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Using a rice–crayfish model to increase production on waterlogged land

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Researchers conducting crayfish fishing at the in Hubei province of China during the flooding period. Photo by Pengli Yuan.

Waterlogging is an agricultural limitation in which the soil becomes saturated with water. Up to 7,600 km² of waterlogged fields are present within the Jiangnan Plain, comprising 18% of the total paddy field area. Unpredictable waterlogging disasters have markedly constrained rural economic development in this region of China.

New *Agronomy Journal* research investigated agricultural production models on waterlogged land in the Jiangnan Plain. The researchers tested three models: traditional rice–wheat rotation, the emerging rice–crayfish (RC) model, and the crayfish monoculture model. They produced a series of comprehensive assessments on input and output, nitrogen fertilizer utilization, and the application of pesticides, among other factors.

The team found that RC farming is more sustainable than other farming practices from both an ecological and an economic perspective, and the adoption of this farming model has increased the income of local farmers by 9–48% while decreasing the use of nitrogen fertilizer, pesticides, and fishery medications by 56, 75, and 58, respectively. Therefore, RC farming approaches may be used as an alternative sustainable agricultural production model for waterlogged lands in the Jiangnan Plain to promote the sustainable development of local agriculture while preserving ecological integrity.

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Yuan, P., Wang, J., Chen, S., Guo, Y., & Cao, C. (2021). Certified rice–crayfish as an alternative farming modality in waterlogged land in the Jiangnan Plain region of China. *Agronomy Journal*. <https://doi.org/10.1002/agj2.20694> (in press)

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