

Chapter 5

Data Analysis Results

5.1 Data Analysis Results for the Sadao Thai Investments

As was described in Chapter 3, the initial Sadao Thai investment analysis, which does not include the various external sensitivity analysis permutations, considered 504 different investment scenarios. These scenarios can be broken down into four groups of 126 investment scenarios following the differing investment lengths of 15, 20, 30, and 40 years. From this point the investment scenarios can be further broken down into two groups with one group including the Thai government afforestation subsidy and one group not including the subsidy. The group including the subsidy was labeled the “A” group while the group not including the subsidy was labeled the “B” group. Within each group seven investment types were included. These included investments including a 50,000 baht land purchase (labeled “Land” investments), investments including an annual 1,000, 2,000, 3,000, 4,000, or 5,000 baht opportunity cost (labeled “Oppt. Cost 1”, “Oppt. Cost 2”, “Oppt. Cost 3”, “Oppt. Cost 4”, and “Oppt. Cost 5” investments respectively), and regular investments which included neither opportunity costs nor land purchases (labeled “Norm” for normal investments). The labeling described above are used in all of the data analysis result tables presented later in this paper to categorize the different investment types. For example, “A30-Oppt. Cost 5” relates to an investment type 30 years in length that includes both the government afforestation subsidy and an annual 5,000 baht opportunity cost, and “B15-Land” relates to a 15 year investment type including the 50,000 baht land purchase.

Each investment type contained nine different investment scenarios that represented the nine different combinations of seed and wood prices. These combinations were separated out into three major groups following the neem seed sale price levels of 5, 10, and 15 Baht/Kg. Thus, the three groups contained the following price combinations respectively: 5 Baht/Kg-1,000 Baht/m³, 5 Baht/Kg-5,000 Baht/m³, and 5 Baht/Kg-10,000 Baht/m³; 10 Baht/Kg-1,000 Baht/m³, 10 Baht/Kg-5,000 Baht/m³, and 10 Baht/Kg-10,000 Baht/m³; 15 Baht/Kg-1,000 Baht/m³,

15 Baht/Kg-5,000 Baht/m³, and 15 Baht/Kg-10,000 Baht/m³. These price combinations combined with the differing investment types and investment lengths generated 504 distinct IRR, NPV, and B/C ratio results, which are detailed below.

5.1.1 Sadao Thai Internal Rate of Return (IRR) Results

The internal rate of return or IRR of an investment project is the rate of return earned on funds invested in a project. It is the discount rate at which the present value of revenues minus the present value of costs equals 0, which is also the point at which the project's net present value (NPV) equals zero. The IRR investment guideline stipulates that investments are acceptable if the IRR is equal to or greater than the investor's minimum acceptable rate of return (MAR), which in turn is the desired discount rate. Projects with IRR's less than the MAR are deemed unacceptable. The four discount rates used in this study were 10, 12, 15, and 20 percent.

Tables 5.1, 5.2, 5.3, and 5.4 present the results of the Sadao Thai IRR analysis. For the reader's convenience, the results have been printed in color with the following color code. Red marks those investments that did not meet the 10% discount rate criterion. Purple indicates the results that were equal to or greater than 10%, but that were less than 12% criterion. Results printed in green mark those investment results that were equal to or greater than 12%, but that were less than 15%. Blue indicates IRR results that were equal to or greater than 15%, but were less than the 20% discount criterion. Finally, black signifies investment IRR's that were equal to or greater than the 20 percent discount criterion.

Table 5.1 depicts the internal rates of return for Sadao Thai investments 40 years in length. Normal investments, both with and without the Thai government afforestation subsidy, at the 5 Baht/Kg seed price show IRR's that meet or exceed the 15% discount rate. Normal investments at the 10 and 15 Baht/Kg seed price all show returns in excess of 30%. At the 5 Baht/Kg seed price investments including a 50,000 baht land purchase are all unacceptable. However, at the 10 Baht/Kg level all investments are acceptable at the 12% discount rate, and at the 15 Baht/Kg level all of the investments are acceptable at the 15% discount rate.

Investments including the 1,000 baht opportunity cost at the 5 Baht/Kg seed price level were acceptable at the 12% discount level. Moreover, at the 10 and 15

Baht/Kg price level the investments were acceptable at the 20% discount level. This shows that Sadao Thai plantations are potentially more profitable than cultivating the three major economic crops in each region, namely Maize, Cassava, and Sugarcane.

Investments including the 2,000 baht opportunity cost were unacceptable at the 5 Baht/Kg - 1,000 Baht/m³ price level. Yet, at the 5,000 Baht/m³ wood price level and above, all investment were acceptable. Investments including the 3,000 baht opportunity cost showed the same pattern, except that the investment scenario without the government subsidy was unacceptable at the 5 Baht/Kg seed price and 5,000 Baht/m³. At the 4,000 baht opportunity cost level, only investments scenarios at the 5 Baht/Kg and 10,000 Baht/m³ level and above were acceptable. Investments at the 5,000 opportunity cost level were acceptable only at the 10 and 15 Baht/Kg seed price levels.

Table 5.2 shows the internal rates of return for Sadao Thai investments 30 years in length. Once again all normal investments were acceptable at all seed and wood price levels. Investments including a land purchase were acceptable at the 10 and 15 Baht/Kg seed price levels, but investments scenarios at the 5 Baht/Kg seed price levels were only acceptable at the 10,000 Baht/m³ wood price level.

Investments including the first level opportunity cost were acceptable at all seed and price levels. At the 2,000 baht opportunity cost level, only the B investment at the 5 Baht/Kg – 1,000 Baht/m³ price combination level was unacceptable. At the 3000 baht opportunity cost level, both the A and B investments at the 5 Baht/Kg – 1,000 Baht/m³ price combination level were unacceptable, but at every other price combination were acceptable. As for investments including an annual opportunity cost of 4,000 baht, both the A and B scenarios at the 5 Baht/Kg – 1,000 Baht/m³ price combination level failed to meet the minimum 10% discount rate criterion. At the 5 Baht/Kg – 5,000 Baht/m³ price combination level, the A scenario past the 10% guideline, but the B scenario did not by achieving an IRR of only 9.889%. Above the 5 Baht/Kg – 10,000 Baht/m³ price combination level, all investment scenarios met or exceeded the 10% discount rate criteria. The 30 year investments including an annual opportunity cost of 5,000 baht failed the minimum 10% discount rate guideline at both the 5 Baht/Kg – 1,000 Baht/m³ and 5 Baht/Kg – 5,000 Baht/m³ price combination levels, but met the criterion at all other price combination levels.

Table 5.3 shows the internal rates of return for Sadao Thai investments 20 years in length. As was the case for the 30 year investments, all of 20 year normal investments exceeded the 15% discount rate in all nine seed and wood price combination scenarios. The "Land" investments were acceptable only at seed and wood price combinations of 5 Baht/Kg – 10,000 Baht/m³ and above. All of the 20 year investments scenarios including the annual 1,000 baht opportunity cost met or exceeded the 12% discount rate criterion for every wood and seed price combination level. The remaining investments including opportunity costs ranging from 2,000 to 5,000 baht were unacceptable at the 5 Baht/Kg – 1,000 Baht/m³ level, but were acceptable at all other price combination levels.

Table 5.4 reviews the IRR results for Sadao Thai investments 15 years in length. All normal investments met the 15% discount rate criteria, while the Land investments were only acceptable at the 5 Baht/Kg – 10,000 Baht/m³ level or greater. The one exception to this being the B-Land investment scenario at the 10 Baht/Kg – 1,000 Baht/m³ level that registered an IRR of only 9.564%. All opportunity cost investments failed to meet the 10% criterion at the 5 Baht/Kg – 1,000 Baht/m³ price level, but however were acceptable at all other price combination levels.

Several important observations can be made from the results presented in all four IRR tables. First, for 40 and 30 year investments changes in the wood price level had almost no effect on the IRR showing variances of no greater than one percent. At the 5 Baht/Kg price level more variance of was observed, but this variance was still no greater than six percentage points in the 40 year investments and 8 points in the 30 year investments. For 20 year investments changes in the wood price level had more effect causing up to a 7 percentage point differential at the 10 Baht/Kg level and up to a 3 percentage point differential at the 15 Baht/Kg level. Changes in the wood price level at the 5 Baht/Kg seed price level showed IRR differentials of up to 13 percentage points. 15 year investments showed even greater IRR differentials between the three wood price levels. At the 15 Baht/Kg seed price, the differential became as large as 6 percentage points, at the 10 Baht/Kg level it was as great as 10 percentage point, and at the 5 Baht/Kg level the differential was even greater at 17 percentage points.

This points to the fact that at longer investment lengths the economics of the

neem trees lie rather strongly with seed production rather than with timber production. However, at shorter investment lengths the economics of the tree are more balanced between seed and timber production. The economics of the tree are also sensitive to changes in seed price. As the data shows, the IRR differentials between the three wood price levels were much smaller at the 10 and 15 Baht/Kg seed price levels than at the 5 Baht/Kg price.

Table 5.1 Sadao Thai Internal Rates of Return: 40 Year Investment Period

| Investment Analysis | 5 Baht/kg | | | 10 Baht/kg | | | 15 Baht/kg | | |
|---------------------|---------------------------|---------------------------|----------------------------|---------------------------|---------------------------|----------------------------|---------------------------|---------------------------|----------------------------|
| | 1,000 Baht/m ³ | 5,000 Baht/m ³ | 10,000 Baht/m ³ | 1,000 Baht/m ³ | 5,000 Baht/m ³ | 10,000 Baht/m ³ | 1,000 Baht/m ³ | 5,000 Baht/m ³ | 10,000 Baht/m ³ |
| A40-Norm | 17.565% | 18.118% | 18.650% | 33.171% | 33.181% | 33.193% | 43.916% | 43.917% | 43.917% |
| B40-Norm | 15.983% | 16.692% | 17.338% | 30.485% | 30.502% | 30.523% | 40.590% | 40.592% | 40.593% |
| A40-Land | 6.185% | 8.319% | 9.663% | 13.371% | 13.848% | 14.322% | 19.023% | 19.135% | 19.265% |
| B40-Land | 5.978% | 8.141% | 9.496% | 13.000% | 13.505% | 14.002% | 18.531% | 18.653% | 18.796% |
| A40-Oppt. Cost 1 | 13.209% | 14.418% | 15.360% | 27.916% | 27.947% | 27.986% | 38.128% | 38.130% | 38.133% |
| B40-Oppt. Cost 1 | 12.210% | 13.569% | 14.587% | 25.900% | 26.015% | 26.073% | 35.638% | 35.642% | 35.646% |
| A40-Oppt. Cost 2 | 9.902% | 11.873% | 13.157% | 23.758% | 23.838% | 23.934% | 33.530% | 33.536% | 33.543% |
| B40-Oppt. Cost 2 | 9.259% | 11.336% | 12.659% | 22.300% | 22.407% | 22.533% | 31.601% | 31.611% | 31.622% |
| A40-Oppt. Cost 3 | 7.310% | 10.024% | 11.566% | 20.355% | 20.525% | 20.719% | 29.753% | 29.768% | 29.785% |
| B40-Oppt. Cost 3 | 6.886% | 9.660% | 11.219% | 19.238% | 19.447% | 19.682% | 28.222% | 28.242% | 28.266% |
| A40-Oppt. Cost 4 | 5.211% | 8.603% | 10.343% | 17.499% | 17.811% | 18.144% | 26.573% | 26.602% | 26.638% |
| B40-Oppt. Cost 4 | 4.924% | 8.341% | 10.087% | 16.629% | 16.992% | 17.371% | 25.334% | 25.372% | 25.418% |
| A40-Oppt. Cost 5 | 3.453% | 7.459% | 9.357% | 15.053% | 15.566% | 16.070% | 23.843% | 23.896% | 23.961% |
| B40-Oppt. Cost 5 | 3.252% | 7.262% | 9.159% | 14.368% | 14.939% | 15.486% | 22.825% | 22.891% | 22.970% |

Source: Calculations

Table 5.2 Sadao Thai Internal Rates of Return: 30 Year Investment Period

| Investment Analysis | 5 Baht/kg | | | 10 Baht/kg | | | 15 Baht/kg | | |
|---------------------|---------------------------|---------------------------|----------------------------|---------------------------|---------------------------|----------------------------|---------------------------|---------------------------|----------------------------|
| | 1,000 Baht/m ³ | 5,000 Baht/m ³ | 10,000 Baht/m ³ | 1,000 Baht/m ³ | 5,000 Baht/m ³ | 10,000 Baht/m ³ | 1,000 Baht/m ³ | 5,000 Baht/m ³ | 10,000 Baht/m ³ |
| A30-Norm | 17.806% | 19.486% | 20.815% | 33.183% | 33.307% | 33.454% | 43.917% | 43.935% | 43.957% |
| B30-Norm | 16.227% | 18.128% | 19.569% | 30.500% | 30.675% | 30.880% | 40.592% | 40.620% | 40.655% |
| A30-Land | 5.843% | 9.258% | 11.301% | 13.232% | 14.455% | 15.518% | 18.956% | 19.418% | 19.909% |
| B30-Land | 5.606% | 9.048% | 11.099% | 12.846% | 14.107% | 15.195% | 18.455% | 18.943% | 19.458% |
| A30-Oppt. Cost 1 | 13.521% | 16.107% | 17.855% | 27.937% | 28.200% | 28.498% | 38.130% | 38.171% | 38.222% |
| B30-Oppt. Cost 1 | 12.492% | 15.233% | 17.042% | 25.931% | 26.325% | 26.695% | 35.640% | 35.698% | 35.768% |
| A30-Oppt. Cost 2 | 10.202% | 13.652% | 15.717% | 23.788% | 24.256% | 24.754% | 33.532% | 33.613% | 33.711% |
| B30-Oppt. Cost 2 | 9.505% | 13.048% | 15.143% | 22.328% | 22.881% | 23.453% | 31.604% | 31.708% | 31.832% |
| A30-Oppt. Cost 3 | 7.513% | 11.757% | 14.070% | 20.389% | 21.126% | 21.650% | 29.756% | 29.895% | 30.061% |
| B30-Oppt. Cost 3 | 7.024% | 11.316% | 13.640% | 20.092% | 20.926% | 20.885% | 28.223% | 28.393% | 28.592% |
| A30-Oppt. Cost 4 | 5.251% | 10.226% | 12.738% | 17.528% | 18.584% | 19.540% | 26.573% | 26.794% | 27.048% |
| B30-Oppt. Cost 4 | 4.899% | 9.889% | 12.402% | 16.647% | 17.790% | 18.805% | 25.331% | 25.588% | 25.881% |
| A30-Oppt. Cost 5 | 3.287% | 8.944% | 11.624% | 15.066% | 16.479% | 17.660% | 23.837% | 24.162% | 24.524% |
| B30-Oppt. Cost 5 | 3.027% | 8.678% | 11.353% | 14.364% | 15.858% | 17.085% | 22.815% | 23.181% | 23.583% |

Source: Calculations

Note: 1) Red: IRRs < 10%, Purple: IRRs > 10% but less than 12%, Green: IRRs > 12% but less than 15%, Blue: IRRs > 15% but less than 20%, Black: IRRs > 20%

2) * Indicates Investment Scenarios including the Government's investment subsidy that met higher interest rate criteria than the same scenario without the subsidy.

