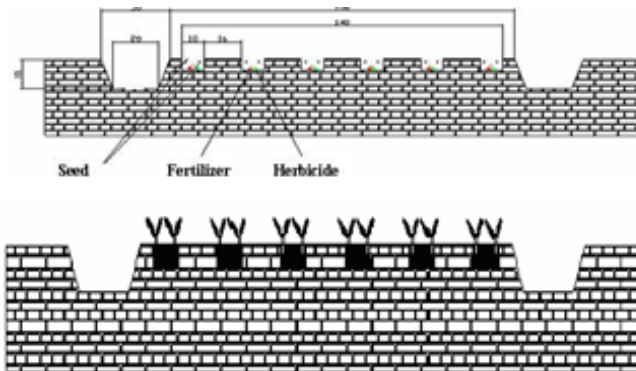


## Innovational Rice-Wheat Cropping System for Higher Yield

### with Lower Emissions in China, Based on the Concepts of SRI

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#### 1. Rice and winter-wheat seeding processes (one machine and fixed furrows for two crops)



(1) Field design of fixed furrow for rice and winter wheat cropping



(2) Winter wheat seeding after rice harvesting with straw recycling and little tillage in the fixed furrow



(3) Rice dry seeding after winter wheat harvesting with straw recycling and little tillage in the fixed furrow

**2. Dry-wet irrigation during rice growing season**



### 3. Main results

<b>(1) Rice and winter wheat yields from 2009-2010 in Jiangsu province, kg per mu [kg/mu]</b>				
<b>Experimental sites</b>	<b>Cropping type</b>	<b>2009 rice</b>	<b>2009-2010 wheat</b>	<b>2010 rice</b>
<b>North Jiangsu</b>	<b>RCDS</b>	<b>609.1</b> [9,745]	<b>227.3</b> [3,634]	<b>540.7</b> [8,651]
	<b>RCWS</b>	<b>505.2</b> [8,083]	<b>151.2</b> [2,419]	<b>501.6</b> [8,026]
	<b>RCMT</b>	<b>----</b>	<b>165.5</b> [2,648]	<b>539.4</b> [8,630]
<b>Middle Jiangsu</b>	<b>RCDS</b>	<b>526.2</b> [8,419]	<b>275.1</b> [4,402]	<b>580.8</b> [9,293]
	<b>RCWS</b>	<b>479.3</b> [7,669]	<b>235.1</b> [3,762]	<b>469.2</b> [7,057]
	<b>RCMT</b>	<b>----</b>	<b>238.3</b> [3,813]	<b>----</b>
<b>South Jiangsu</b>	<b>RCDS</b>	<b>----</b>	<b>292.2</b> [4,675]	<b>691.9</b> [11,070]
	<b>RCWS</b>	<b>----</b>	<b>264.2</b> [4,227]	<b>504.9</b> [8,078]
	<b>RCMT</b>	<b>----</b>	<b>276.5</b> [4,424]	<b>484.6</b> [7,754]

**RCDS = rice cropping with dry-seeding for higher yield and lower emissions**

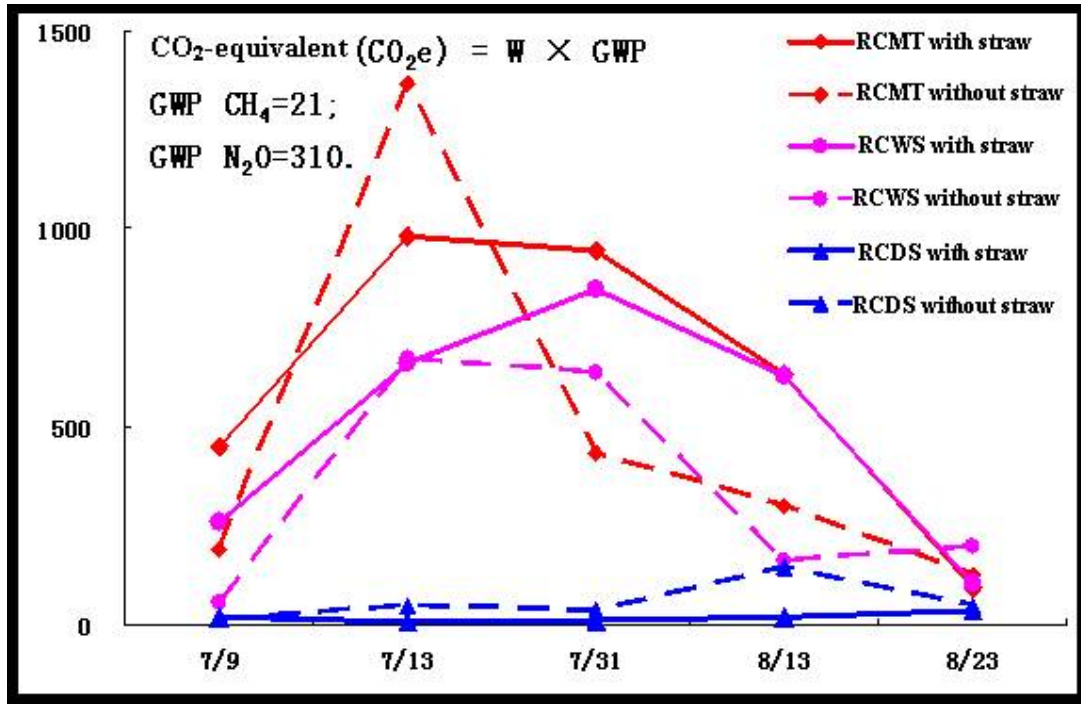
**RCWS = rice cropping with conventional wet-seeding**

