

LIST OF TABLES

Table 2. 1 Classification of Analysis Results for N, P, K.....	14
Table 2. 2 Classification of Soil Nitrogen Content for Soybean Cultivation	14
Table 2. 3 Category of Soil Phosphorus Content under Acidic Conditions for Soybean Cultivation	15
Table 2. 4 Category of Soil Phosphorus Content under Alkaline Conditions for Soybean Cultivation	15
Table 2. 5 Category of Soil Potassium (K) Content for Soybean Cultivation.....	15
Table 2. 6 Performance Comparison of LoRa with Other Wireless Technologies	17
Table 2. 7 Standard Spreading Factors in LoRa	19
Table 2. 8 Delay Categories	20
Table 2. 9 Packet Loss Categories.....	20
Table 2. 10 Mean Absolute Percentage Error Category	21
Table 3. 1 Si Soil Investment Cost.....	28
Table 3. 2 Production Cost.....	29
Table 3. 3 Operational Cost.....	30
Table 3. 4 Si Soil Projection Sales Revenue.....	31
Table 3. 5 Si Soil Expense	31
Table 3. 6 Cash Flow	32
Table 4. 1 Parameter LoRa Simulation	33
Table 4. 2 SNR Simulation Result	36
Table 4. 3 Accuracy of Si Soil Nitrogen Sensor.....	38
Table 4. 4 Accuracy of Si Soil Phosphorus Sensor	39
Table 4. 5 Accuracy of Si Soil Potassium Sensor.....	40
Table 4. 6 Nitrogen Sensor Distance Testing	41
Table 4. 7 Phosphorus Sensor Distance Testing.....	42
Table 4. 8 Potassium Sensor Distance Testing.....	42
Table 4. 9 Soybean Seed Weight Results in Kilograms	45
Table 4. 10 Fertilizer Cost.....	46
Table 4. 11 Monitoring Tools Cost	47
Table 4. 12 Labor Cost.....	47
Table 4. 13 Soybean Productivity Benefit.....	48
Table 4. 14 Cost-Benefit per Cycle	48
Table 4. 15 Si Soil Production Cost	51
Table 4. 16 Si Soil Investment Cost	52
Table 4. 17 PP Result.....	53
Table 4. 18 IRR Result.....	53
Table 4. 19 NPV Result	54
Table 4. 20 PI Result.....	55