Table 5.3 Sadao Thai Internal Rates of Return: 20 Year Investment Period

| Investment Analysis | 5 Baht/Kg | | | | | 10 Baht/Kg | | | | | 15 Baht/Kg | | | | |
|---------------------|---------------------------|---------------------------|----------------------------|---------------------------|---------------------------|----------------------------|---------------------------|---------------------------|----------------------------|---------------------------|---------------------------|----------------------------|---------------------------|---------------------------|----------------------------|
| | 1,000 Baht/m ³ | 5,000 Baht/m ³ | 10,000 Baht/m ³ | 1,000 Baht/m ³ | 5,000 Baht/m ³ | 10,000 Baht/m ³ | 1,000 Baht/m ³ | 5,000 Baht/m ³ | 10,000 Baht/m ³ | 1,000 Baht/m ³ | 5,000 Baht/m ³ | 10,000 Baht/m ³ | 1,000 Baht/m ³ | 5,000 Baht/m ³ | 10,000 Baht/m ³ |
| A20-Norm | 17.988% | 22.472% | 25.503% | 33.171% | 34.314% | 35.469% | 43.894% | 44.273% | 44.712% | 43.894% | 44.273% | 44.712% | 43.894% | 44.273% | 44.712% |
| B20-Norm | 16.269% | 20.961% | 24.065% | 30.452% | 31.777% | 33.076% | 40.551% | 41.020% | 41.553% | 40.551% | 41.020% | 41.553% | 40.551% | 41.020% | 41.553% |
| A20-Land | 3.863% | 9.865% | 13.373% | 12.095%* | 15.103%* | 17.443% | 18.223% | 19.880% | 21.418% | 18.223% | 19.880% | 21.418% | 18.223% | 19.880% | 21.418% |
| B20-Land | 3.556% | 9.576% | 13.086% | 11.654%* | 14.702%* | 17.062% | 17.681% | 19.377% | 20.941% | 17.681% | 19.377% | 20.941% | 17.681% | 19.377% | 20.941% |
| A20-Oppt. Cost 1 | 13.442% | 18.990% | 22.406% | 27.861% | 29.485% | 31.066% | 38.074% | 38.651% | 39.293% | 38.074% | 38.651% | 39.293% | 38.074% | 38.651% | 39.293% |
| B20-Oppt. Cost 1 | 12.249% | 17.917% | 21.366% | 25.864% | 27.652% | 29.286% | 35.559% | 36.230% | 36.964% | 35.559% | 36.230% | 36.964% | 35.559% | 36.230% | 36.964% |
| A20-Oppt. Cost 2 | 9.753% | 16.273% | 19.995% | 23.614% | 25.734% | 27.588% | 33.428% | 34.228% | 35.084% | 33.428% | 34.228% | 35.084% | 33.428% | 34.228% | 35.084% |
| B20-Oppt. Cost 2 | 8.889% | 15.467% | 19.200% | 22.089% | 24.352% | 26.292% | 31.466% | 32.361% | 33.301% | 31.466% | 32.361% | 33.301% | 31.466% | 32.361% | 33.301% |
| A20-Oppt. Cost 3 | 6.621% | 14.051% | 18.028% | 20.081%* | 22.705% | 24.855% | 29.585% | 30.629% | 31.699% | 29.585% | 30.629% | 31.699% | 29.585% | 30.629% | 31.699% |
| B20-Oppt. Cost 3 | 5.975% | 13.422% | 17.395% | 18.883% | 21.626%* | 23.841% | 28.013% | 29.147% | 30.293% | 28.013% | 29.147% | 30.293% | 28.013% | 29.147% | 30.293% |
| A20-Oppt. Cost 4 | 3.869% | 12.171%* | 16.368% | 17.054% | 20.181%* | 22.597% | 26.320% | 27.622% | 28.901% | 26.320% | 27.622% | 28.901% | 26.320% | 27.622% | 28.901% |
| B20-Oppt. Cost 4 | 3.376% | 11.665% | 15.850% | 16.091% | 19.317% | 21.780% | 25.032% | 26.419% | 27.763% | 25.032% | 26.419% | 27.763% | 25.032% | 26.419% | 27.763% |
| A20-Oppt. Cost 5 | 1.386% | 10.540% | 14.933% | 14.398% | 18.027% | 20.682% | 23.485% | 25.054% | 26.535% | 23.485% | 25.054% | 26.535% | 23.485% | 25.054% | 26.535% |
| B20-Oppt. Cost 5 | 1.003% | 10.124% | 14.498% | 13.610% | 17.320% | 20.008% | 22.411% | 24.060% | 25.596% | 22.411% | 24.060% | 25.596% | 22.411% | 24.060% | 25.596% |

Source: Calculations

Table 5.4 Sadao Thai Internal Rates of Return: 15 Year Investment Period

| Investment Analysis | 5 Baht/Kg | | | | | 10 Baht/Kg | | | | | 15 Baht/Kg | | | | |
|---------------------|---------------------------|---------------------------|----------------------------|---------------------------|---------------------------|----------------------------|---------------------------|---------------------------|----------------------------|---------------------------|---------------------------|----------------------------|---------------------------|---------------------------|----------------------------|
| | 1,000 Baht/m ³ | 5,000 Baht/m ³ | 10,000 Baht/m ³ | 1,000 Baht/m ³ | 5,000 Baht/m ³ | 10,000 Baht/m ³ | 1,000 Baht/m ³ | 5,000 Baht/m ³ | 10,000 Baht/m ³ | 1,000 Baht/m ³ | 5,000 Baht/m ³ | 10,000 Baht/m ³ | 1,000 Baht/m ³ | 5,000 Baht/m ³ | 10,000 Baht/m ³ |
| A15-Norm | 18.158% | 25.255% | 29.978% | 33.030% | 35.990% | 38.655% | 43.723% | 45.177% | 46.697% | 43.723% | 45.177% | 46.697% | 43.723% | 45.177% | 46.697% |
| B15-Norm | 16.207% | 23.439% | 28.197% | 30.196% | 33.367% | 36.164% | 40.304% | 41.921% | 43.582% | 40.304% | 41.921% | 43.582% | 40.304% | 41.921% | 43.582% |
| A15-Land | 1.265% | 9.426% | 14.376% | 10.072%* | 14.854% | 18.496% | 16.590% | 19.673% | 22.383% | 16.590% | 19.673% | 22.383% | 16.590% | 19.673% | 22.383% |
| B15-Land | 0.881% | 9.047% | 13.991% | 9.564%* | 14.376% | 18.028% | 15.988% | 19.106% | 21.837% | 15.988% | 19.106% | 21.837% | 15.988% | 19.106% | 21.837% |
| A15-Oppt. Cost 1 | 13.235%* | 21.355% | 26.434% | 27.530% | 31.117% | 34.171% | 37.773% | 39.605% | 41.442% | 37.773% | 39.605% | 41.442% | 37.773% | 39.605% | 41.442% |
| B15-Oppt. Cost 1 | 11.817% | 20.002% | 25.084% | 25.408% | 29.159% | 32.302% | 35.173% | 37.145% | 39.094% | 35.173% | 37.145% | 39.094% | 35.173% | 37.145% | 39.094% |
| A15-Oppt. Cost 2 | 9.132% | 18.209% | 23.584% | 23.063% | 27.240% | 30.623% | 32.976% | 35.173% | 37.295% | 32.976% | 35.173% | 37.295% | 32.976% | 35.173% | 37.295% |
| B15-Oppt. Cost 2 | 8.060% | 17.154% | 22.515% | 21.412% | 25.714% | 29.158% | 30.924% | 33.243% | 35.452% | 30.924% | 33.243% | 35.452% | 30.924% | 33.243% | 35.452% |
| A15-Oppt. Cost 3 | 5.567% | 15.569%* | 21.202% | 19.292% | 24.032% | 27.703% | 28.967% | 31.519% | 33.898% | 28.967% | 31.519% | 33.898% | 28.967% | 31.519% | 33.898% |
| B15-Oppt. Cost 3 | 4.754% | 14.719% | 20.329% | 17.970% | 22.805% | 26.517% | 27.302% | 29.959% | 32.407% | 27.302% | 29.959% | 32.407% | 27.302% | 29.959% | 32.407% |
| A15-Oppt. Cost 4 | 2.370% | 13.290% | 19.155% | 16.015%* | 21.301% | 25.228% | 26.524% | 28.423% | 31.035% | 26.524% | 28.423% | 31.035% | 26.524% | 28.423% | 31.035% |
| B15-Oppt. Cost 4 | 1.709% | 12.588% | 18.424% | 14.932% | 20.290% | 24.244% | 24.144% | 27.132% | 29.799% | 24.144% | 27.132% | 29.799% | 24.144% | 27.132% | 29.799% |
| A15-Oppt. Cost 5 | -0.569% | 11.279% | 17.359% | 13.101% | 18.922% | 23.084% | 22.503% | 25.742% | 28.569% | 22.503% | 25.742% | 28.569% | 22.503% | 25.742% | 28.569% |
| B15-Oppt. Cost 5 | -1.100% | 10.689% | 16.736% | 12.198% | 18.073% | 22.250% | 21.359% | 24.554% | 27.525% | 21.359% | 24.554% | 27.525% | 21.359% | 24.554% | 27.525% |

Source: Calculations

Note: 1) Red: IRRs < 10%, Purple: IRRs < 10% but less than 12%, Green: IRRs < 12% but less than 15%, Blue: IRRs < 15% but less than 20%, Black: IRRs > 20%
 2) * Indicates investment scenarios including the Government effort/cost subsidy that met higher interest rate criteria than the same scenario with out the subsidy.

The second important observation from this data is that Sadao Thai plantation investments show the greatest potential at the 10 and 15 Baht/Kg seed levels where all but one scenario past the 10% discount rate criterion.

A third observation worth noting is that at the 10 and 15 Baht/Kg seed price level and at every investment time length, investments including the 5,000 Baht opportunity cost showed higher internal rates of return than investments including the 50,000 Baht land purchase. However, at the 5 Baht/Kg seed price level this was not always the case as the varying timber prices and investment lengths presented different rates of return. For investments having a forty investment life, both of these investment types at the 5 Baht/Kg seed price level failed the minimum 10% criteria, yet the land purchase scenario still showed greater returns. For the 30 year length investments, the "Oppt. Cost 5" scenario gave a better return than the "Land" scenario only at the 10,000 Baht/m³ timber price level. At both the 20 and 15 year investment periods, the "Oppt. Cost 5" scenario had higher internal rates of return at both the 5,000 and 10,000 Baht/m³ wood price levels.

5.1.2 Sadao Thai Benefit / Cost Ratio Results

As was described in chapter three of this thesis, the benefit / cost ratio is the summed present values of a projects total revenue divided by the summed present values of all costs, where the present value of both benefits and costs are calculated using a designated discount rate. The designated discount rates used for the B/C ratio analysis were 10, 12, 15, and 20 percent respectively. The B/C ratio criterion denotes that a project is acceptable if it shows a B/C ratio equal to or greater than one, and unacceptable if the ratio is less than one. This is due to the fact that when the B/C ratio is one the present value of cost and benefits are exactly equal. When the B/C ratio is less than one, the summed present value of costs is greater than the summed present value of benefits obviously implying a negative return on the investment for the investor.

Tables 5.5 to 5.8 display the B/C ratio analysis results for the Sadao Thai investment scenarios at each of the four discount rates for the 40, 30, 20, and 15 year investment periods respectively. The B/C ratio analysis results, like the results of the IRR analysis, have been printed out in color. Red denotes the B/C ratio results that

were less than one. Black indicates those results that were equal to or greater than one, but that were less than two. Blue marks the B/C ratio results that were equal to or greater than two, but which were less than three. Green indicates those results that were equal to or greater than three, but that were less than four. Purple marks the B/C ratio results that were equal to or greater than four, but that were less than five. And finally, Brown denotes those results that were equal to or greater than five.

The results of the Benefit / Cost ratio analysis followed closely with the results of the IRR analysis. The reason for this derives from the fact that the B/C ratio should equal exactly 1.0 at the discount rate equal to the Internal Rate of Return. Thus, if a scenario's IRR was equal to or greater than any one of the discount rates used in the analysis, the B/C ratio result for that scenario showed a value that was equal to or greater than 1.0 at that discount rate level. For example, if the IRR value for a scenario, which has an investment length of 30 years and a price combination of 5 Baht/Kg seed price and 5,000 Baht/m³ wood price, was 15%, the B/C ratio value at the 15, 12, and 10 percent levels would be equal to or greater than 1.0, but at the 20 percent discount rate level the ratio value would be less than 1.0. In terms of the investor, this means that only those investors with a MAR of 15% or less should accept this investment.

The sheer number of results presented in the B/C Ratio tables makes writing a detailed account of the results both cumbersome and tedious. Because of this, this study leaves any in-depth review of these tables to the reader. The goal of the B/C ratio and NPV tables that follow is to provide the reader, who is interested in setting up a Sadao Thai plantation, an index of the economic potential for Neem tree plantations. Given he already knows the present market conditions for Neem seed and wood and what rate of return he desires, the reader will be able to use this index to predict the viability of his potential investment.

