Advisory to farmers on possible effect due to El Nino on brackishwater aquaculture

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General introduction

El Niño significantly disrupts Indian shrimp farming by causing weak monsoons, higher temperatures, and increased water salinity. These environmental changes lead to reduced water availability and a higher incidence of disease, which directly lowers crop productivity. Consequently, the phenomenon threatens the long-term environmental and economic sustainability of the entire brackishwater aquaculture sector.

Specific effects and possible suggestions

1. **Overall effect on farming system**
    a. **Possible impacts**: Decrease in culture area, productivity, possible crop failures, reduced income, employment and livelihood, supply chain disruption, reduced reproductive, metabolic and physiological performance of culture species.
    b. **Suggested measures**: Introduction of diversified species like, milkfish, Indian white shrimp, Asian seabass, mud crab, integration farming with seaweeds. Reducing stocking density, implementation of biosecurity, institutional support to credit and crop insurance

2. **Effect on Nutrition**
    a. **Possible impacts**: Decreased feed intake (low FCR efficiency), decrease growth, reduced availability of key feed ingredients.
    b. **Suggested intervention**: Use of functional feeds, feeding management, application of plankton boosters (Plankton^{Plus}), gut probiotics etc. Use of alternative feed ingredients.

3. **Effect on water and soil quality deterioration**
    a. **Possible impact**: deterioration in water quality- increased water temperature, salinity, decrease in DO, increase toxic metabolites like ammonia, nitrite, decrease productivity, poor pond bottom, increase in energy use. Increased greenhouse gas (GHG) emission.
    b. **Suggested intervention**: Increasing the water depth of the pond, water exchange from the reservoirs, regular monitoring of water quality, increased aeration, application of oxygen enhancers, use probiotics for improving water quality parameters.

4. **Effect on aquatic animal health**
    a. **Possible impact**: Increased abiotic stress leading to increased disease susceptibility, lower productivity
    b. **Suggested measures**: Regular screening for opportunistic pathogens, application of prophylactic probiotics, immune stimulants and nutritional supplements.