VACCINATION IN STRIPED CATFISH (*Pangasianodon hypophthalmus*) UNDER COMMERCIAL CULTURE CONDITIONS: ECONOMIC ANALYSIS

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Introduction:

Bacillary necrosis and motile Aeromonas septicemia are major diseases driving antibiotic use in striped catfish farming in Vietnam. This study evaluated the effects of vaccination (ALPHA JECT® Panga 2) on productivity, antibiotic use, and economic performance under commercial farming conditions.

Methods:

Data were collected from 50 non-vaccinated and 56 vaccinated striped catfish ponds in Vietnam. Technical performance, production costs, antibiotic use, and net income were compared between groups using t-tests, ANOVA, and linear regression analyses.

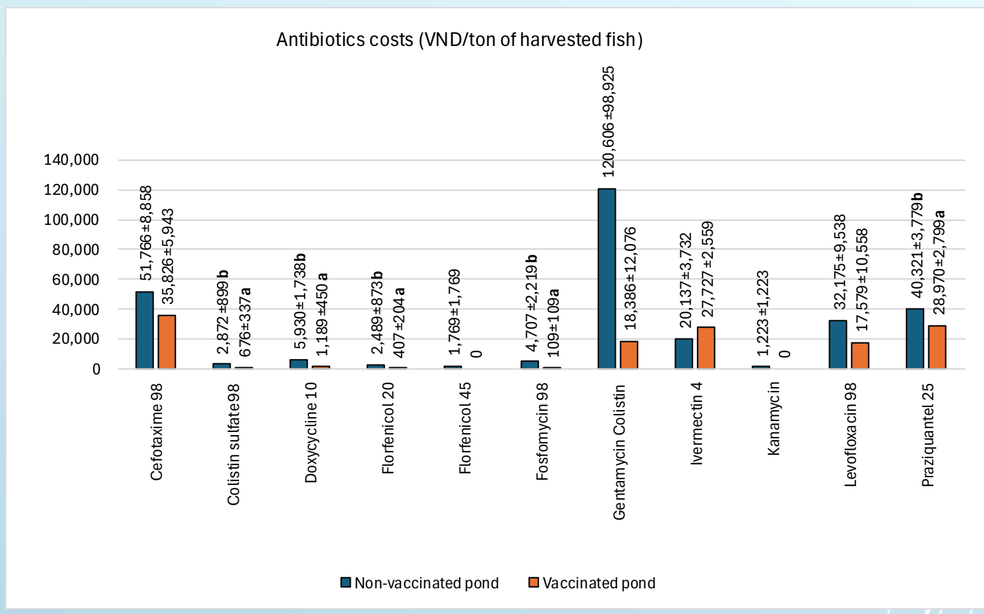


Figure 1. Costs of antibiotics and parasites used (*Mean±SE). The means with different superscripts letters in the same rows are significant differences (p<0.05)*

Results:

Production performance

- Mortality decreased from 37.4% to 24.7% with vaccination.
- Yield increased by ~30% in vaccinated ponds.
- Vaccination reduced antibiotic and health supplement use.
- Kanamycin use was eliminated in vaccinated ponds.

Economic performance

- Vaccinated ponds achieved approximately 22% higher net income than non-vaccinated ponds.
- Gross income increased from 5,665 to 7,278 million VND/ha.
- Despite higher seed costs, vaccination improved overall profitability.
- Production cost per ton of harvested fish was slightly reduced in vaccinated ponds.
- Net income was highest at harvest sizes between 0.65 and 0.85 kg/fish.

Regression and economic sensitivity analyses

- In non-vaccinated ponds, increasing antibiotic costs significantly reduced net income.
- This negative relationship was weaker and non-significant in vaccinated ponds.
- Economic performance in vaccinated ponds was therefore less sensitive to disease-related treatment costs.

❑ Production Performance

✓ Survival rate: 75.3% vs. 62.6%

✓ Fish yield: 254 vs. 196 tons/ha

✓ Culture period: 217 vs. 230 days

eFCR: 1.56 vs. 1.61

❑ Main finding:

➢ Vaccination improved survival and increased productivity by ~30%.

❑ Antibiotic & Health Costs

✓ Antibiotic costs reduced by ~54%

✓ Health supplement costs reduced by ~33%

✓ Kanamycin use eliminated

✓ Production cost/ton slightly reduced

❑ Main finding:

➢ Vaccination substantially reduced therapeutic interventions and health-related costs.