Table S.5 Sadao Thai Benefit/Cost (B/C) Ratios for 40 Year Investment Period

| Discount Rate | Investment Analysis | 5 Baht/Kg | | | | | 10 Baht/Kg | | | | | 15 Baht/Kg | | | | |
|------------------|---------------------|---------------------------|---------------------------|----------------------------|---------------------------|---------------------------|----------------------------|---------------------------|---------------------------|----------------------------|---------------------------|---------------------------|----------------------------|---------------------------|---------------------------|----------------------------|
| | | 1,000 Baht/m ² | 5,000 Baht/m ² | 10,000 Baht/m ² | 1,000 Baht/m ² | 5,000 Baht/m ² | 10,000 Baht/m ² | 1,000 Baht/m ² | 5,000 Baht/m ² | 10,000 Baht/m ² | 1,000 Baht/m ² | 5,000 Baht/m ² | 10,000 Baht/m ² | 1,000 Baht/m ² | 5,000 Baht/m ² | 10,000 Baht/m ² |
| 10% | A40-Norm | 1.42 | 1.64 | 1.92 | 2.62 | 2.85 | 3.13 | 3.83 | 4.05 | 4.33 | 3.83 | 4.05 | 4.33 | 3.83 | 4.05 | 4.33 |
| | A40-Norm | 1.37 | 1.59 | 1.87 | 2.57 | 2.79 | 3.07 | 3.78 | 4.00 | 4.28 | 3.78 | 4.00 | 4.28 | 3.78 | 4.00 | 4.28 |
| | A40-Land | 0.70 | 0.81 | 0.95 | 1.30 | 1.41 | 1.55 | 1.90 | 2.01 | 2.15 | 1.90 | 2.01 | 2.15 | 1.90 | 2.01 | 2.15 |
| | A40-Land | 0.68 | 0.79 | 0.93 | 1.27 | 1.39 | 1.52 | 1.87 | 1.97 | 2.12 | 1.87 | 1.97 | 2.12 | 1.87 | 1.97 | 2.12 |
| | A40-Oppt. Cost 1 | 1.17 | 1.35 | 1.58 | 2.16 | 2.35 | 2.58 | 3.15 | 3.34 | 3.57 | 3.15 | 3.34 | 3.57 | 3.15 | 3.34 | 3.57 |
| | A40-Oppt. Cost 1 | 1.13 | 1.31 | 1.54 | 2.12 | 2.30 | 2.53 | 3.11 | 3.30 | 3.53 | 3.11 | 3.30 | 3.53 | 3.11 | 3.30 | 3.53 |
| | A40-Oppt. Cost 2 | 0.99 | 1.15 | 1.35 | 1.84 | 2.00 | 2.19 | 2.68 | 2.84 | 3.04 | 2.68 | 2.84 | 3.04 | 2.68 | 2.84 | 3.04 |
| | A40-Oppt. Cost 2 | 0.96 | 1.12 | 1.33 | 1.80 | 1.96 | 2.16 | 2.65 | 2.80 | 3.00 | 2.65 | 2.80 | 3.00 | 2.65 | 2.80 | 3.00 |
| | A40-Oppt. Cost 3 | 0.87 | 1.00 | 1.17 | 1.60 | 1.74 | 1.91 | 2.30 | 2.44 | 2.64 | 2.30 | 2.44 | 2.64 | 2.30 | 2.44 | 2.64 |
| | A40-Oppt. Cost 3 | 0.89 | 1.14 | 1.34 | 1.88 | 2.07 | 2.28 | 2.81 | 2.99 | 3.21 | 2.81 | 2.99 | 3.21 | 2.81 | 2.99 | 3.21 |
| | A40-Oppt. Cost 4 | 0.77 | 0.88 | 1.04 | 1.42 | 1.54 | 1.69 | 2.07 | 2.19 | 2.31 | 2.07 | 2.19 | 2.31 | 2.07 | 2.19 | 2.31 |
| | A40-Oppt. Cost 4 | 0.74 | 0.86 | 1.01 | 1.39 | 1.51 | 1.66 | 2.04 | 2.16 | 2.31 | 2.04 | 2.16 | 2.31 | 2.04 | 2.16 | 2.31 |
| | A40-Oppt. Cost 5 | 0.69 | 0.80 | 0.99 | 1.27 | 1.38 | 1.51 | 1.85 | 1.96 | 2.10 | 1.85 | 1.96 | 2.10 | 1.85 | 1.96 | 2.10 |
| | A40-Oppt. Cost 5 | 0.66 | 0.77 | 0.91 | 1.25 | 1.35 | 1.49 | 1.83 | 1.94 | 2.07 | 1.83 | 1.94 | 2.07 | 1.83 | 1.94 | 2.07 |
| | A40-Norm | 1.28 | 1.41 | 1.56 | 2.26 | 2.48 | 2.64 | 3.43 | 3.56 | 3.72 | 3.43 | 3.56 | 3.72 | 3.43 | 3.56 | 3.72 |
| A40-Norm | 1.22 | 1.35 | 1.51 | 2.30 | 2.42 | 2.58 | 3.37 | 3.50 | 3.66 | 3.37 | 3.50 | 3.66 | 3.37 | 3.50 | 3.66 | |
| A40-Land | 0.60 | 0.66 | 0.74 | 1.17 | 1.24 | 1.31 | 1.61 | 1.67 | 1.75 | 1.61 | 1.67 | 1.75 | 1.61 | 1.67 | 1.75 | |
| A40-Land | 0.57 | 0.63 | 0.71 | 1.08 | 1.14 | 1.21 | 1.59 | 1.65 | 1.72 | 1.59 | 1.65 | 1.72 | 1.59 | 1.65 | 1.72 | |
| A40-Oppt. Cost 1 | 1.09 | 1.16 | 1.29 | 1.95 | 2.05 | 2.14 | 2.84 | 2.94 | 3.07 | 2.84 | 2.94 | 3.07 | 2.84 | 2.94 | 3.07 | |
| A40-Oppt. Cost 1 | 1.07 | 1.12 | 1.25 | 1.90 | 2.01 | 2.11 | 2.79 | 2.90 | 3.03 | 2.79 | 2.90 | 3.03 | 2.79 | 2.90 | 3.03 | |
| A40-Oppt. Cost 2 | 0.90 | 0.99 | 1.10 | 1.68 | 1.75 | 1.83 | 2.42 | 2.51 | 2.62 | 2.42 | 2.51 | 2.62 | 2.42 | 2.51 | 2.62 | |
| A40-Oppt. Cost 2 | 0.86 | 0.95 | 1.06 | 1.62 | 1.71 | 1.82 | 2.38 | 2.47 | 2.58 | 2.38 | 2.47 | 2.58 | 2.38 | 2.47 | 2.58 | |
| A40-Oppt. Cost 3 | 0.79 | 0.86 | 0.96 | 1.45 | 1.52 | 1.62 | 2.11 | 2.19 | 2.28 | 2.11 | 2.19 | 2.28 | 2.11 | 2.19 | 2.28 | |
| A40-Oppt. Cost 3 | 0.75 | 0.83 | 0.93 | 1.41 | 1.49 | 1.59 | 2.07 | 2.15 | 2.25 | 2.07 | 2.15 | 2.25 | 2.07 | 2.15 | 2.25 | |
| A40-Oppt. Cost 4 | 0.70 | 0.77 | 0.85 | 1.28 | 1.35 | 1.44 | 1.87 | 1.94 | 2.02 | 1.87 | 1.94 | 2.02 | 1.87 | 1.94 | 2.02 | |
| A40-Oppt. Cost 4 | 0.67 | 0.73 | 0.82 | 1.25 | 1.32 | 1.41 | 1.84 | 1.91 | 2.00 | 1.84 | 1.91 | 2.00 | 1.84 | 1.91 | 2.00 | |
| A40-Oppt. Cost 5 | 0.63 | 0.69 | 0.76 | 1.21 | 1.26 | 1.33 | 1.74 | 1.79 | 1.87 | 1.74 | 1.79 | 1.87 | 1.74 | 1.79 | 1.87 | |
| A40-Oppt. Cost 5 | 0.60 | 0.66 | 0.74 | 1.12 | 1.19 | 1.26 | 1.65 | 1.71 | 1.79 | 1.65 | 1.71 | 1.79 | 1.65 | 1.71 | 1.79 | |
| A40-Norm | 1.11 | 1.17 | 1.23 | 2.03 | 2.08 | 2.15 | 2.84 | 2.99 | 3.06 | 2.84 | 2.99 | 3.06 | 2.84 | 2.99 | 3.06 | |
| A40-Norm | 1.05 | 1.10 | 1.17 | 1.96 | 2.01 | 2.08 | 2.87 | 2.95 | 3.05 | 2.87 | 2.95 | 3.05 | 2.87 | 2.95 | 3.05 | |
| A40-Land | 0.48 | 0.51 | 0.54 | 0.89 | 0.92 | 0.95 | 1.29 | 1.32 | 1.35 | 1.29 | 1.32 | 1.35 | 1.29 | 1.32 | 1.35 | |
| A40-Land | 0.46 | 0.49 | 0.51 | 0.86 | 0.89 | 0.92 | 1.27 | 1.29 | 1.32 | 1.27 | 1.29 | 1.32 | 1.27 | 1.29 | 1.32 | |
| A40-Oppt. Cost 1 | 0.92 | 0.97 | 1.02 | 1.68 | 1.71 | 1.73 | 2.44 | 2.48 | 2.54 | 2.44 | 2.48 | 2.54 | 2.44 | 2.48 | 2.54 | |
| A40-Oppt. Cost 1 | 0.87 | 0.91 | 0.97 | 1.63 | 1.67 | 1.73 | 2.39 | 2.43 | 2.49 | 2.39 | 2.43 | 2.49 | 2.39 | 2.43 | 2.49 | |
| A40-Oppt. Cost 2 | 0.78 | 0.83 | 0.88 | 1.44 | 1.48 | 1.52 | 2.09 | 2.12 | 2.17 | 2.09 | 2.12 | 2.17 | 2.09 | 2.12 | 2.17 | |
| A40-Oppt. Cost 2 | 0.74 | 0.78 | 0.83 | 1.39 | 1.43 | 1.48 | 2.04 | 2.08 | 2.13 | 2.04 | 2.08 | 2.13 | 2.04 | 2.08 | 2.13 | |
| A40-Oppt. Cost 3 | 0.69 | 0.74 | 0.78 | 1.28 | 1.33 | 1.38 | 1.82 | 1.87 | 1.92 | 1.82 | 1.87 | 1.92 | 1.82 | 1.87 | 1.92 | |
| A40-Oppt. Cost 3 | 0.65 | 0.70 | 0.74 | 1.22 | 1.25 | 1.29 | 1.78 | 1.82 | 1.86 | 1.78 | 1.82 | 1.86 | 1.78 | 1.82 | 1.86 | |
| A40-Oppt. Cost 4 | 0.61 | 0.64 | 0.68 | 1.12 | 1.14 | 1.18 | 1.62 | 1.65 | 1.69 | 1.62 | 1.65 | 1.69 | 1.62 | 1.65 | 1.69 | |
| A40-Oppt. Cost 4 | 0.58 | 0.61 | 0.64 | 1.08 | 1.11 | 1.15 | 1.50 | 1.53 | 1.57 | 1.50 | 1.53 | 1.57 | 1.50 | 1.53 | 1.57 | |
| A40-Oppt. Cost 5 | 0.55 | 0.58 | 0.61 | 1.00 | 1.03 | 1.08 | 1.45 | 1.48 | 1.51 | 1.45 | 1.48 | 1.51 | 1.45 | 1.48 | 1.51 | |
| A40-Oppt. Cost 5 | 0.52 | 0.55 | 0.58 | 0.97 | 1.00 | 1.03 | 1.42 | 1.45 | 1.48 | 1.42 | 1.45 | 1.48 | 1.42 | 1.45 | 1.48 | |
| A40-Norm | 0.91 | 0.92 | 0.94 | 1.63 | 1.64 | 1.63 | 2.32 | 2.33 | 2.35 | 2.32 | 2.33 | 2.35 | 2.32 | 2.33 | 2.35 | |
| A40-Norm | 0.84 | 0.85 | 0.86 | 1.54 | 1.55 | 1.57 | 2.26 | 2.26 | 2.27 | 2.26 | 2.26 | 2.27 | 2.26 | 2.26 | 2.27 | |
| A40-Land | 0.37 | 0.38 | 0.38 | 0.66 | 0.66 | 0.67 | 0.94 | 0.95 | 0.96 | 0.94 | 0.95 | 0.96 | 0.94 | 0.95 | 0.96 | |
| A40-Land | 0.34 | 0.34 | 0.35 | 0.63 | 0.63 | 0.64 | 0.91 | 0.92 | 0.93 | 0.91 | 0.92 | 0.93 | 0.91 | 0.92 | 0.93 | |
| A40-Oppt. Cost 1 | 0.70 | 0.77 | 0.78 | 1.35 | 1.36 | 1.37 | 1.94 | 1.95 | 1.96 | 1.94 | 1.95 | 1.96 | 1.94 | 1.95 | 1.96 | |
| A40-Oppt. Cost 1 | 0.65 | 0.70 | 0.72 | 1.29 | 1.30 | 1.31 | 1.88 | 1.89 | 1.90 | 1.88 | 1.89 | 1.90 | 1.88 | 1.89 | 1.90 | |
| A40-Oppt. Cost 2 | 0.65 | 0.66 | 0.67 | 1.16 | 1.17 | 1.18 | 1.66 | 1.67 | 1.68 | 1.66 | 1.67 | 1.68 | 1.66 | 1.67 | 1.68 | |
| A40-Oppt. Cost 2 | 0.60 | 0.61 | 0.62 | 1.10 | 1.11 | 1.12 | 1.61 | 1.62 | 1.63 | 1.61 | 1.62 | 1.63 | 1.61 | 1.62 | 1.63 | |
| A40-Oppt. Cost 3 | 0.57 | 0.58 | 0.59 | 0.97 | 0.97 | 0.98 | 1.41 | 1.42 | 1.43 | 1.41 | 1.42 | 1.43 | 1.41 | 1.42 | 1.43 | |
| A40-Oppt. Cost 3 | 0.52 | 0.53 | 0.54 | 0.90 | 0.91 | 0.92 | 1.30 | 1.31 | 1.32 | 1.30 | 1.31 | 1.32 | 1.30 | 1.31 | 1.32 | |
| A40-Oppt. Cost 4 | 0.51 | 0.52 | 0.52 | 0.86 | 0.87 | 0.88 | 1.25 | 1.26 | 1.27 | 1.25 | 1.26 | 1.27 | 1.25 | 1.26 | 1.27 | |
| A40-Oppt. Cost 4 | 0.47 | 0.47 | 0.48 | 0.81 | 0.81 | 0.82 | 1.17 | 1.17 | 1.18 | 1.17 | 1.17 | 1.18 | 1.17 | 1.17 | 1.18 | |
| A40-Oppt. Cost 5 | 0.46 | 0.46 | 0.47 | 0.81 | 0.81 | 0.82 | 1.17 | 1.17 | 1.18 | 1.17 | 1.17 | 1.18 | 1.17 | 1.17 | 1.18 | |
| A40-Oppt. Cost 5 | 0.42 | 0.43 | 0.43 | 0.77 | 0.77 | 0.77 | 1.13 | 1.13 | 1.14 | 1.13 | 1.13 | 1.14 | 1.13 | 1.13 | 1.14 | |

Colour Code: Red: B/C Ratios < 1.00. Black: B/C Ratios >= 1.00 but < 2.00. Blue: B/C Ratios >= 2.00 but < 3.00. Green: B/C Ratios >= 3.00 but < 4.00. Purple: B/C Ratios >= 4.00 but < 5.00. Brown: B/C Ratios >= 5.00. Source: Calculations

Table 5.6 Sadao Thai Benefit/Cost (B/C) Ratios for 30 Year Investment Period

| Discount Rate | Investment Analysis | 5 Baht/Kg | | | | | 10 Baht/Kg | | | | | 15 Baht/Kg | | | | |
|------------------|---------------------|---------------------------|---------------------------|----------------------------|---------------------------|---------------------------|----------------------------|---------------------------|---------------------------|----------------------------|---------------------------|---------------------------|----------------------------|------|--|--|
| | | 1,000 Baht/m ³ | 5,000 Baht/m ³ | 10,000 Baht/m ³ | 1,000 Baht/m ³ | 5,000 Baht/m ³ | 10,000 Baht/m ³ | 1,000 Baht/m ³ | 5,000 Baht/m ³ | 10,000 Baht/m ³ | 1,000 Baht/m ³ | 5,000 Baht/m ³ | 10,000 Baht/m ³ | | | |
| 10% | A30-Norm | 1.44 | 1.68 | 2.44 | 2.60 | 3.05 | 3.80 | 3.78 | 4.21 | 4.70 | 3.78 | 4.21 | 4.70 | | | |
| | B30-Norm | 1.39 | 1.63 | 2.36 | 2.55 | 2.99 | 3.53 | 3.71 | 4.16 | 4.71 | 3.71 | 4.16 | 4.71 | | | |
| | A30-Land | 0.70 | 0.92 | 1.19 | 1.27 | 1.49 | 1.76 | 1.84 | 2.03 | 2.32 | 1.84 | 2.03 | 2.32 | | | |
| | B30-Land | 0.68 | 0.89 | 1.16 | 1.24 | 1.46 | 1.73 | 1.81 | 2.00 | 2.30 | 1.81 | 2.00 | 2.30 | | | |
| | A30-Oppt. Cost 1 | 1.19 | 1.55 | 2.01 | 2.15 | 2.51 | 2.97 | 3.11 | 3.47 | 3.93 | 3.11 | 3.47 | 3.93 | | | |
| | B30-Oppt. Cost 1 | 1.14 | 1.51 | 1.97 | 2.10 | 2.47 | 2.93 | 3.05 | 3.43 | 3.89 | 3.05 | 3.43 | 3.89 | | | |
| | A30-Oppt. Cost 2 | 1.01 | 1.32 | 1.71 | 1.83 | 2.14 | 2.53 | 2.64 | 2.96 | 3.35 | 2.64 | 2.96 | 3.35 | | | |
| | B30-Oppt. Cost 2 | 0.97 | 1.29 | 1.69 | 1.79 | 2.10 | 2.49 | 2.61 | 2.92 | 3.31 | 2.61 | 2.92 | 3.31 | | | |
| | A30-Oppt. Cost 3 | 0.88 | 1.15 | 1.49 | 1.56 | 1.86 | 2.20 | 2.30 | 2.57 | 2.91 | 2.30 | 2.57 | 2.91 | | | |
| | B30-Oppt. Cost 3 | 0.85 | 1.12 | 1.46 | 1.56 | 1.86 | 2.20 | 2.27 | 2.54 | 2.88 | 2.27 | 2.54 | 2.88 | | | |
| | A30-Oppt. Cost 4 | 0.78 | 1.02 | 1.32 | 1.41 | 1.65 | 2.17 | 2.04 | 2.25 | 2.55 | 2.04 | 2.25 | 2.55 | | | |
| | B30-Oppt. Cost 4 | 0.75 | 0.99 | 1.29 | 1.39 | 1.62 | 2.01 | 2.01 | 2.25 | 2.55 | 2.01 | 2.25 | 2.55 | | | |
| | A30-Oppt. Cost 5 | 0.70 | 0.91 | 1.16 | 1.24 | 1.48 | 1.92 | 1.63 | 2.04 | 2.31 | 1.63 | 2.04 | 2.31 | | | |
| | B30-Oppt. Cost 5 | 0.67 | 0.89 | 1.16 | 1.24 | 1.45 | 1.72 | 1.60 | 2.02 | 2.29 | 1.60 | 2.02 | 2.29 | | | |
| | 12% | A30-Norm | 1.24 | 1.50 | 1.97 | 2.35 | 2.64 | 3.02 | 3.19 | 3.69 | 4.06 | 3.19 | 3.69 | 4.06 | | |
| B30-Norm | | 1.24 | 1.54 | 1.97 | 2.29 | 2.59 | 2.96 | 3.34 | 3.63 | 4.01 | 3.34 | 3.63 | 4.01 | | | |
| A30-Land | | 0.69 | 0.74 | 0.92 | 0.99 | 1.23 | 1.40 | 1.58 | 1.69 | 1.89 | 1.58 | 1.69 | 1.89 | | | |
| B30-Land | | 0.59 | 0.72 | 0.89 | 0.96 | 1.20 | 1.38 | 1.55 | 1.69 | 1.88 | 1.55 | 1.69 | 1.88 | | | |
| A30-Oppt. Cost 1 | | 1.07 | 1.32 | 1.69 | 1.89 | 2.19 | 2.50 | 2.71 | 3.06 | 3.36 | 2.71 | 3.06 | 3.36 | | | |
| B30-Oppt. Cost 1 | | 1.03 | 1.27 | 1.59 | 1.89 | 2.14 | 2.45 | 2.61 | 2.97 | 3.27 | 2.61 | 2.97 | 3.27 | | | |
| A30-Oppt. Cost 2 | | 0.82 | 1.13 | 1.39 | 1.56 | 1.87 | 2.13 | 2.40 | 2.61 | 2.87 | 2.40 | 2.61 | 2.87 | | | |
| B30-Oppt. Cost 2 | | 0.81 | 1.09 | 1.35 | 1.56 | 1.82 | 2.09 | 2.35 | 2.56 | 2.83 | 2.35 | 2.56 | 2.83 | | | |
| A30-Oppt. Cost 3 | | 0.69 | 0.98 | 1.21 | 1.44 | 1.69 | 1.96 | 2.08 | 2.27 | 2.50 | 2.08 | 2.27 | 2.50 | | | |
| B30-Oppt. Cost 3 | | 0.76 | 0.95 | 1.18 | 1.41 | 1.59 | 1.82 | 2.05 | 2.24 | 2.46 | 2.05 | 2.24 | 2.46 | | | |
| A30-Oppt. Cost 4 | | 0.71 | 0.87 | 1.07 | 1.28 | 1.41 | 1.64 | 1.85 | 2.01 | 2.22 | 1.85 | 2.01 | 2.22 | | | |
| B30-Oppt. Cost 4 | | 0.68 | 0.84 | 1.04 | 1.25 | 1.41 | 1.61 | 1.82 | 1.98 | 2.18 | 1.82 | 1.98 | 2.18 | | | |
| A30-Oppt. Cost 5 | | 0.64 | 0.79 | 0.96 | 1.19 | 1.29 | 1.48 | 1.66 | 1.81 | 2.00 | 1.66 | 1.81 | 2.00 | | | |
| B30-Oppt. Cost 5 | | 0.61 | 0.75 | 0.94 | 1.12 | 1.27 | 1.45 | 1.63 | 1.78 | 1.98 | 1.63 | 1.78 | 1.98 | | | |
| 15% | | A30-Norm | 1.10 | 1.29 | 1.49 | 2.02 | 2.19 | 2.32 | 2.49 | 2.83 | 3.08 | 2.49 | 2.83 | 3.08 | | |
| | B30-Norm | 1.06 | 1.22 | 1.43 | 1.96 | 2.12 | 2.32 | 2.46 | 2.82 | 3.02 | 2.46 | 2.82 | 3.02 | | | |
| | A30-Land | 0.49 | 0.56 | 0.65 | 0.89 | 0.96 | 1.02 | 1.25 | 1.35 | 1.44 | 1.25 | 1.35 | 1.44 | | | |
| | B30-Land | 0.47 | 0.54 | 0.62 | 0.86 | 0.93 | 1.02 | 1.24 | 1.32 | 1.41 | 1.24 | 1.32 | 1.41 | | | |
| | A30-Oppt. Cost 1 | 0.94 | 1.07 | 1.24 | 1.68 | 1.82 | 1.96 | 2.43 | 2.56 | 2.73 | 2.43 | 2.56 | 2.73 | | | |
| | B30-Oppt. Cost 1 | 0.88 | 1.02 | 1.17 | 1.63 | 1.76 | 1.93 | 2.37 | 2.51 | 2.68 | 2.37 | 2.51 | 2.68 | | | |
| | A30-Oppt. Cost 2 | 0.80 | 0.92 | 1.06 | 1.44 | 1.55 | 1.70 | 2.09 | 2.19 | 2.33 | 2.09 | 2.19 | 2.33 | | | |
| | B30-Oppt. Cost 2 | 0.75 | 0.87 | 1.01 | 1.30 | 1.51 | 1.65 | 2.03 | 2.14 | 2.29 | 2.03 | 2.14 | 2.29 | | | |
| | A30-Oppt. Cost 3 | 0.70 | 0.80 | 0.93 | 1.20 | 1.36 | 1.46 | 1.81 | 1.91 | 2.04 | 1.81 | 1.91 | 2.04 | | | |
| | B30-Oppt. Cost 3 | 0.66 | 0.76 | 0.88 | 1.22 | 1.32 | 1.44 | 1.77 | 1.87 | 2.00 | 1.77 | 1.87 | 2.00 | | | |
| | A30-Oppt. Cost 4 | 0.62 | 0.71 | 0.82 | 1.12 | 1.20 | 1.32 | 1.61 | 1.70 | 1.81 | 1.61 | 1.70 | 1.81 | | | |
| | B30-Oppt. Cost 4 | 0.58 | 0.67 | 0.79 | 1.08 | 1.17 | 1.26 | 1.57 | 1.66 | 1.77 | 1.57 | 1.66 | 1.77 | | | |
| | A30-Oppt. Cost 5 | 0.56 | 0.64 | 0.74 | 1.00 | 1.08 | 1.16 | 1.35 | 1.53 | 1.63 | 1.35 | 1.53 | 1.63 | | | |
| | B30-Oppt. Cost 5 | 0.53 | 0.61 | 0.71 | 0.97 | 1.05 | 1.13 | 1.42 | 1.50 | 1.60 | 1.42 | 1.50 | 1.60 | | | |
| | 20% | A30-Norm | 0.92 | 0.98 | 1.05 | 1.02 | 1.68 | 1.75 | 2.32 | 2.30 | 2.45 | 2.32 | 2.45 | 2.60 | | |
| B30-Norm | | 0.84 | 0.90 | 0.97 | 1.01 | 1.60 | 1.67 | 2.24 | 2.30 | 2.37 | 2.30 | 2.37 | 2.45 | | | |
| A30-Land | | 0.37 | 0.40 | 0.43 | 0.66 | 0.68 | 0.71 | 0.94 | 0.96 | 0.99 | 0.94 | 0.96 | 0.99 | | | |
| B30-Land | | 0.34 | 0.37 | 0.39 | 0.63 | 0.65 | 0.68 | 0.91 | 0.93 | 0.96 | 0.91 | 0.93 | 0.96 | | | |
| A30-Oppt. Cost 1 | | 0.77 | 0.81 | 0.87 | 1.40 | 1.40 | 1.40 | 1.94 | 1.98 | 2.04 | 1.98 | 2.04 | 2.04 | | | |
| B30-Oppt. Cost 1 | | 0.70 | 0.75 | 0.81 | 1.29 | 1.34 | 1.40 | 1.85 | 1.92 | 1.90 | 1.92 | 1.90 | 1.90 | | | |
| A30-Oppt. Cost 2 | | 0.60 | 0.64 | 0.70 | 1.16 | 1.16 | 1.20 | 1.68 | 1.70 | 1.75 | 1.70 | 1.75 | 1.75 | | | |
| B30-Oppt. Cost 2 | | 0.60 | 0.64 | 0.70 | 1.11 | 1.15 | 1.20 | 1.61 | 1.65 | 1.70 | 1.65 | 1.70 | 1.70 | | | |
| A30-Oppt. Cost 3 | | 0.58 | 0.61 | 0.66 | 1.02 | 1.05 | 1.10 | 1.46 | 1.49 | 1.54 | 1.49 | 1.54 | 1.54 | | | |
| B30-Oppt. Cost 3 | | 0.53 | 0.56 | 0.61 | 0.97 | 1.00 | 1.05 | 1.34 | 1.37 | 1.40 | 1.34 | 1.37 | 1.40 | | | |
| A30-Oppt. Cost 4 | | 0.51 | 0.54 | 0.59 | 0.90 | 0.94 | 0.98 | 1.25 | 1.26 | 1.32 | 1.25 | 1.26 | 1.32 | | | |
| B30-Oppt. Cost 4 | | 0.47 | 0.50 | 0.54 | 0.86 | 0.89 | 0.93 | 1.20 | 1.25 | 1.28 | 1.20 | 1.25 | 1.28 | | | |
| A30-Oppt. Cost 5 | | 0.46 | 0.49 | 0.53 | 0.81 | 0.84 | 0.88 | 1.17 | 1.19 | 1.23 | 1.17 | 1.19 | 1.23 | | | |
| B30-Oppt. Cost 5 | | 0.42 | 0.45 | 0.49 | 0.78 | 0.80 | 0.84 | 1.13 | 1.15 | 1.19 | 1.13 | 1.15 | 1.19 | | | |

