

[illegible]

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# 1 Introduction

## 1.1 Background

## 1.2 Problem Analysis

## 1.3 Our Work

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# 2 Assumptions and Notations

## 2.1 Assumptions and Explanation

- **Geographic Applicability Assumption:** The model assumes that the applicable region is Southeast Asia.  
**Explanation:** The climate of Southeast Asia is simple, with only two seasons—rainy and dry. Additionally, the temperature variation within a year is minimal.
- **Planting Pattern Assumption:** The model assumes that two crops of rice are planted each year in the farmland.  
**Explanation:** This aligns with the planting patterns commonly observed in Southeast Asia, and the simplicity of crop types makes the model easier to establish.
- **Stable Growth Environment Assumption:** The model assumes that no natural disasters, which could significantly impact the agricultural ecosystem, will occur during the time frame considered.  
**Explanation:** Natural disasters are considered low-probability events in agricultural activities. To ensure the generalizability of the model, natural disasters should not be considered.

Symbols	Description
$\mathbf{X}$	Vector $[N_w, N_c, N_p, N_b, N_B, C_{hc}, C_{pc}]^T$ , etc.
$w$	Subscription for weeds
$c$	Subscription for crops
$p$	Subscription for pest
$bir$	Subscription for birds
$bat$	Subscription for bats
$hc$	Subscription for herbicide
$pc$	Subscription for pesticide
$C_i$	Concentration of certain chemical
$N_i$	Numbers of certain species
$\alpha$	$abc$

## 2.2 Notations

## 3 Models

## 4 Application of the Models

## 5 Sensitivity Analysis

## 6 Evaluation of the Model

### 6.1 Strengths

### 6.2 Weaknesses

## 7 Conclusion

## References

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- [2] Rosenow D.T. et al. Drought tolerant sorghum and cotton germplasm. *Agricultural Water Management*, 7(1):207–222, 1983.