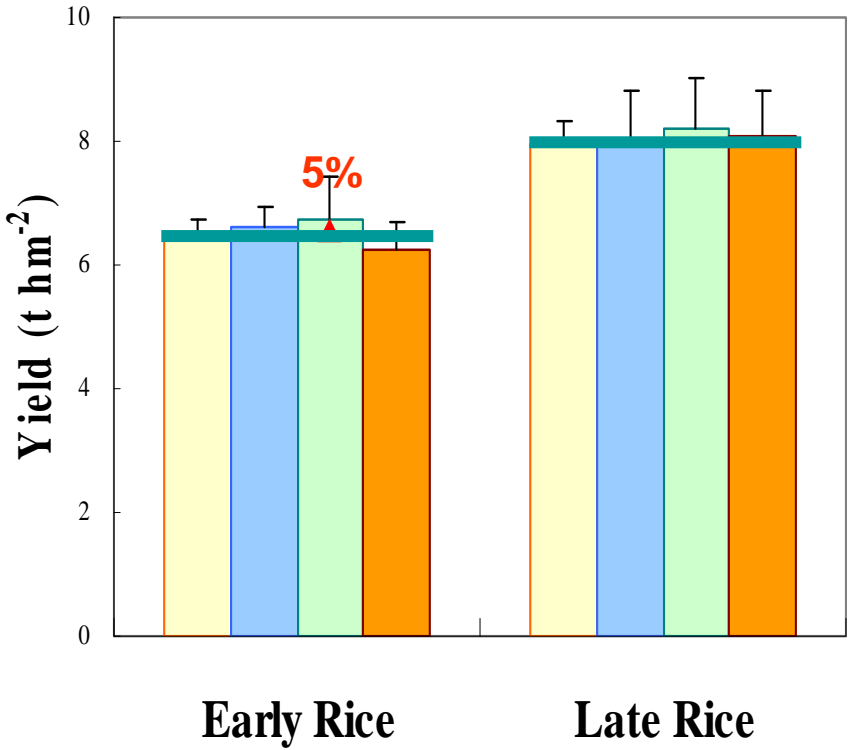
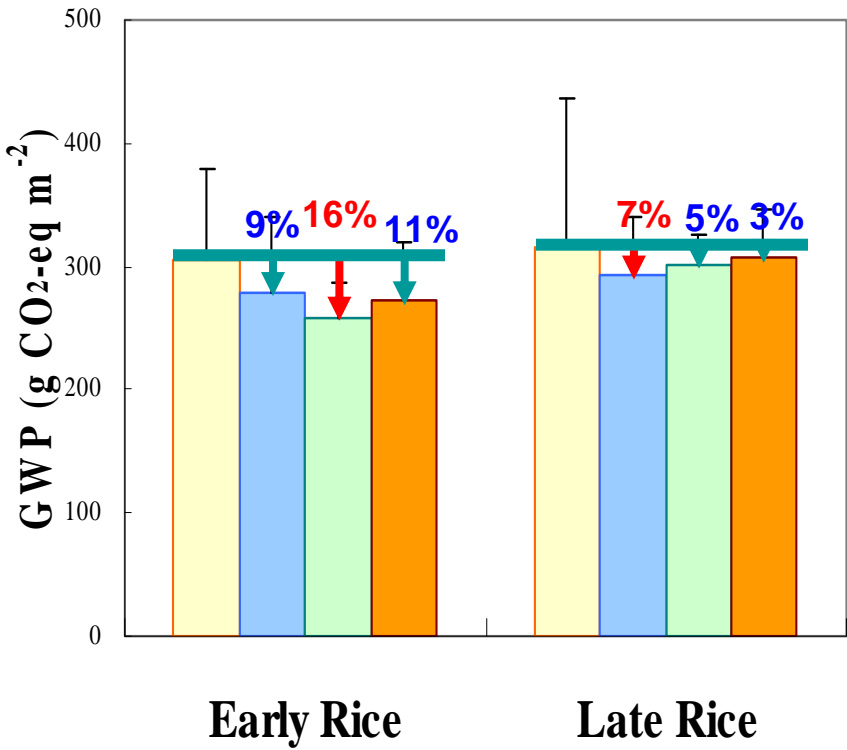
- Without HQ/DCD
- BF+HQ/DCD
- TF+HQ/DCD
- PIF+HQ/DCD