Color Code: Red: B/C Ratios < 1.00; Black: B/C Ratios >= 1.00 but < 2.00; Blue: B/C Ratios >= 2.00 but < 3.00; Green: B/C Ratios >= 3.00 but < 4.00; Purple: B/C Ratios >= 4.00 but < 5.00; Brown: B/C Ratios >= 5.00
Source: Calculated

Table 5.7. Sadao Thai Benefit/Cost (B/C) Ratios for 20 Year Investment Period

| Discount Rate | Investment Analysis | 5 Baht/Kg | | | | | 10 Baht/Kg | | | | | 15 Baht/Kg | | | | |
|------------------|---------------------|---------------------------|---------------------------|----------------------------|---------------------------|---------------------------|----------------------------|---------------------------|---------------------------|----------------------------|---------------------------|---------------------------|----------------------------|--|--|--|
| | | 1,000 Baht/m ³ | 5,000 Baht/m ³ | 10,000 Baht/m ³ | 1,000 Baht/m ³ | 5,000 Baht/m ³ | 10,000 Baht/m ³ | 1,000 Baht/m ³ | 5,000 Baht/m ³ | 10,000 Baht/m ³ | 1,000 Baht/m ³ | 5,000 Baht/m ³ | 10,000 Baht/m ³ | | | |
| 10% | A20-Norm | 1.40 | 2.12 | 3.01 | 2.45 | 3.16 | 4.06 | 3.49 | 4.21 | 5.10 | 3.49 | 4.21 | 5.10 | | | |
| | B20-Norm | 1.34 | 2.06 | 2.96 | 2.39 | 3.10 | 4.00 | 3.43 | 4.15 | 5.04 | 3.43 | 4.15 | 5.04 | | | |
| | A20-Land | 0.65 | 0.99 | 1.41 | 1.14 | 1.47 | 1.89 | 1.63 | 1.98 | 2.39 | 1.63 | 1.98 | 2.39 | | | |
| | B20-Land | 0.63 | 0.96 | 1.38 | 1.11 | 1.45 | 1.87 | 1.60 | 1.93 | 2.35 | 1.60 | 1.93 | 2.35 | | | |
| | A20-Oppl. Cost 1 | 1.75 | 2.49 | 3.49 | 2.92 | 3.62 | 4.52 | 3.89 | 4.63 | 5.52 | 3.89 | 4.63 | 5.52 | | | |
| | B20-Oppl. Cost 1 | 1.11 | 1.67 | 2.45 | 1.98 | 2.57 | 3.31 | 2.84 | 3.43 | 4.17 | 2.84 | 3.43 | 4.17 | | | |
| | A20-Oppl. Cost 2 | 0.99 | 1.49 | 2.13 | 1.73 | 2.23 | 2.86 | 2.46 | 2.97 | 3.60 | 2.46 | 2.97 | 3.60 | | | |
| | B20-Oppl. Cost 2 | 0.95 | 1.45 | 2.09 | 1.69 | 2.19 | 2.82 | 2.42 | 2.93 | 3.56 | 2.42 | 2.93 | 3.56 | | | |
| | A20-Oppl. Cost 3 | 0.86 | 1.30 | 1.85 | 1.50 | 1.94 | 2.50 | 2.15 | 2.59 | 3.14 | 2.15 | 2.59 | 3.14 | | | |
| | B20-Oppl. Cost 3 | 0.83 | 1.27 | 1.82 | 1.47 | 1.91 | 2.46 | 2.11 | 2.55 | 3.10 | 2.11 | 2.55 | 3.10 | | | |
| 12% | A20-Oppl. Cost 4 | 0.76 | 1.15 | 1.64 | 1.33 | 1.72 | 2.21 | 1.90 | 2.29 | 2.78 | 1.90 | 2.29 | 2.78 | | | |
| | B20-Oppl. Cost 4 | 0.73 | 1.12 | 1.61 | 1.30 | 1.69 | 2.18 | 1.87 | 2.26 | 2.75 | 1.87 | 2.26 | 2.75 | | | |
| | A20-Oppl. Cost 5 | 0.69 | 1.04 | 1.48 | 1.20 | 1.55 | 2.07 | 1.71 | 2.06 | 2.50 | 1.71 | 2.06 | 2.50 | | | |
| | B20-Oppl. Cost 5 | 0.66 | 1.01 | 1.45 | 1.17 | 1.52 | 2.00 | 1.68 | 2.03 | 2.47 | 1.68 | 2.03 | 2.47 | | | |
| | A20-Norm | 1.28 | 1.94 | 2.55 | 2.24 | 2.80 | 3.50 | 3.19 | 3.75 | 4.45 | 3.19 | 3.75 | 4.45 | | | |
| | B20-Norm | 1.22 | 1.88 | 2.48 | 2.17 | 2.74 | 3.44 | 3.13 | 3.69 | 4.39 | 3.13 | 3.69 | 4.39 | | | |
| | A20-Land | 0.59 | 0.89 | 1.24 | 1.01 | 1.26 | 1.57 | 1.44 | 1.69 | 2.00 | 1.44 | 1.69 | 2.00 | | | |
| | B20-Land | 0.55 | 0.80 | 1.14 | 0.96 | 1.23 | 1.53 | 1.41 | 1.68 | 1.98 | 1.41 | 1.68 | 1.98 | | | |
| | A20-Oppl. Cost 1 | 1.00 | 1.48 | 2.11 | 1.65 | 2.32 | 2.90 | 2.65 | 3.11 | 3.69 | 2.65 | 3.11 | 3.69 | | | |
| | B20-Oppl. Cost 1 | 0.97 | 1.44 | 2.06 | 1.60 | 2.27 | 2.85 | 2.59 | 3.06 | 3.64 | 2.59 | 3.06 | 3.64 | | | |
| 15% | A20-Oppl. Cost 2 | 0.91 | 1.31 | 1.90 | 1.54 | 1.94 | 2.44 | 2.22 | 2.61 | 3.11 | 2.22 | 2.61 | 3.11 | | | |
| | B20-Oppl. Cost 2 | 0.86 | 1.26 | 1.76 | 1.44 | 1.84 | 2.16 | 1.97 | 2.32 | 2.75 | 1.97 | 2.32 | 2.75 | | | |
| | A20-Oppl. Cost 3 | 0.79 | 1.14 | 1.57 | 1.34 | 1.69 | 2.13 | 1.93 | 2.28 | 2.72 | 1.93 | 2.28 | 2.72 | | | |
| | B20-Oppl. Cost 3 | 0.75 | 1.10 | 1.54 | 1.28 | 1.62 | 2.13 | 1.93 | 2.28 | 2.72 | 1.93 | 2.28 | 2.72 | | | |
| | A20-Oppl. Cost 4 | 0.70 | 1.01 | 1.40 | 1.23 | 1.58 | 1.92 | 1.75 | 2.06 | 2.44 | 1.75 | 2.06 | 2.44 | | | |
| | B20-Oppl. Cost 4 | 0.67 | 0.98 | 1.36 | 1.19 | 1.50 | 1.89 | 1.72 | 2.02 | 2.41 | 1.72 | 2.02 | 2.41 | | | |
| | A20-Oppl. Cost 5 | 0.63 | 0.91 | 1.25 | 1.10 | 1.38 | 1.73 | 1.57 | 1.85 | 2.20 | 1.57 | 1.85 | 2.20 | | | |
| | B20-Oppl. Cost 5 | 0.60 | 0.88 | 1.22 | 1.07 | 1.35 | 1.69 | 1.54 | 1.82 | 2.17 | 1.54 | 1.82 | 2.17 | | | |
| | A20-Norm | 1.13 | 1.61 | 2.00 | 1.66 | 2.15 | 2.83 | 2.60 | 3.19 | 3.67 | 2.60 | 3.19 | 3.67 | | | |
| | B20-Norm | 1.06 | 1.49 | 1.99 | 1.59 | 2.08 | 2.77 | 2.57 | 3.12 | 3.60 | 2.57 | 3.12 | 3.60 | | | |
| 18% | A20-Land | 0.48 | 0.65 | 0.86 | 0.64 | 0.84 | 1.01 | 0.84 | 1.07 | 1.27 | 0.84 | 1.07 | 1.27 | | | |
| | B20-Land | 0.45 | 0.62 | 0.83 | 0.61 | 0.81 | 0.98 | 0.81 | 1.04 | 1.24 | 0.81 | 1.04 | 1.24 | | | |
| | A20-Oppl. Cost 1 | 0.94 | 1.26 | 1.61 | 1.25 | 1.58 | 2.00 | 1.95 | 2.36 | 2.83 | 1.95 | 2.36 | 2.83 | | | |
| | B20-Oppl. Cost 1 | 0.89 | 1.20 | 1.51 | 1.20 | 1.50 | 1.90 | 1.80 | 2.27 | 2.61 | 1.80 | 2.27 | 2.61 | | | |
| | A20-Oppl. Cost 2 | 0.80 | 1.08 | 1.42 | 1.07 | 1.30 | 1.67 | 1.59 | 1.94 | 2.32 | 1.59 | 1.94 | 2.32 | | | |
| | B20-Oppl. Cost 2 | 0.75 | 1.03 | 1.30 | 1.03 | 1.27 | 1.56 | 1.46 | 1.76 | 2.04 | 1.46 | 1.76 | 2.04 | | | |
| | A20-Oppl. Cost 3 | 0.70 | 0.94 | 1.25 | 0.94 | 1.22 | 1.46 | 1.40 | 1.64 | 1.94 | 1.40 | 1.64 | 1.94 | | | |
| | B20-Oppl. Cost 3 | 0.66 | 0.90 | 1.20 | 0.90 | 1.17 | 1.42 | 1.35 | 1.57 | 1.83 | 1.35 | 1.57 | 1.83 | | | |
| | A20-Oppl. Cost 4 | 0.62 | 0.84 | 1.11 | 0.99 | 1.30 | 1.57 | 1.35 | 1.55 | 1.80 | 1.35 | 1.55 | 1.80 | | | |
| | B20-Oppl. Cost 4 | 0.59 | 0.80 | 1.07 | 0.95 | 1.26 | 1.53 | 1.30 | 1.53 | 1.77 | 1.30 | 1.53 | 1.77 | | | |
| 20% | A20-Oppl. Cost 5 | 0.56 | 0.75 | 1.00 | 0.84 | 1.14 | 1.30 | 1.09 | 1.36 | 1.55 | 1.09 | 1.36 | 1.55 | | | |
| | B20-Oppl. Cost 5 | 0.53 | 0.72 | 0.96 | 0.84 | 1.14 | 1.30 | 1.09 | 1.36 | 1.55 | 1.09 | 1.36 | 1.55 | | | |
| | A20-Norm | 0.93 | 1.13 | 1.39 | 1.09 | 1.40 | 1.60 | 1.40 | 1.60 | 1.79 | 1.40 | 1.60 | 1.79 | | | |
| | B20-Norm | 0.85 | 1.00 | 1.32 | 1.00 | 1.32 | 1.52 | 1.28 | 1.52 | 1.65 | 1.28 | 1.52 | 1.65 | | | |
| | A20-Land | 0.37 | 0.46 | 0.56 | 0.44 | 0.54 | 0.63 | 0.51 | 0.61 | 0.71 | 0.51 | 0.61 | 0.71 | | | |
| | B20-Land | 0.34 | 0.42 | 0.53 | 0.41 | 0.51 | 0.60 | 0.49 | 0.59 | 0.68 | 0.49 | 0.59 | 0.68 | | | |
| | A20-Oppl. Cost 1 | 0.77 | 0.95 | 1.16 | 0.95 | 1.16 | 1.33 | 1.11 | 1.33 | 1.51 | 1.11 | 1.33 | 1.51 | | | |
| | B20-Oppl. Cost 1 | 0.71 | 0.88 | 1.10 | 0.88 | 1.10 | 1.27 | 1.06 | 1.27 | 1.44 | 1.06 | 1.27 | 1.44 | | | |
| | A20-Oppl. Cost 2 | 0.67 | 0.81 | 1.00 | 0.81 | 1.00 | 1.14 | 0.90 | 1.14 | 1.28 | 0.90 | 1.14 | 1.28 | | | |
| | B20-Oppl. Cost 2 | 0.61 | 0.76 | 0.93 | 0.76 | 0.93 | 1.09 | 0.84 | 1.09 | 1.24 | 0.84 | 1.09 | 1.24 | | | |
| A20-Oppl. Cost 3 | 0.58 | 0.71 | 0.88 | 0.71 | 0.88 | 1.00 | 0.83 | 1.00 | 1.13 | 0.83 | 1.00 | 1.13 | | | | |
| B20-Oppl. Cost 3 | 0.53 | 0.60 | 0.73 | 0.60 | 0.73 | 0.89 | 0.69 | 0.89 | 1.01 | 0.69 | 0.89 | 1.01 | | | | |
| A20-Oppl. Cost 4 | 0.52 | 0.63 | 0.74 | 0.63 | 0.74 | 0.84 | 0.69 | 0.84 | 0.97 | 0.69 | 0.84 | 0.97 | | | | |
| B20-Oppl. Cost 4 | 0.48 | 0.59 | 0.70 | 0.59 | 0.70 | 0.80 | 0.65 | 0.80 | 0.91 | 0.65 | 0.80 | 0.91 | | | | |
| A20-Oppl. Cost 5 | 0.47 | 0.57 | 0.70 | 0.60 | 0.77 | 0.87 | 0.70 | 0.87 | 1.00 | 0.70 | 0.87 | 1.00 | | | | |
| B20-Oppl. Cost 5 | 0.43 | 0.53 | 0.66 | 0.53 | 0.66 | 0.77 | 0.62 | 0.77 | 0.88 | 0.62 | 0.77 | 0.88 | | | | |