❑ Economic Outcomes

✓ Gross income: 7,278 vs. 5,665 Mil. VND/ha

✓ Net income: 2,211 vs. 1,734 Mil. VND/ha

✓ Increase in net income: +22%

✓ Highest profitability: 0.65–0.85 kg/fish

❑ Main finding:

➢ Higher seed costs were offset by improved productivity and profitability.

Figure 2. Economic impact of vaccination in striped catfish culture

Conclusion:

Vaccination improved survival, yield, and profitability in striped catfish farming while reducing antibiotic use and associated food safety risks. These findings support vaccination as an economically and environmentally sustainable disease prevention strategy.

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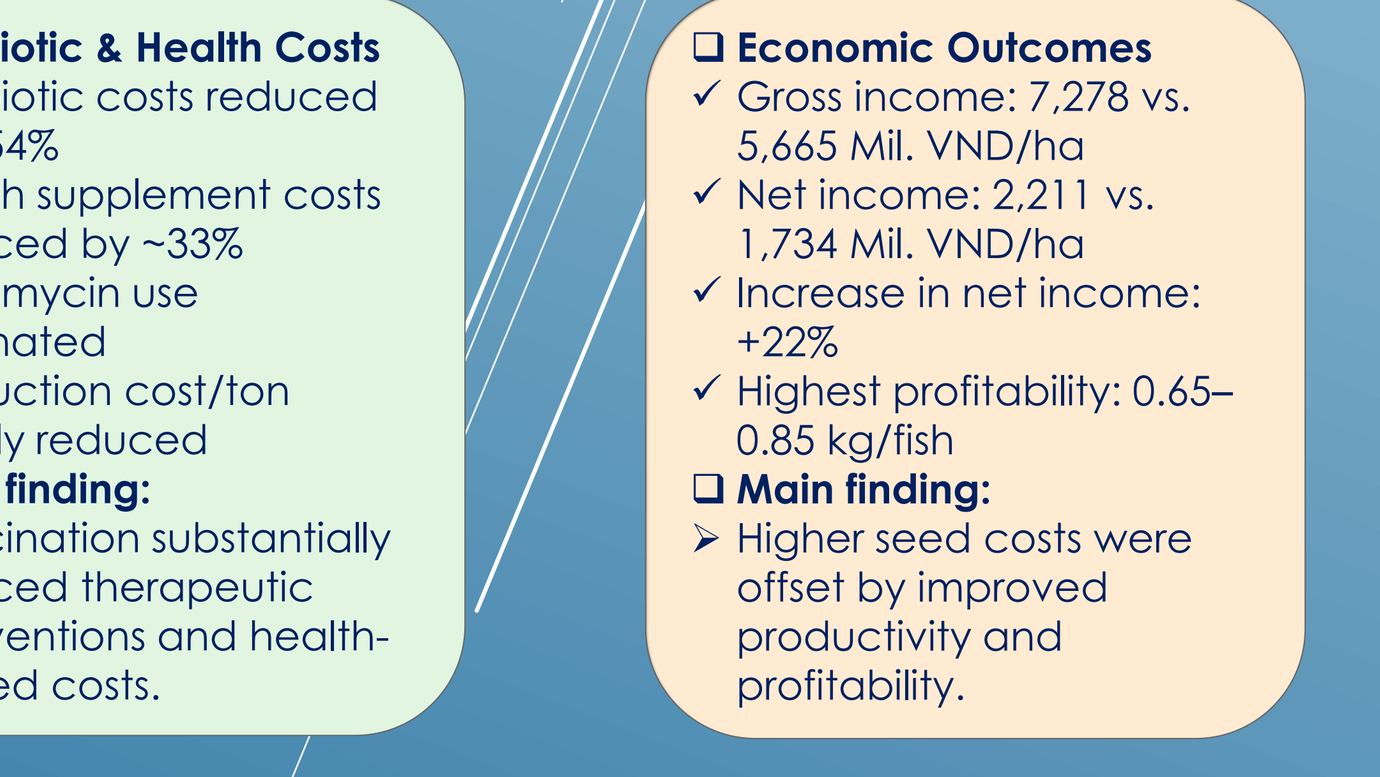


Figure 3. Performances of vaccinated seed in striped catfish culture