Results and Discussion

GWP and yield of double rice as affected by the timing of application of HQ/DCD

Without HQ/DCD BF+HQ/DCD
TF+HQ/DCD PIF+HQ/DCD



Results and Discussion

GWP and yield of double rice as affected by the timing of application of HQ/DCD

Double Rice:

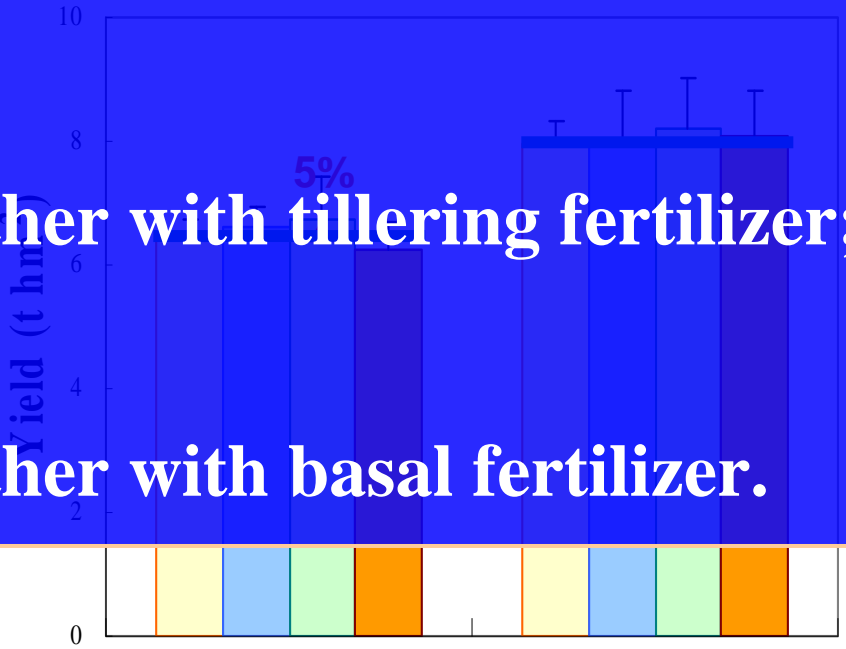
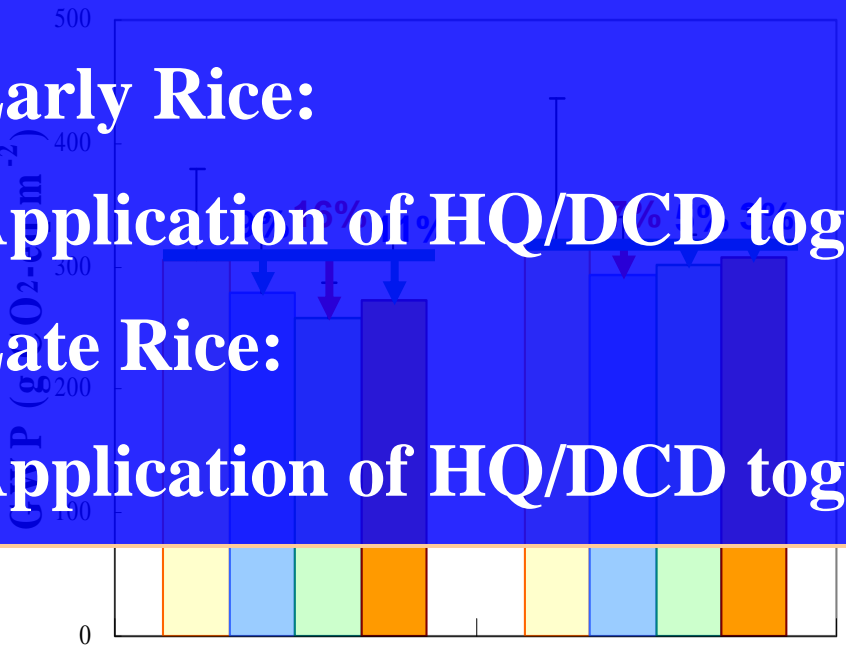
- Without HQ/DCD
- BF+HQ/DCD
- LTF+HQ/DCD
- PIF+HQ/DCD

Early Rice:

Application of HQ/DCD together with tillering fertilizer;

Late Rice:

Application of HQ/DCD together with basal fertilizer.



Early Rice

Late Rice

Early Rice

Late Rice

Thank you

谢谢