Color Code: Red: B/C Ratios < 1.00 Blue: B/C Ratios >= 1.00 but < 2.00 Green: B/C Ratios >= 2.00 but < 3.00 Purple: B/C Ratios >= 3.00 but < 4.00 Brown: B/C Ratios >= 4.00 but < 5.00 Orange: B/C Ratios >= 5.00
 Source: Calculations

Table 5.8 Sadao Thai Benefit/Cost (B/C) Ratios for 15 Year Investment Period

| Discount Rate | Investment Analysis | 5 Baht/Kg | | | | | 10 Baht/Kg | | | | | 15 Baht/Kg | | | | |
|------------------|---------------------|---------------------------|---------------------------|----------------------------|---------------------------|---------------------------|----------------------------|---------------------------|---------------------------|----------------------------|---------------------------|---------------------------|----------------------------|---------------------------|---------------------------|----------------------------|
| | | 1,000 Baht/m ³ | 5,000 Baht/m ³ | 10,000 Baht/m ³ | 1,000 Baht/m ³ | 5,000 Baht/m ³ | 10,000 Baht/m ³ | 1,000 Baht/m ³ | 5,000 Baht/m ³ | 10,000 Baht/m ³ | 1,000 Baht/m ³ | 5,000 Baht/m ³ | 10,000 Baht/m ³ | 1,000 Baht/m ³ | 5,000 Baht/m ³ | 10,000 Baht/m ³ |
| 10% | A15-Norm | 1.39 | 2.25 | 3.32 | 2.35 | 3.21 | 4.28 | 3.31 | 4.17 | 5.24 | 3.31 | 4.17 | 5.24 | 3.31 | 4.17 | 5.24 |
| | B15-Norm | 1.32 | 2.18 | 3.25 | 2.28 | 3.14 | 4.21 | 3.25 | 4.10 | 5.18 | 3.25 | 4.10 | 5.18 | 3.25 | 4.10 | 5.18 |
| | A15-Land | 0.59 | 0.96 | 1.42 | 1.00 | 1.37 | 1.83 | 1.42 | 1.78 | 2.24 | 1.42 | 1.78 | 2.24 | 1.42 | 1.78 | 2.24 |
| | B15-Land | 0.56 | 0.93 | 1.39 | 0.98 | 1.34 | 1.80 | 1.39 | 1.75 | 2.21 | 1.39 | 1.75 | 2.21 | 1.39 | 1.75 | 2.21 |
| | A15-Oppt. Cost 1 | 1.14 | 1.84 | 2.72 | 1.93 | 2.63 | 3.51 | 2.72 | 3.42 | 4.30 | 2.72 | 3.42 | 4.30 | 2.72 | 3.42 | 4.30 |
| | B15-Oppt. Cost 1 | 1.08 | 1.79 | 2.67 | 1.87 | 2.58 | 3.46 | 2.66 | 3.37 | 4.25 | 2.66 | 3.37 | 4.25 | 2.66 | 3.37 | 4.25 |
| | A15-Oppt. Cost 2 | 0.97 | 1.52 | 2.31 | 1.64 | 2.23 | 2.98 | 2.31 | 2.98 | 3.65 | 2.31 | 2.98 | 3.65 | 2.31 | 2.98 | 3.65 |
| | B15-Oppt. Cost 2 | 0.92 | 1.47 | 2.26 | 1.59 | 2.19 | 2.93 | 2.26 | 2.86 | 3.50 | 2.26 | 2.86 | 3.50 | 2.26 | 2.86 | 3.50 |
| | A15-Oppt. Cost 3 | 0.84 | 1.36 | 2.09 | 1.42 | 1.94 | 2.60 | 2.09 | 2.60 | 3.17 | 2.09 | 2.60 | 3.17 | 2.09 | 2.60 | 3.17 |
| | B15-Oppt. Cost 3 | 0.84 | 1.36 | 2.09 | 1.42 | 1.94 | 2.60 | 2.09 | 2.60 | 3.17 | 2.09 | 2.60 | 3.17 | 2.09 | 2.60 | 3.17 |
| | A15-Oppt. Cost 4 | 0.90 | 1.26 | 1.97 | 1.38 | 1.90 | 2.28 | 1.97 | 2.28 | 2.80 | 1.97 | 2.28 | 2.80 | 1.97 | 2.28 | 2.80 |
| | B15-Oppt. Cost 4 | 0.74 | 1.16 | 1.73 | 1.22 | 1.69 | 2.05 | 1.73 | 2.05 | 2.51 | 1.73 | 2.05 | 2.51 | 1.73 | 2.05 | 2.51 |
| | A15-Oppt. Cost 5 | 0.66 | 1.07 | 1.59 | 1.12 | 1.53 | 1.99 | 1.59 | 1.99 | 2.47 | 1.59 | 1.99 | 2.47 | 1.59 | 1.99 | 2.47 |
| | B15-Oppt. Cost 5 | 0.63 | 1.04 | 1.55 | 1.09 | 1.50 | 2.01 | 1.55 | 1.98 | 2.47 | 1.55 | 1.98 | 2.47 | 1.55 | 1.98 | 2.47 |
| | A15-Norm | 1.26 | 1.99 | 2.89 | 2.16 | 2.87 | 3.77 | 2.89 | 3.76 | 4.65 | 2.89 | 3.76 | 4.65 | 2.89 | 3.76 | 4.65 |
| B15-Norm | 1.20 | 1.92 | 2.82 | 2.09 | 2.80 | 3.70 | 2.82 | 3.69 | 4.58 | 2.82 | 3.69 | 4.58 | 2.82 | 3.69 | 4.58 | |
| A15-Land | 0.53 | 0.80 | 1.20 | 0.90 | 1.20 | 1.57 | 0.90 | 1.27 | 1.64 | 0.90 | 1.27 | 1.64 | 0.90 | 1.27 | 1.64 | |
| B15-Land | 0.50 | 0.80 | 1.17 | 0.87 | 1.17 | 1.54 | 0.87 | 1.24 | 1.54 | 0.87 | 1.24 | 1.54 | 0.87 | 1.24 | 1.54 | |
| A15-Oppt. Cost 1 | 1.05 | 1.64 | 2.38 | 1.78 | 2.37 | 3.10 | 2.38 | 3.04 | 3.83 | 2.38 | 3.04 | 3.83 | 2.38 | 3.04 | 3.83 | |
| B15-Oppt. Cost 1 | 0.99 | 1.58 | 2.32 | 1.72 | 2.31 | 3.05 | 2.45 | 3.04 | 3.77 | 2.45 | 3.04 | 3.77 | 2.45 | 3.04 | 3.77 | |
| A15-Oppt. Cost 2 | 0.89 | 1.39 | 2.07 | 1.51 | 1.96 | 2.64 | 2.13 | 2.63 | 3.26 | 2.13 | 2.63 | 3.26 | 2.13 | 2.63 | 3.26 | |
| B15-Oppt. Cost 2 | 0.84 | 1.34 | 1.97 | 1.46 | 1.95 | 2.59 | 2.08 | 2.58 | 3.21 | 2.08 | 2.58 | 3.21 | 2.08 | 2.58 | 3.21 | |
| A15-Oppt. Cost 3 | 0.76 | 1.21 | 1.76 | 1.31 | 1.75 | 2.29 | 1.85 | 2.29 | 2.83 | 1.85 | 2.29 | 2.83 | 1.85 | 2.29 | 2.83 | |
| B15-Oppt. Cost 3 | 0.73 | 1.17 | 1.71 | 1.27 | 1.71 | 2.25 | 1.81 | 2.24 | 2.79 | 1.81 | 2.24 | 2.79 | 1.81 | 2.24 | 2.79 | |
| A15-Oppt. Cost 4 | 0.69 | 1.07 | 1.55 | 1.16 | 1.55 | 2.03 | 1.64 | 2.02 | 2.51 | 1.64 | 2.02 | 2.51 | 1.64 | 2.02 | 2.51 | |
| B15-Oppt. Cost 4 | 0.65 | 1.03 | 1.52 | 1.12 | 1.51 | 1.99 | 1.60 | 2.02 | 2.47 | 1.60 | 2.02 | 2.47 | 1.60 | 2.02 | 2.47 | |
| A15-Oppt. Cost 5 | 0.62 | 1.04 | 1.39 | 1.04 | 1.39 | 1.82 | 1.47 | 1.81 | 2.25 | 1.47 | 1.81 | 2.25 | 1.47 | 1.81 | 2.25 | |
| B15-Oppt. Cost 5 | 0.58 | 0.93 | 1.36 | 1.01 | 1.35 | 1.79 | 1.43 | 1.78 | 2.21 | 1.43 | 1.78 | 2.21 | 1.43 | 1.78 | 2.21 | |
| A15-Norm | 1.13 | 1.67 | 2.36 | 1.80 | 2.45 | 3.13 | 2.36 | 3.23 | 3.91 | 2.36 | 3.23 | 3.91 | 2.36 | 3.23 | 3.91 | |
| B15-Norm | 1.05 | 1.59 | 2.28 | 1.63 | 2.38 | 3.06 | 2.60 | 3.15 | 3.81 | 2.60 | 3.15 | 3.81 | 2.60 | 3.15 | 3.81 | |
| A15-Land | 0.46 | 0.88 | 1.27 | 0.77 | 1.27 | 1.68 | 0.77 | 1.27 | 1.58 | 0.77 | 1.27 | 1.58 | 0.77 | 1.27 | 1.58 | |
| B15-Land | 0.43 | 0.85 | 1.24 | 0.74 | 1.24 | 1.65 | 0.74 | 1.27 | 1.55 | 0.74 | 1.27 | 1.55 | 0.74 | 1.27 | 1.55 | |
| A15-Oppt. Cost 1 | 0.93 | 1.30 | 1.95 | 1.58 | 2.03 | 2.59 | 2.22 | 2.67 | 3.23 | 2.22 | 2.67 | 3.23 | 2.22 | 2.67 | 3.23 | |
| B15-Oppt. Cost 1 | 0.87 | 1.21 | 1.89 | 1.51 | 1.97 | 2.53 | 2.16 | 2.61 | 3.17 | 2.16 | 2.61 | 3.17 | 2.16 | 2.61 | 3.17 | |
| A15-Oppt. Cost 2 | 0.80 | 1.18 | 1.79 | 1.34 | 1.73 | 2.21 | 1.89 | 2.26 | 2.76 | 1.89 | 2.26 | 2.76 | 1.89 | 2.26 | 2.76 | |
| B15-Oppt. Cost 2 | 0.74 | 1.13 | 1.71 | 1.29 | 1.69 | 2.16 | 1.84 | 2.22 | 2.71 | 1.84 | 2.22 | 2.71 | 1.84 | 2.22 | 2.71 | |
| A15-Oppt. Cost 3 | 0.69 | 1.03 | 1.45 | 1.17 | 1.51 | 1.83 | 1.65 | 1.93 | 2.40 | 1.65 | 1.93 | 2.40 | 1.65 | 1.93 | 2.40 | |
| B15-Oppt. Cost 3 | 0.65 | 0.98 | 1.40 | 1.13 | 1.46 | 1.88 | 1.60 | 1.89 | 2.36 | 1.60 | 1.89 | 2.36 | 1.60 | 1.89 | 2.36 | |
| A15-Oppt. Cost 4 | 0.62 | 0.91 | 1.29 | 1.04 | 1.34 | 1.71 | 1.48 | 1.79 | 2.13 | 1.48 | 1.79 | 2.13 | 1.48 | 1.79 | 2.13 | |
| B15-Oppt. Cost 4 | 0.57 | 0.87 | 1.34 | 1.00 | 1.30 | 1.67 | 1.42 | 1.72 | 2.09 | 1.42 | 1.72 | 2.09 | 1.42 | 1.72 | 2.09 | |
| A15-Oppt. Cost 5 | 0.55 | 0.82 | 1.15 | 0.93 | 1.20 | 1.53 | 1.31 | 1.58 | 1.91 | 1.31 | 1.58 | 1.91 | 1.31 | 1.58 | 1.91 | |
| B15-Oppt. Cost 5 | 0.52 | 0.78 | 1.12 | 0.90 | 1.18 | 1.50 | 1.28 | 1.54 | 1.88 | 1.28 | 1.54 | 1.88 | 1.28 | 1.54 | 1.88 | |
| A15-Norm | 0.94 | 1.28 | 1.72 | 1.56 | 1.91 | 2.35 | 2.19 | 2.54 | 2.97 | 2.19 | 2.54 | 2.97 | 2.19 | 2.54 | 2.97 | |
| B15-Norm | 0.85 | 1.20 | 1.63 | 1.48 | 1.83 | 2.26 | 2.11 | 2.46 | 2.89 | 2.11 | 2.46 | 2.89 | 2.11 | 2.46 | 2.89 | |
| A15-Land | 0.36 | 0.70 | 1.04 | 0.60 | 0.91 | 1.15 | 0.60 | 0.95 | 1.15 | 0.60 | 0.95 | 1.15 | 0.60 | 0.95 | 1.15 | |
| B15-Land | 0.33 | 0.65 | 0.93 | 0.57 | 0.71 | 0.98 | 0.57 | 0.82 | 1.12 | 0.57 | 0.82 | 1.12 | 0.57 | 0.82 | 1.12 | |
| A15-Oppt. Cost 1 | 0.78 | 1.07 | 1.53 | 1.30 | 1.70 | 2.15 | 1.70 | 2.11 | 2.48 | 1.70 | 2.11 | 2.48 | 1.70 | 2.11 | 2.48 | |
| B15-Oppt. Cost 1 | 0.71 | 1.00 | 1.42 | 1.23 | 1.62 | 2.09 | 1.78 | 2.05 | 2.41 | 1.78 | 2.05 | 2.41 | 1.78 | 2.05 | 2.41 | |
| A15-Oppt. Cost 2 | 0.67 | 0.92 | 1.23 | 1.11 | 1.36 | 1.67 | 1.50 | 1.81 | 2.12 | 1.50 | 1.81 | 2.12 | 1.50 | 1.81 | 2.12 | |
| B15-Oppt. Cost 2 | 0.61 | 0.86 | 1.17 | 1.00 | 1.30 | 1.61 | 1.50 | 1.75 | 2.06 | 1.50 | 1.75 | 2.06 | 1.50 | 1.75 | 2.06 | |
| A15-Oppt. Cost 3 | 0.58 | 0.80 | 1.07 | 0.97 | 1.19 | 1.46 | 1.37 | 1.68 | 1.86 | 1.37 | 1.68 | 1.86 | 1.37 | 1.68 | 1.86 | |
| B15-Oppt. Cost 3 | 0.53 | 0.75 | 1.04 | 0.92 | 1.14 | 1.41 | 1.32 | 1.53 | 1.80 | 1.32 | 1.53 | 1.80 | 1.32 | 1.53 | 1.80 | |
| A15-Oppt. Cost 4 | 0.52 | 0.71 | 0.95 | 0.87 | 1.06 | 1.30 | 1.21 | 1.41 | 1.65 | 1.21 | 1.41 | 1.65 | 1.21 | 1.41 | 1.65 | |
| B15-Oppt. Cost 4 | 0.47 | 0.67 | 0.91 | 0.82 | 1.01 | 1.26 | 1.17 | 1.36 | 1.60 | 1.17 | 1.36 | 1.60 | 1.17 | 1.36 | 1.60 | |
| A15-Oppt. Cost 5 | 0.47 | 0.64 | 0.86 | 0.78 | 0.95 | 1.17 | 1.09 | 1.27 | 1.48 | 1.09 | 1.27 | 1.48 | 1.09 | 1.27 | 1.48 | |
| B15-Oppt. Cost 5 | 0.43 | 0.60 | 0.82 | 0.74 | 0.91 | 1.13 | 1.05 | 1.25 | 1.44 | 1.05 | 1.25 | 1.44 | 1.05 | 1.25 | 1.44 | |

Color Code: Red: B/C Ratios < 1.00 Black: B/C Ratios >= 1.00 but < 2.00 Blue: B/C Ratios >= 2.00 but < 3.00 Green: B/C Ratios >= 3.00 but < 4.00 Purple: B/C Ratios >= 4.00 but < 5.00 Brown: B/C Ratios >= 5.00
 Source: Calculations

5.1.3 Sadao Thai Net Present Value (NPV) Results

A project's net present value represents the maximum price an investor should be willing to pay for an asset given an expected level of costs and revenues and a desired earning rate (discount rate). The NPV criterion stipulates that only those investments that have NPV of zero or greater should be accepted while those with negative values should be rejected.