**RCMT = rice cropping with conventional machine transplanting**

**---- = data not available because the corresponding cropping patterns were not performed**

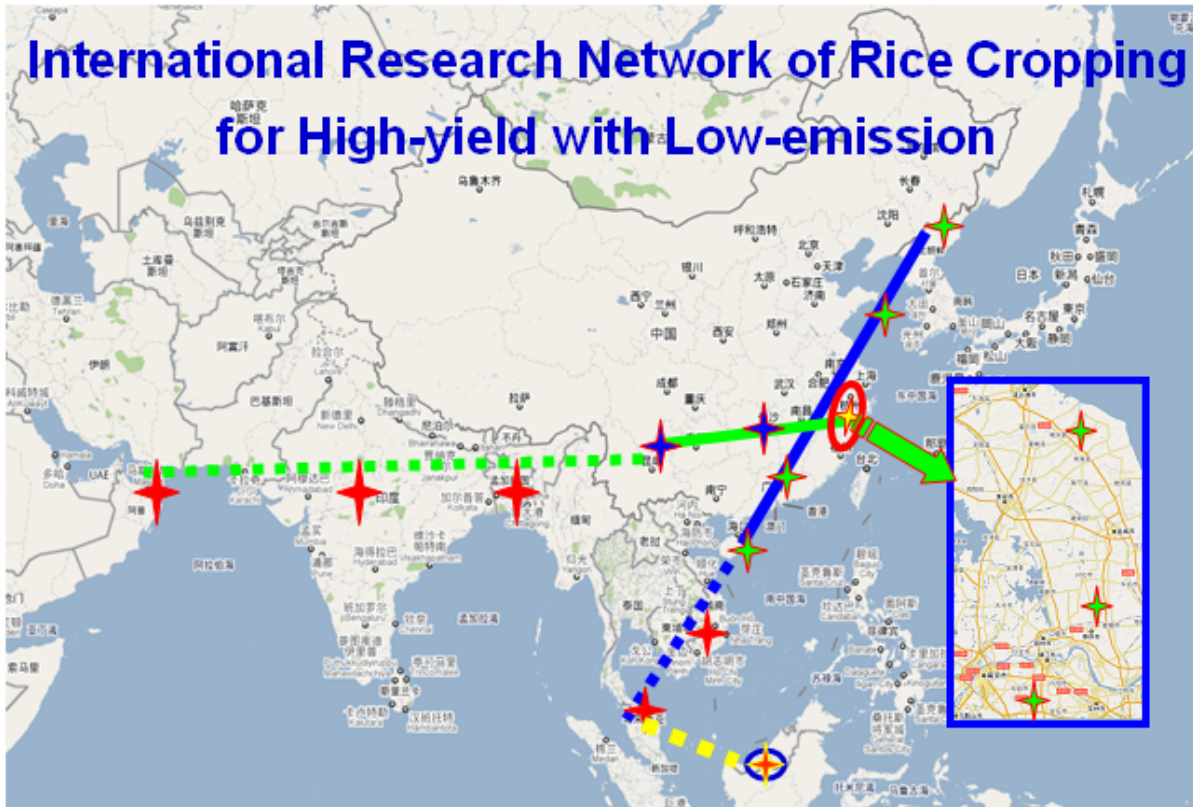
**In the RCWS and RCMT cropping patterns, winter wheat cropping was performed with the same agronomic practices with conventional seeding.**

(2) Great mitigation potential of CH<sub>4</sub> and N<sub>2</sub>O emissions in rice-growing season



(3) Great decreases in production inputs, including water, were achieved, and there was an increment in the energy efficiency of machines

#### 4. The next five-year research plan



In the next five-year, we will extend this innovative cropping system around China, especially in the paddy-upland cropping area of Yangtze River (along the green-filled line in the above picture). Based on our experiences in China, we hope to demonstrate our technology in the rice-cropping area in the world, especially in the paddy-upland cropping area (along the green line in the above picture) via international research co-operation programs.

Our objectives are to increase rice yield and to decrease greenhouse gases emissions in paddy fields with high efficiencies of resource use and labor input through the following technologies integrated based on the concepts of SRI:

- (1) New rice varieties with higher productivity potential and lower CH<sub>4</sub> emission;
- (2) Straw recycling with water-saving irrigation in fixed-furrow field system;
- (3) Deep and precision fertilization;
- (4) Mechanized crop management with one-time for tilling, seeding, fertilizing and weed control, etc.