



Environment for Development

## RESEARCH BRIEF

April 2024

### Training and technical support on adaptation to salinity intrusion could enhance food security

*Based on the EFD Discussion Paper entitled “Gender-differentiated impacts of salinity intrusion on agricultural production and food security: A study in the Mekong Delta, Vietnam” by Dang, L.H., Pham, T.T & Pham, K.N.*

Research questions: How does salinity intrusion affect agricultural production and food security and how are male and female farmers different in those impacts?

#### Key Messages

- Climate change, extreme climate events, and recent salinity intrusion are growing concerns for the Mekong Delta in Vietnam.
- It is important to control soil salinity through drainage and water management practices to avoid loss of production.
- High yield loss due to salinity leads to a significant reduction in income, food expenditure, and consumption of some main foods.
- Training on salinity intrusion and adaptation has enhanced rice production and farmers’ income.
- Government authorities should promote research to introduce rice varieties that are well adapted to salinity and local conditions, and to spread these varieties to high-saline regions.

#### Background and Methodology

Salinity intrusion has had profound impacts on agricultural production and food security. These impacts include a decrease in crop production, a decline in agro-biodiversity, rising food prices, adverse effects on nutritional status and health, soil infertility, reduced economic

opportunities, an increase in labor cost, fertilizer and pesticide expenses. Such impacts have been particularly severe for developing countries and the rural poor.

In the Mekong Delta, Vietnam, rice and agricultural production have been influenced substantially by sea level rise and salinity intrusion. The observed

salinity is increasing, and saltwater increasingly encroaches on rivers and land. The impacts can be yield loss or failure, decreasing quality of agricultural products, farm income loss, and reduction in food expenditure and food consumption.

Worldwide, female farmers are involved in activities to adapt to climate change. However, they often have limited access to resources that would help their agricultural production adapt to climate-related risks. Women may suffer more food insecurity than men under climate change and salinity intrusion.

Therefore, this study investigates the impacts of salinity intrusion on agricultural production and food security concerning the gender aspect and suggests policy implications for helping both male and female farmers in dealing with salinity intrusion in local areas.

We interviewed 274 male-headed and 156 female-headed households in Tien Giang, Ben Tre, and Soc Trang, three coastal rice-producing provinces in the Mekong Delta.

The Cobb-Douglas production function was used to estimate the impacts of salinity intrusion on agricultural production and food security.

## **Results**

Salinity intrusion has negative impacts on rice yield for the whole sample and separately for male-headed and female-headed households.

Participation in training on salinity intrusion and adaptation was particularly

useful in increasing the rice yield of male farmers. Female farmers appear to have had less access to local social activities and extension services. The most common reasons that female farmers claimed for not having joined extension services were no access, not enough time, and that their husbands joined. Female farmers may have better access to the training if provided with flexible schedules and transport convenience. The access to information on such training could also be enhanced.

Food security was represented by farm households' income, food expenditure, and the amount of consumption of three main foods: rice, vegetables, and meat.

Salinity intrusion has reduced farmers' income. The perceived extent of influence of salinity on farm households' income was associated with increased food expenditure for female farmers. When female-headed households were aware of the serious salinity impacts on their households' income, they tended to buy and save food for later use.

A higher amount of farm households' rice consumption or vegetable consumption was associated with a greater perceived extent of the influence of salinity on farm households' income. Yield loss significantly decreased meat consumption for male farmers.

## **Policy Implications**

For better access to training on salinity intrusion and adaptation for farmers, a flexible schedule may be useful. The involvement of relevant stakeholders (e.g. local authorities, agricultural

experts) in identifying potential land use and sustainable use of resources is also required to ensure sustainable development of rice farming. Local authorities can provide technical support

for farmers to mitigate salinity impacts. They can also promote research to identify and introduce salt-tolerant varieties to farmers and spread the varieties to highly saline regions.

**The Environment for Development initiative is a capacity-building program in environmental economics focused on international research collaboration, policy advice, and academic training. It consists of centres in Central America, Chile, China, Colombia, Ethiopia, Ghana, India, Kenya, Nigeria, South Africa, Sweden (University of Gothenburg), Tanzania, Vietnam, Uganda, and the US (Resources for the Future). Financial support is provided by the Swedish International Development Cooperation Agency (Sida).**