The results of the Sadao Thai NPV analysis are given in Tables 5.9, 5.10, 5.11, and 5.12. The results given in these tables follows almost exactly the pattern shown in the B/C ratio tables (Tables 5.5 – 5.8), because the Net Present Value of an investment should equal exactly zero (i.e. the summed value of present value benefits equals the summed value of all present value costs) at the same discount rate at which the B/C ratio value equals exactly one. There were some NPV results that did not match this pattern exactly, but were only marginally off. Computer rounding effects may have caused this.

Table 5.9 Sadao Thai Net Present Values (NPV's) for 40 Year Investment Period

| Discount Rate | Investment Analysis | 5 Baht/Kg | | | | | 10 Baht/Kg | | | | | 15 Baht/Kg | | | | |
|------------------|---------------------|---------------------------|---------------------------|----------------------------|---------------------------|---------------------------|----------------------------|---------------------------|---------------------------|----------------------------|---------------------------|---------------------------|----------------------------|---------------------------|---------------------------|----------------------------|
| | | 1,000 Baht/m ³ | 5,000 Baht/m ³ | 10,000 Baht/m ³ | 1,000 Baht/m ³ | 5,000 Baht/m ³ | 10,000 Baht/m ³ | 1,000 Baht/m ³ | 5,000 Baht/m ³ | 10,000 Baht/m ³ | 1,000 Baht/m ³ | 5,000 Baht/m ³ | 10,000 Baht/m ³ | 1,000 Baht/m ³ | 5,000 Baht/m ³ | 10,000 Baht/m ³ |
| 10% | A40-Norm | 21,152.93 | 32,433.07 | 46,633.24 | 81,934.00 | 93,214.14 | 107,314.32 | 142,718.08 | 153,985.22 | 169,095.39 | | | | | | |
| | B40-Norm | 18,371.84 | 29,851.97 | 43,952.15 | 79,352.91 | 90,693.05 | 104,793.22 | 140,133.98 | 151,414.12 | 165,814.98 | | | | | | |
| | A40-Oppl. | (30,218.48) | (19,938.34) | (4,638.17) | 30,662.99 | 41,842.73 | 55,842.91 | 81,243.97 | 92,623.81 | 116,723.98 | | | | | | |
| | B40-Oppl. | (32,739.57) | (21,519.43) | (7,419.26) | 27,981.50 | 39,261.64 | 53,361.81 | 80,762.58 | 100,042.72 | 117,442.88 | | | | | | |
| | A40-Oppl. Cost 1 | 10,395.97 | 21,678.11 | 35,778.29 | 71,177.05 | 82,457.19 | 93,976.27 | 129,377.03 | 140,657.17 | 154,757.34 | | | | | | |
| | B40-Oppl. Cost 1 | 7,814.88 | 19,095.02 | 33,195.19 | 68,595.95 | 79,875.09 | 85,800.40 | 121,201.17 | 132,481.31 | 144,800.48 | | | | | | |
| | A40-Oppl. Cost 2 | (360.88) | 10,919.16 | 25,019.33 | 60,420.09 | 71,700.23 | 83,218.31 | 119,620.07 | 129,900.21 | 144,800.38 | | | | | | |
| | B40-Oppl. Cost 2 | (2,942.08) | 8,338.06 | 22,438.24 | 57,839.00 | 69,119.14 | 83,218.31 | 119,620.07 | 129,900.21 | 144,800.38 | | | | | | |
| | A40-Oppl. Cost 3 | (11,117.84) | 182.20 | 14,282.37 | 49,683.14 | 59,352.18 | 72,462.35 | 107,863.12 | 119,143.26 | 133,243.43 | | | | | | |
| | B40-Oppl. Cost 3 | (13,699.03) | (2,418.89) | 11,581.28 | 47,082.04 | 58,186.32 | 74,262.49 | 109,667.38 | 125,067.57 | 142,486.47 | | | | | | |
| | A40-Oppl. Cost 4 | (21,874.89) | (10,594.76) | 3,505.42 | 38,908.18 | 47,605.23 | 61,705.40 | 97,106.16 | 108,396.30 | 122,486.47 | | | | | | |
| | B40-Oppl. Cost 4 | (24,455.99) | (19,175.85) | 924.32 | 36,353.09 | 47,605.23 | 61,705.40 | 97,106.16 | 108,396.30 | 122,486.47 | | | | | | |
| A40-Oppl. Cost 5 | (32,631.85) | (21,951.71) | (7,251.54) | 29,149.23 | 39,429.36 | 53,529.54 | 89,930.30 | 100,210.44 | 114,310.61 | | | | | | | |
| B40-Oppl. Cost 5 | (35,212.94) | (23,932.81) | (9,832.63) | 25,568.13 | 36,848.27 | 50,948.44 | 86,349.21 | 97,629.34 | 111,729.52 | | | | | | | |
| A40-Norm | 17,823.57 | 24,908.47 | 59,824.38 | 65,410.68 | 72,383.60 | 107,311.43 | 112,897.81 | 119,897.81 | 139,897.81 | | | | | | | |
| B40-Norm | 9,823.83 | 15,410.15 | 22,393.06 | 57,310.95 | 62,897.28 | 69,880.18 | 104,798.07 | 110,384.40 | 117,387.31 | | | | | | | |
| A40-Land | (37,401.61) | (31,915.28) | (24,832.38) | 10,085.51 | 15,871.84 | 22,654.74 | 57,572.63 | 63,158.98 | 70,141.87 | | | | | | | |
| B40-Land | (39,915.02) | (34,328.70) | (27,345.79) | 7,572.10 | 13,158.42 | 20,141.33 | 55,059.22 | 60,645.55 | 67,628.45 | | | | | | | |
| A40-Oppl. Cost 1 | 3,104.21 | 6,650.54 | 15,673.44 | 50,591.33 | 55,177.66 | 63,160.57 | 98,078.46 | 103,664.78 | 110,647.89 | | | | | | | |
| B40-Oppl. Cost 1 | 590.80 | 6,177.12 | 13,160.03 | 48,077.82 | 53,664.25 | 60,647.15 | 95,565.04 | 101,151.37 | 108,134.28 | | | | | | | |
| A40-Oppl. Cost 2 | (8,128.82) | (5,424.99) | 6,440.41 | 39,844.89 | 44,431.22 | 51,414.12 | 86,332.01 | 91,918.34 | 98,901.25 | | | | | | | |
| B40-Oppl. Cost 2 | (8,842.23) | (3,055.91) | (2,792.82) | 29,811.86 | 35,198.19 | 42,181.09 | 77,098.98 | 82,685.31 | 89,668.22 | | | | | | | |
| A40-Oppl. Cost 3 | (15,381.85) | (9,775.52) | (2,792.82) | 29,811.86 | 35,198.19 | 42,181.09 | 77,098.98 | 82,685.31 | 89,668.22 | | | | | | | |
| B40-Oppl. Cost 3 | (17,875.28) | (12,288.94) | (2,892.24) | 28,478.47 | 35,481.38 | 42,181.09 | 77,098.98 | 82,685.31 | 89,668.22 | | | | | | | |
| A40-Oppl. Cost 4 | (24,584.68) | (19,008.35) | (12,025.65) | 30,378.83 | 25,965.16 | 32,848.06 | 67,865.95 | 73,452.28 | 80,435.19 | | | | | | | |
| B40-Oppl. Cost 4 | (27,108.29) | (14,539.05) | (14,539.05) | 30,378.83 | 25,965.16 | 32,848.06 | 67,865.95 | 73,452.28 | 80,435.19 | | | | | | | |
| A40-Oppl. Cost 5 | (33,827.91) | (28,241.58) | (21,259.87) | 13,659.21 | 19,245.54 | 26,228.45 | 61,149.34 | 66,732.66 | 74,715.57 | | | | | | | |
| B40-Oppl. Cost 5 | (36,341.32) | (30,755.00) | (23,772.08) | 11,145.80 | 16,732.12 | 23,715.03 | 58,632.92 | 64,219.25 | 72,202.16 | | | | | | | |
| A40-Norm | 4,226.22 | 6,218.78 | 8,789.50 | 38,368.85 | 40,381.52 | 42,852.23 | 72,611.89 | 74,504.26 | 76,994.87 | | | | | | | |
| B40-Norm | 1,806.38 | 3,798.95 | 5,849.11 | 37,941.68 | 40,432.37 | 42,852.23 | 72,611.89 | 74,504.26 | 76,994.87 | | | | | | | |
| A40-Land | (43,265.88) | (41,273.31) | (38,782.60) | (9,123.15) | (7,130.58) | (4,639.87) | 26,019.59 | 27,012.16 | 29,502.87 | | | | | | | |
| B40-Land | (45,685.72) | (43,693.15) | (41,202.44) | (11,542.99) | (9,550.42) | (7,059.71) | 22,599.75 | 24,592.32 | 27,083.03 | | | | | | | |
| A40-Oppl. Cost 1 | (3,411.83) | (1,419.26) | 1,071.45 | 30,730.91 | 32,723.48 | 35,214.19 | 64,873.64 | 66,868.21 | 69,358.92 | | | | | | | |
| B40-Oppl. Cost 1 | (5,931.67) | (3,899.10) | (1,348.39) | 23,082.86 | 25,085.43 | 27,576.14 | 57,453.90 | 59,448.47 | 61,939.18 | | | | | | | |
| A40-Oppl. Cost 2 | (11,049.87) | (9,057.30) | (8,568.59) | 20,873.02 | 22,665.59 | 25,156.30 | 54,815.76 | 56,808.33 | 59,299.04 | | | | | | | |
| B40-Oppl. Cost 2 | (13,469.71) | (11,477.15) | (9,986.43) | 15,454.82 | 17,447.39 | 19,938.10 | 49,697.85 | 51,690.42 | 54,080.83 | | | | | | | |
| A40-Oppl. Cost 3 | (18,687.92) | (16,695.35) | (14,204.64) | 13,034.98 | 15,027.55 | 17,518.26 | 47,177.71 | 49,170.28 | 51,660.89 | | | | | | | |
| B40-Oppl. Cost 3 | (21,107.76) | (19,115.19) | (16,624.48) | 13,034.98 | 15,027.55 | 17,518.26 | 47,177.71 | 49,170.28 | 51,660.89 | | | | | | | |
| A40-Oppl. Cost 4 | (26,325.96) | (24,333.39) | (21,842.68) | 9,809.34 | 7,389.50 | 4,882.01 | 34,321.46 | 36,316.03 | 38,304.74 | | | | | | | |
| B40-Oppl. Cost 4 | (28,745.80) | (26,753.23) | (24,262.52) | 5,396.83 | 2,877.73 | 2,171.30 | 31,901.82 | 33,894.19 | 36,384.90 | | | | | | | |
| A40-Oppl. Cost 5 | (33,964.01) | (31,971.44) | (29,480.73) | (3,900.57) | (2,241.11) | (2,48.55) | 2,242.17 | 2,48.55 | 2,738.98 | | | | | | | |
| B40-Oppl. Cost 5 | (36,383.85) | (34,391.28) | (31,900.57) | (2,241.11) | (1,681.24) | (1,060.17) | 19,533.83 | 20,528.40 | 21,523.97 | | | | | | | |
| A40-Norm | (2,697.46) | (4,979.71) | (4,800.78) | 16,398.98 | 16,777.92 | 17,251.88 | 37,777.68 | 38,156.61 | 38,630.27 | | | | | | | |
| B40-Norm | (4,808.52) | (4,808.52) | (4,808.52) | (25,530.82) | (25,151.89) | (24,678.23) | (4,152.13) | (3,773.20) | (3,299.53) | | | | | | | |
| A40-Land | (49,191.77) | (48,812.84) | (48,339.18) | (27,813.08) | (27,434.15) | (26,960.48) | (6,434.38) | (6,055.45) | (5,681.79) | | | | | | | |
| B40-Land | (693.37) | (8,314.44) | (7,840.78) | 12,685.32 | 13,064.25 | 13,443.18 | 34,064.01 | 34,442.84 | 34,916.81 | | | | | | | |
| A40-Oppl. Cost 1 | (10,975.83) | (10,598.70) | (10,123.03) | 10,403.07 | 10,782.00 | 11,261.66 | 28,088.10 | 28,467.03 | 28,920.69 | | | | | | | |
| B40-Oppl. Cost 1 | (14,889.29) | (14,513.98) | (14,138.70) | 6,689.40 | 7,068.33 | 7,547.90 | 25,785.84 | 26,164.77 | 26,618.44 | | | | | | | |
| A40-Oppl. Cost 2 | (20,885.21) | (18,892.61) | (16,118.95) | 4,407.15 | 4,786.08 | 5,164.98 | 22,072.18 | 22,451.11 | 22,924.77 | | | | | | | |
| B40-Oppl. Cost 2 | (22,887.48) | (20,894.88) | (18,902.28) | 1,892.61 | 2,271.54 | 2,650.48 | 19,789.93 | 20,168.86 | 20,642.52 | | | | | | | |
| A40-Oppl. Cost 3 | (26,881.13) | (26,302.20) | (25,826.53) | (5,302.43) | (4,823.50) | (4,449.84) | 16,076.26 | 16,455.19 | 16,928.86 | | | | | | | |
| B40-Oppl. Cost 3 | (28,953.98) | (28,374.05) | (27,898.32) | (7,584.69) | (7,205.76) | (6,827.09) | 13,784.01 | 14,172.94 | 14,646.60 | | | | | | | |
| A40-Oppl. Cost 4 | (32,298.11) | (31,824.45) | (31,350.60) | (11,298.35) | (10,919.42) | (10,445.78) | 10,980.34 | 11,459.27 | 11,938.20 | | | | | | | |
| B40-Oppl. Cost 4 | (34,959.30) | (34,485.64) | (34,011.99) | (13,530.60) | (13,201.67) | (12,728.01) | 7,788.08 | 8,177.02 | 8,565.95 | | | | | | | |

Source: Calculations

Table 5.10 Sadao Thal Net Present Values (NPV's) for 30 Year Investment Period

| Discount Rate | Investment Analysis | 5 Baht/Kg | | | | | 10 Baht/Kg | | | | | 15 Baht/Kg | | | | |
|-------------------|---------------------|---------------------------|---------------------------|----------------------------|---------------------------|---------------------------|----------------------------|---------------------------|---------------------------|----------------------------|---------------------------|---------------------------|----------------------------|---------------------------|---------------------------|----------------------------|
| | | 1,000 Baht/m ² | 5,000 Baht/m ² | 10,000 Baht/m ² | 1,000 Baht/m ² | 5,000 Baht/m ² | 10,000 Baht/m ² | 1,000 Baht/m ² | 5,000 Baht/m ² | 10,000 Baht/m ² | 1,000 Baht/m ² | 5,000 Baht/m ² | 10,000 Baht/m ² | 1,000 Baht/m ² | 5,000 Baht/m ² | 10,000 Baht/m ² |
| 10% | A30-Norm | 21,451.40 | 43,184.99 | 70,351.99 | 78,358.98 | 100,092.57 | 127,259.56 | 135,266.55 | 157,000.15 | 184,167.14 | | | | | | |
| | A30-Norm | 18,870.31 | 40,603.90 | 67,370.89 | 75,777.88 | 97,511.48 | 124,678.47 | 132,685.46 | 154,419.05 | 181,586.04 | | | | | | |
| | A30-Land | (8,186.41) | 18,890.58 | 26,987.57 | 48,721.16 | 75,889.15 | 103,047.64 | 105,628.74 | 132,795.73 | 160,962.72 | | | | | | |
| | A30-Land | (32,601.10) | 10,767.51 | 16,395.48 | 24,406.48 | 45,140.07 | 73,307.06 | 81,314.05 | 103,047.64 | 130,214.63 | | | | | | |
| | A30-Oppt. Cost 1 | 11,081.80 | 32,815.38 | 59,982.38 | 67,889.37 | 89,722.96 | 116,889.95 | 124,896.95 | 144,049.45 | 171,216.44 | | | | | | |
| | A30-Oppt. Cost 2 | 8,500.70 | 30,234.28 | 57,401.29 | 65,408.28 | 87,141.87 | 114,308.86 | 122,315.85 | 144,049.45 | 171,216.44 | | | | | | |
| | A30-Oppt. Cost 3 | 7,121.18 | 22,445.78 | 48,612.77 | 57,619.77 | 79,353.36 | 106,520.35 | 114,527.34 | 136,260.83 | 163,427.82 | | | | | | |
| | A30-Oppt. Cost 4 | (1,868.90) | 19,654.69 | 47,031.68 | 55,038.67 | 76,772.26 | 103,939.25 | 111,946.25 | 133,679.84 | 160,846.83 | | | | | | |
| | A30-Oppt. Cost 5 | (9,657.42) | 12,076.18 | 39,243.17 | 47,250.16 | 66,402.66 | 93,569.65 | 104,157.74 | 125,891.33 | 153,058.32 | | | | | | |
| | A30-Oppt. Cost 6 | (12,238.51) | 9,495.08 | 36,662.07 | 44,669.07 | 65,814.15 | 93,569.65 | 101,576.64 | 123,310.23 | 150,477.22 | | | | | | |
| | A30-Oppt. Cost 7 | (20,008.12) | 1,706.57 | 29,873.56 | 36,880.55 | 58,614.15 | 83,200.04 | 93,788.13 | 115,521.72 | 142,688.71 | | | | | | |
| | A30-Oppt. Cost 8 | (30,396.63) | (8,663.03) | 18,503.96 | 26,510.95 | 48,244.54 | 75,411.53 | 83,418.52 | 105,152.12 | 132,319.11 | | | | | | |
| | A30-Oppt. Cost 9 | (32,977.72) | (11,244.13) | 15,922.86 | 23,929.85 | 45,663.45 | 72,830.44 | 80,837.43 | 102,571.02 | 129,738.01 | | | | | | |
| | A30-Oppt. Cost 10 | 12,896.36 | 25,786.70 | 41,897.11 | 58,273.25 | 71,161.58 | 87,272.00 | 103,648.13 | 118,536.46 | 132,648.88 | | | | | | |
| | A30-Norm | 10,384.95 | 23,273.28 | 39,383.70 | 55,755.83 | 68,648.17 | 84,758.58 | 101,134.72 | 114,023.05 | 130,133.47 | | | | | | |
| A30-Norm | (36,840.49) | (23,952.16) | (7,841.74) | 9,534.40 | 21,422.73 | 37,533.14 | 53,909.28 | 66,797.81 | 80,399.81 | | | | | | | |
| A30-Land | (39,353.90) | (26,465.57) | (10,355.15) | 6,020.98 | 18,909.31 | 35,019.73 | 51,395.87 | 64,284.20 | 80,399.81 | | | | | | | |
| A30-Land | 3,876.56 | 16,764.99 | 32,875.31 | 49,251.44 | 62,139.77 | 78,250.19 | 94,626.33 | 105,001.24 | 121,111.86 | | | | | | | |
| A30-Oppt. Cost 1 | 5,145.25 | 14,251.48 | 28,853.80 | 46,739.03 | 59,626.36 | 75,736.78 | 92,117.81 | 107,514.66 | 123,625.07 | | | | | | | |
| A30-Oppt. Cost 2 | (7,659.68) | 7,743.08 | 21,340.09 | 37,176.22 | 50,604.55 | 66,714.97 | 83,091.11 | 95,979.44 | 112,089.85 | | | | | | | |
| A30-Oppt. Cost 3 | (14,167.05) | 5,229.67 | 14,851.68 | 31,207.83 | 44,096.16 | 60,206.58 | 76,582.71 | 86,937.63 | 103,068.05 | | | | | | | |
| A30-Oppt. Cost 4 | (16,680.47) | (1,278.72) | 12,318.28 | 28,694.42 | 41,582.75 | 57,693.16 | 74,069.30 | 80,449.24 | 96,559.66 | | | | | | | |
| A30-Oppt. Cost 5 | (23,169.89) | (10,300.53) | 5,809.89 | 22,186.02 | 35,074.36 | 51,184.77 | 65,047.48 | 77,935.83 | 94,046.24 | | | | | | | |
| A30-Oppt. Cost 6 | (25,702.27) | (12,613.94) | 3,286.47 | 19,872.61 | 32,560.94 | 48,671.36 | 65,047.48 | 77,935.83 | 94,046.24 | | | | | | | |
| A30-Oppt. Cost 7 | (32,210.87) | (19,322.33) | (3,211.92) | 13,164.22 | 26,052.55 | 42,162.97 | 58,539.10 | 71,427.43 | 87,537.85 | | | | | | | |
| A30-Oppt. Cost 8 | (34,724.08) | (21,835.75) | (5,725.33) | 10,630.80 | 23,539.14 | 39,649.55 | 56,025.69 | 68,974.92 | 85,024.44 | | | | | | | |
| A30-Oppt. Cost 9 | 4,701.42 | 10,889.42 | 18,174.43 | 37,972.47 | 43,960.47 | 51,445.48 | 71,243.52 | 77,231.52 | 84,716.53 | | | | | | | |
| A30-Oppt. Cost 10 | 2,281.58 | 8,269.58 | 15,754.59 | 35,552.63 | 41,540.63 | 49,025.64 | 68,823.68 | 74,811.68 | 82,296.69 | | | | | | | |
| A30-Norm | (42,790.88) | (36,802.68) | (29,317.67) | (9,519.63) | 3,953.38 | 23,781.42 | 29,739.42 | 27,319.58 | 34,804.59 | | | | | | | |
| A30-Land | (45,210.52) | (39,222.52) | (31,737.51) | (11,939.47) | (3,951.47) | 1,533.54 | 21,331.58 | 27,319.58 | 34,804.59 | | | | | | | |
| A30-Land | (2,849.46) | 3,138.56 | 10,625.55 | 30,421.59 | 35,409.60 | 43,884.60 | 61,272.80 | 67,260.81 | 74,745.81 | | | | | | | |
| A30-Oppt. Cost 1 | (5,269.30) | 7,181.71 | 8,203.71 | 28,001.75 | 33,989.76 | 36,343.72 | 56,141.77 | 62,129.77 | 69,614.77 | | | | | | | |
| A30-Oppt. Cost 2 | (10,400.33) | (4,412.33) | 3,072.87 | 22,870.72 | 28,858.72 | 36,343.72 | 53,721.93 | 59,709.93 | 67,194.93 | | | | | | | |
| A30-Oppt. Cost 3 | (17,851.21) | (6,832.17) | 652.83 | 20,450.86 | 26,438.88 | 33,923.88 | 53,721.93 | 59,709.93 | 67,194.93 | | | | | | | |
| A30-Oppt. Cost 4 | (20,371.05) | (11,963.21) | (4,478.20) | 15,319.84 | 21,307.84 | 28,792.85 | 48,171.05 | 52,169.05 | 59,644.06 | | | | | | | |
| A30-Oppt. Cost 5 | (25,502.09) | (14,383.05) | (6,898.04) | 12,900.00 | 18,888.00 | 26,374.01 | 41,040.01 | 47,028.02 | 54,513.02 | | | | | | | |
| A30-Oppt. Cost 6 | (27,921.93) | (19,514.08) | (12,029.08) | 8,756.97 | 13,756.97 | 21,241.97 | 33,920.17 | 44,608.18 | 52,093.18 | | | | | | | |
| A30-Oppt. Cost 7 | (33,052.96) | (27,064.96) | (14,446.92) | 5,349.12 | 11,837.13 | 18,691.09 | 35,499.14 | 39,477.14 | 46,962.15 | | | | | | | |
| A30-Oppt. Cost 8 | (35,472.80) | (29,484.80) | (21,999.80) | (19,579.96) | 2,181.09 | 6,206.09 | 31,089.30 | 37,057.30 | 44,542.30 | | | | | | | |
| A30-Oppt. Cost 9 | (42,484.87) | (42,484.87) | (42,484.87) | (42,484.87) | (42,484.87) | (42,484.87) | (42,484.87) | (42,484.87) | (42,484.87) | | | | | | | |
| A30-Oppt. Cost 10 | (46,986.93) | (44,954.07) | (42,775.49) | (25,530.18) | (23,787.32) | (21,609.74) | (16,645.68) | (4,902.82) | (2,724.24) | | | | | | | |
| A30-Land | (48,979.19) | (47,236.32) | (45,057.74) | (27,812.43) | (26,069.57) | (23,890.99) | (16,628.60) | (3,873.91) | (3,795.35) | | | | | | | |
| A30-Land | (8,459.59) | (6,716.73) | (4,539.15) | 12,070.16 | 14,459.02 | 14,459.02 | 14,459.02 | 14,459.02 | 14,459.02 | | | | | | | |
| A30-Oppt. Cost 1 | (10,741.85) | (8,998.98) | (6,920.41) | 10,424.91 | 12,187.77 | 14,346.35 | 31,591.66 | 29,642.05 | 29,638.38 | | | | | | | |
| A30-Oppt. Cost 2 | (14,434.32) | (12,691.46) | (10,512.88) | 6,732.44 | 8,475.30 | 10,653.88 | 27,899.39 | 27,899.39 | 27,899.39 | | | | | | | |
| A30-Oppt. Cost 3 | (16,716.57) | (14,973.71) | (12,795.13) | 4,450.18 | 6,193.05 | 8,371.62 | 25,616.94 | 23,687.33 | 23,687.33 | | | | | | | |
| A30-Oppt. Cost 4 | (20,409.04) | (18,666.18) | (16,489.60) | 757.71 | 2,500.57 | 4,879.15 | 21,924.46 | 21,385.07 | 25,846.51 | | | | | | | |
| A30-Oppt. Cost 5 | (22,691.29) | (20,948.43) | (18,769.85) | (18,769.85) | (18,769.85) | (18,769.85) | (18,769.85) | (18,769.85) | (18,769.85) | | | | | | | |
| A30-Oppt. Cost 6 | (26,383.77) | (24,640.90) | (22,462.32) | (7,499.27) | (5,217.01) | (3,474.15) | (1,295.57) | (1,295.57) | (1,295.57) | | | | | | | |
| A30-Oppt. Cost 7 | (29,868.02) | (28,923.16) | (27,444.58) | (7,499.27) | (5,217.01) | (3,474.15) | (1,295.57) | (1,295.57) | (1,295.57) | | | | | | | |
| A30-Oppt. Cost 8 | (32,358.49) | (30,615.83) | (28,457.05) | (11,191.74) | (9,448.87) | (7,270.29) | 9,976.02 | 11,177.68 | 13,886.46 | | | | | | | |
| A30-Oppt. Cost 9 | (34,840.74) | (32,897.88) | (30,719.30) | (13,475.99) | (11,731.13) | (9,552.65) | 7,692.76 | 9,495.63 | 11,614.22 | | | | | | | |

Source: Calculations

Table 5.11 Sadao Thal Net Present Values (NPV's) for 20 Year Investment Period

| Discount Rate | Investment Analysis | 5 Bant/Kg | | | | | 10 Bant/Kg | | | | | 15 Bant/Kg | | | | |
|------------------|---------------------|---------------------------|---------------------------|----------------------------|---------------------------|---------------------------|----------------------------|---------------------------|---------------------------|----------------------------|---------------------------|---------------------------|----------------------------|---------------------------|---------------------------|----------------------------|
| | | 1,000 Bant/m ² | 5,000 Bant/m ² | 10,000 Bant/m ² | 1,000 Bant/m ² | 5,000 Bant/m ² | 10,000 Bant/m ² | 1,000 Bant/m ² | 5,000 Bant/m ² | 10,000 Bant/m ² | 1,000 Bant/m ² | 5,000 Bant/m ² | 10,000 Bant/m ² | 1,000 Bant/m ² | 5,000 Bant/m ² | 10,000 Bant/m ² |
| 10% | A20-Norm | 18,048.86 | 50,207.96 | 90,406.64 | 64,909.57 | 97,069.58 | 137,287.56 | 111,770.28 | 143,939.40 | 184,128.28 | | | | | | |
| | B20-Norm | 15,467.76 | 47,626.97 | 87,825.75 | 62,328.48 | 94,487.58 | 134,686.47 | 109,189.20 | 141,348.30 | 181,547.16 | | | | | | |
| | A20-Land | (1,183.45) | 39,035.43 | 78,070.86 | 13,538.17 | 45,697.27 | 83,315.06 | 67,817.79 | 89,876.89 | 130,175.78 | | | | | | |
| | B20-Land | (35,903.65) | 3,744.54 | 36,454.34 | 10,957.07 | 11,167.81 | 127,902.64 | 102,405.37 | 134,564.48 | 174,763.36 | | | | | | |
| | A20-Optt. Cost 1 | 6,883.94 | 40,943.04 | 81,886.08 | 55,544.66 | 87,703.76 | 127,902.64 | 99,824.28 | 131,933.38 | 172,182.26 | | | | | | |
| | B20-Optt. Cost 1 | (680.98) | 38,261.95 | 76,523.90 | 54,881.71 | 82,265.81 | 123,412.88 | 95,142.88 | 127,182.26 | 169,333.52 | | | | | | |
| | A20-Optt. Cost 2 | (3,262.08) | 31,478.12 | 62,956.24 | 43,598.64 | 65,397.92 | 109,172.80 | 83,875.63 | 115,894.54 | 158,452.42 | | | | | | |
| | B20-Optt. Cost 2 | (10,045.90) | 22,113.20 | 44,226.40 | 36,814.91 | 55,222.82 | 106,591.71 | 74,310.61 | 106,469.72 | 148,688.60 | | | | | | |
| | A20-Optt. Cost 3 | (12,827.00) | 19,532.11 | 39,064.22 | 34,233.72 | 68,467.44 | 99,807.88 | 71,723.52 | 103,888.62 | 144,087.50 | | | | | | |
| | B20-Optt. Cost 3 | (19,410.82) | 12,748.28 | 25,189.16 | 27,449.89 | 55,009.00 | 97,226.78 | 64,945.69 | 97,104.90 | 137,303.68 | | | | | | |
| | A20-Optt. Cost 4 | (21,951.92) | 10,167.19 | 20,334.38 | 24,868.80 | 57,027.80 | 90,442.96 | 62,364.60 | 94,523.70 | 134,722.98 | | | | | | |
| | B20-Optt. Cost 4 | (28,775.74) | 3,383.36 | 43,882.24 | 18,094.97 | 50,244.08 | 90,442.96 | 62,364.60 | 94,523.70 | 134,722.98 | | | | | | |
| | A20-Optt. Cost 5 | (31,356.84) | 902.27 | 41,001.15 | 15,503.88 | 47,662.98 | 87,861.86 | 62,364.60 | 94,523.70 | 134,722.98 | | | | | | |
| | B20-Optt. Cost 5 | 11,454.71 | 34,290.86 | 68,581.71 | 50,299.31 | 73,105.44 | 101,650.60 | 89,083.90 | 111,920.03 | 140,485.19 | | | | | | |
| | A20-Norm | 8,941.30 | 31,777.43 | 63,554.86 | 47,555.89 | 70,792.02 | 99,137.19 | 86,570.48 | 109,408.92 | 137,951.78 | | | | | | |
| B20-Norm | (38,284.14) | (15,448.01) | 13,097.16 | 530.45 | 23,366.59 | 51,911.75 | 39,345.06 | 62,181.18 | 90,726.34 | | | | | | | |
| A20-Land | (40,797.55) | 17,957.42 | 10,583.74 | 20,853.17 | 49,398.34 | 83,284.92 | 60,771.41 | 101,040.84 | 139,586.00 | | | | | | | |
| B20-Land | 3,088.94 | 25,925.07 | 51,850.12 | 39,390.12 | 62,226.25 | 90,771.41 | 72,352.34 | 95,188.48 | 123,733.64 | | | | | | | |
| A20-Optt. Cost 1 | 6,883.94 | 40,943.04 | 81,886.08 | 55,544.66 | 87,703.76 | 127,902.64 | 99,824.28 | 131,933.38 | 172,182.26 | | | | | | | |
| B20-Optt. Cost 1 | (680.98) | 38,261.95 | 76,523.90 | 54,881.71 | 82,265.81 | 123,412.88 | 95,142.88 | 127,182.26 | 169,333.52 | | | | | | | |
| A20-Optt. Cost 2 | (3,262.08) | 31,478.12 | 62,956.24 | 43,598.64 | 65,397.92 | 109,172.80 | 83,875.63 | 115,894.54 | 158,452.42 | | | | | | | |
| B20-Optt. Cost 2 | (10,045.90) | 22,113.20 | 44,226.40 | 36,814.91 | 55,222.82 | 106,591.71 | 74,310.61 | 106,469.72 | 148,688.60 | | | | | | | |
| A20-Optt. Cost 3 | (12,827.00) | 19,532.11 | 39,064.22 | 34,233.72 | 68,467.44 | 99,807.88 | 71,723.52 | 103,888.62 | 144,087.50 | | | | | | | |
| B20-Optt. Cost 3 | (19,410.82) | 12,748.28 | 25,189.16 | 27,449.89 | 55,009.00 | 97,226.78 | 64,945.69 | 97,104.90 | 137,303.68 | | | | | | | |
| A20-Optt. Cost 4 | (21,951.92) | 10,167.19 | 20,334.38 | 24,868.80 | 57,027.80 | 90,442.96 | 62,364.60 | 94,523.70 | 134,722.98 | | | | | | | |
| B20-Optt. Cost 4 | (28,775.74) | 3,383.36 | 43,882.24 | 18,094.97 | 50,244.08 | 90,442.96 | 62,364.60 | 94,523.70 | 134,722.98 | | | | | | | |
| A20-Optt. Cost 5 | (31,356.84) | 902.27 | 41,001.15 | 15,503.88 | 47,662.98 | 87,861.86 | 62,364.60 | 94,523.70 | 134,722.98 | | | | | | | |
| B20-Optt. Cost 5 | 11,454.71 | 34,290.86 | 68,581.71 | 50,299.31 | 73,105.44 | 101,650.60 | 89,083.90 | 111,920.03 | 140,485.19 | | | | | | | |
| A20-Norm | 2,118.70 | 15,938.63 | 31,877.26 | 21,251.52 | 31,877.26 | 48,103.07 | 65,377.98 | 77,847.66 | 96,122.90 | | | | | | | |
| B20-Norm | (42,953.56) | (29,133.83) | (11,856.71) | (13,208.97) | 610.87 | 17,885.89 | 16,536.53 | 20,255.56 | 47,630.48 | | | | | | | |
| A20-Land | (45,375.40) | 31,553.47 | (14,278.55) | (15,628.81) | (1,908.87) | 15,469.05 | 14,115.79 | 27,935.72 | 45,210.64 | | | | | | | |
| B20-Land | 11,160.24 | 28,435.16 | 27,084.90 | 40,904.64 | 59,479.76 | 86,829.50 | 70,649.43 | 87,824.35 | | | | | | | | |
| A20-Optt. Cost 1 | (2,659.89) | 8,740.40 | 24,565.06 | 38,485.09 | 55,759.91 | 83,451.20 | 68,229.59 | 85,604.51 | | | | | | | | |
| B20-Optt. Cost 1 | (5,079.53) | 3,982.01 | 21,236.93 | 19,386.87 | 33,706.61 | 50,951.52 | 49,831.27 | 61,031.36 | | | | | | | | |
| A20-Optt. Cost 2 | (9,857.92) | 3,982.01 | 17,466.83 | 31,286.76 | 48,561.68 | 72,843.29 | 61,473.15 | 75,843.51 | | | | | | | | |
| B20-Optt. Cost 2 | (12,277.77) | 1,542.17 | 18,817.08 | 26,508.37 | 43,783.29 | 68,187.49 | 65,620.78 | 78,456.92 | | | | | | | | |
| A20-Optt. Cost 3 | (3,236.22) | 14,038.70 | 12,889.44 | 24,088.53 | 41,353.45 | 60,013.19 | 53,683.13 | 63,909.82 | | | | | | | | |
| B20-Optt. Cost 3 | (17,058.16) | (5,556.06) | 11,618.86 | 19,269.80 | 35,595.06 | 55,234.81 | 49,064.74 | 69,329.66 | | | | | | | | |
| A20-Optt. Cost 4 | (19,476.00) | 6,840.47 | 10,434.45) | 5,490.21 | 18,310.14 | 35,595.06 | 32,838.14 | 41,858.61 | | | | | | | | |
| B20-Optt. Cost 4 | (24,254.39) | 4,450.62 | 4,450.62 | 3,070.37 | 16,890.30 | 24,185.22 | 23,838.57 | 39,458.67 | | | | | | | | |
| A20-Optt. Cost 5 | (31,452.62) | (357.77) | (1,709.02) | (1,709.02) | 12,111.91 | 29,386.83 | 29,038.57 | 41,858.61 | | | | | | | | |
| B20-Optt. Cost 5 | (33,872.46) | (20,052.52) | (2,777.81) | (4,127.86) | 9,692.07 | 26,986.99 | 25,816.73 | 39,458.67 | | | | | | | | |
| A20-Norm | 2,118.70 | 15,938.63 | 31,877.26 | 21,251.52 | 31,877.26 | 48,103.07 | 65,377.98 | 77,847.66 | 96,122.90 | | | | | | | |
| B20-Norm | (42,953.56) | (29,133.83) | (11,856.71) | (13,208.97) | 610.87 | 17,885.89 | 16,536.53 | 20,255.56 | 47,630.48 | | | | | | | |
| A20-Land | (45,375.40) | 31,553.47 | (14,278.55) | (15,628.81) | (1,908.87) | 15,469.05 | 14,115.79 | 27,935.72 | 45,210.64 | | | | | | | |
| B20-Land | 11,160.24 | 28,435.16 | 27,084.90 | 40,904.64 | 59,479.76 | 86,829.50 | 70,649.43 | 87,824.35 | | | | | | | | |
| A20-Optt. Cost 1 | (2,659.89) | 8,740.40 | 24,565.06 | 38,485.09 | 55,759.91 | 83,451.20 | 68,229.59 | 85,604.51 | | | | | | | | |
| B20-Optt. Cost 1 | (5,079.53) | 3,982.01 | 21,236.93 | 19,386.87 | 33,706.61 | 50,951.52 | 49,831.27 | 61,031.36 | | | | | | | | |
| A20-Optt. Cost 2 | (9,857.92) | 3,982.01 | 17,466.83 | 31,286.76 | 48,561.68 | 72,843.29 | 61,473.15 | 75,843.51 | | | | | | | | |
| B20-Optt. Cost 2 | (12,277.77) | 1,542.17 | 18,817.08 | 26,508.37 | 43,783.29 | 68,187.49 | 65,620.78 | 78,456.92 | | | | | | | | |
| A20-Optt. Cost 3 | (3,236.22) | 14,038.70 | 12,889.44 | 24,088.53 | 41,353.45 | 60,013.19 | 53,683.13 | 63,909.82 | | | | | | | | |
| B20-Optt. Cost 3 | (17,058.16) | (5,556.06) | 11,618.86 | 19,269.80 | 35,595.06 | 55,234.81 | 49,064.74 | 69,329.66 | | | | | | | | |
| A20-Optt. Cost 4 | (19,476.00) | 6,840.47 | 10,434.45) | 5,490.21 | 18,310.14 | 35,595.06 | 32,838.14 | 41,858.61 | | | | | | | | |
| B20-Optt. Cost 4 | (24,254.39) | 4,450.62 | 4,450.62 | 3,070.37 | 16,890.30 | 24,185.22 | 23,838.57 | 39,458.67 | | | | | | | | |
| A20-Optt. Cost 5 | (31,452.62) | (357.77) | (1,709.02) | (1,709.02) | 12,111.91 | 29,386.83 | 29,038.57 | 41,858.61 | | | | | | | | |
| B20-Optt. Cost 5 | (33,872.46) | (20,052.52) | (2,777.81) | (4,127.86) | 9,692.07 | 26,986.99 | 25,816.73 | 39,458.67 | | | | | | | | |
| A20-Norm | 2,118.70 | 15,938.63 | 31,877.26 | 21,251.52 | 31,877.26 | 48,103.07 | 65,377.98 | 77,847.66 | 96,122.90 | | | | | | | |
| B20-Norm | (42,953.56) | (29,133.83) | (11,856.71) | (13,208.97) | 610.87 | 17,885.89 | 16,536.53 | 20,255.56 | 47,630.48 | | | | | | | |
| A20-Land | (45,375.40) | 31,553.47 | (14,278.55) | (15,628.81) | (1,908.87) | 15,469.05 | 14,115.79 | 27,935.72 | 45,210.64 | | | | | | | |
| B20-Land | 11,160.24 | 28,435.16 | 27,084.90 | 40,904.64 | 59,479.76 | 86,829.50 | 70,649.43 | 87,824.35 | | | | | | | | |
| A20-Optt. Cost 1 | (2,659.89) | 8,740.40 | 24,565.06 | 38,485.09 | 55,759.91 | 83,451.20 | 68,229.59 | 85,604.51 | | | | | | | | |
| B20-Optt. Cost 1 | (5,079.53) | 3,982.01 | 21,236.93 | 19,386.87 | 33,706.61 | 50,951.52 | 49,831.27 | 61,031.36 | | | | | | | | |
| A20-Optt. Cost 2 | (9,857.92) | 3,982.01 | 17,466.83 | 31,286.76 | 48,561.68 | 72,843.29 | 61,473.15 | 75,843.51 | | | | | | | | |
| B20-Optt. Cost 2 | (12,277.77) | 1,542.17 | 18,817.08 | 26,508.37 | 43,783.29 | 68,187.49 | 65,620.78 | 78,456.92 | | | | | | | | |
| A20-Optt. Cost 3 | (3,236.22) | 14,038.70 | 12,889.44 | 24,088.53 | 41,353.45 | 60,013.19 | 53,683.13 | 63,909.82 | | | | | | | | |
| B20-Optt. Cost 3 | (17,058.16) | (5,556.06) | 11,618.86 | 19,269.80 | 35,595.06 | | | | | | | | | | | |

Table 5.12 Sadao That Net Present Values (NPV's) for 15 Year Investment Period

| Discount Rate | Investment Analysis | 5 Baht/Kg | | | | | 10 Baht/Kg | | | | | 15 Baht/Kg | | | | |
|-------------------|---------------------|---------------------------|---------------------------|----------------------------|---------------------------|---------------------------|----------------------------|---------------------------|---------------------------|----------------------------|---------------------------|---------------------------|----------------------------|---------------------------|---------------------------|----------------------------|
| | | 1,000 Baht/m ³ | 5,000 Baht/m ³ | 10,000 Baht/m ³ | 1,000 Baht/m ³ | 5,000 Baht/m ³ | 10,000 Baht/m ³ | 1,000 Baht/m ³ | 5,000 Baht/m ³ | 10,000 Baht/m ³ | 1,000 Baht/m ³ | 5,000 Baht/m ³ | 10,000 Baht/m ³ | 1,000 Baht/m ³ | 5,000 Baht/m ³ | 10,000 Baht/m ³ |
| 10% | A15-Norm | 14,852.08 | 47,675.56 | 88,704.92 | 49,730.47 | 84,553.95 | 125,593.31 | 88,698.86 | 121,432.34 | 162,461.70 | 88,698.86 | 121,432.34 | 162,461.70 | 88,698.86 | 121,432.34 | 162,461.70 |
| | A15-Norm | 12,270.98 | 45,094.47 | 86,123.83 | 49,149.37 | 81,372.86 | 123,002.22 | 86,027.76 | 118,551.25 | 159,840.61 | 86,027.76 | 118,551.25 | 159,840.61 | 86,027.76 | 118,551.25 | 159,840.61 |
| | A15-Land | (38,519.33) | (3,695.65) | 37,333.51 | 359.06 | 33,182.85 | 74,211.90 | 37,237.45 | 70,080.94 | 111,099.30 | 37,237.45 | 70,080.94 | 111,099.30 | 37,237.45 | 70,080.94 | 111,099.30 |
| | A15-Land | (39,100.43) | (6,278.94) | 34,752.23 | (2,222.04) | 30,801.45 | 71,630.81 | 34,656.38 | 67,479.84 | 108,509.20 | 34,656.38 | 67,479.84 | 108,509.20 | 34,656.38 | 67,479.84 | 108,509.20 |
| | A15-Oppt. Cost 1 | 3,904.29 | 36,727.76 | 71,971.14 | 40,782.69 | 73,506.17 | 117,216.62 | 77,661.08 | 113,065.86 | 154,085.02 | 77,661.08 | 113,065.86 | 154,085.02 | 77,661.08 | 113,065.86 | 154,085.02 |
| | A15-Oppt. Cost 2 | (1,881.30) | 30,842.19 | 71,971.14 | 34,997.09 | 65,439.48 | 106,266.94 | 68,284.39 | 102,117.88 | 143,147.23 | 68,284.39 | 102,117.88 | 143,147.23 | 68,284.39 | 102,117.88 | 143,147.23 |
| | A15-Oppt. Cost 3 | (4,462.39) | 22,576.50 | 63,604.86 | 26,630.40 | 59,453.89 | 100,489.25 | 63,508.80 | 96,332.28 | 137,361.64 | 63,508.80 | 96,332.28 | 137,361.64 | 63,508.80 | 96,332.28 | 137,361.64 |
| | A15-Oppt. Cost 4 | (10,247.99) | 19,994.41 | 51,023.76 | 24,049.31 | 56,872.80 | 97,902.16 | 56,872.80 | 97,902.16 | 134,780.55 | 56,872.80 | 97,902.16 | 134,780.55 | 56,872.80 | 97,902.16 | 134,780.55 |
| | A15-Oppt. Cost 5 | (12,829.08) | 15,994.41 | 52,657.08 | 18,263.72 | 51,087.20 | 92,118.56 | 52,657.08 | 92,118.56 | 129,994.95 | 52,657.08 | 92,118.56 | 129,994.95 | 52,657.08 | 92,118.56 | 129,994.95 |
| | A15-Oppt. Cost 6 | (21,195.77) | 14,208.81 | 52,657.08 | 15,682.62 | 48,506.11 | 89,535.47 | 52,657.08 | 89,535.47 | 126,413.86 | 52,657.08 | 89,535.47 | 126,413.86 | 52,657.08 | 89,535.47 | 126,413.86 |
| | A15-Oppt. Cost 7 | (26,981.36) | 5,842.12 | 45,971.48 | 9,697.03 | 42,750.52 | 83,749.87 | 45,971.48 | 83,749.87 | 121,628.27 | 45,971.48 | 83,749.87 | 121,628.27 | 45,971.48 | 83,749.87 | 121,628.27 |
| | A15-Oppt. Cost 8 | (29,582.46) | 3,281.03 | 44,290.39 | 7,315.94 | 40,139.42 | 81,168.78 | 44,290.39 | 81,168.78 | 118,047.17 | 44,290.39 | 81,168.78 | 118,047.17 | 44,290.39 | 81,168.78 | 118,047.17 |
| | A15-Norm | 9,796.87 | 35,392.14 | 67,193.74 | 41,235.38 | 66,740.65 | 98,622.24 | 72,673.88 | 98,622.24 | 130,060.78 | 72,673.88 | 98,622.24 | 130,060.78 | 72,673.88 | 98,622.24 | 130,060.78 |
| | A15-Norm | 7,283.48 | 32,788.73 | 64,670.32 | 38,721.95 | 64,227.24 | 96,108.93 | 70,160.47 | 96,108.93 | 127,547.33 | 70,160.47 | 96,108.93 | 127,547.33 | 70,160.47 | 96,108.93 | 127,547.33 |
| | A15-Land | (39,941.98) | (14,436.71) | 17,444.88 | (8,503.48) | 17,001.80 | 48,993.39 | 22,955.03 | 48,993.39 | 80,321.90 | 22,955.03 | 48,993.39 | 80,321.90 | 22,955.03 | 48,993.39 | 80,321.90 |
| A15-Land | (42,455.39) | (16,950.12) | 14,931.47 | (11,016.89) | 14,488.38 | 46,369.98 | 20,421.62 | 46,369.98 | 77,608.48 | 20,421.62 | 46,369.98 | 77,608.48 | 20,421.62 | 46,369.98 | 77,608.48 | |
| A15-Oppt. Cost 1 | 2,168.70 | 27,873.96 | 59,555.57 | 33,607.91 | 59,112.48 | 90,394.07 | 88,480.68 | 90,394.07 | 119,919.17 | 88,480.68 | 90,394.07 | 119,919.17 | 88,480.68 | 90,394.07 | 119,919.17 | |
| A15-Oppt. Cost 2 | (5,459.47) | 20,045.81 | 51,827.40 | 23,979.04 | 51,484.31 | 82,965.91 | 51,484.31 | 82,965.91 | 114,804.41 | 51,484.31 | 82,965.91 | 114,804.41 | 51,484.31 | 82,965.91 | 114,804.41 | |
| A15-Oppt. Cost 3 | (17,972.88) | 17,532.39 | 49,413.99 | 23,466.63 | 48,970.90 | 80,852.49 | 49,789.39 | 80,852.49 | 107,176.24 | 49,789.39 | 80,852.49 | 107,176.24 | 49,789.39 | 80,852.49 | 107,176.24 | |
| A15-Oppt. Cost 4 | (13,087.63) | 12,417.64 | 44,299.23 | 18,350.37 | 43,856.15 | 75,737.74 | 43,856.15 | 75,737.74 | 104,682.93 | 43,856.15 | 75,737.74 | 104,682.93 | 43,856.15 | 75,737.74 | 104,682.93 | |
| A15-Oppt. Cost 5 | (15,601.05) | 9,904.23 | 41,785.82 | 15,937.46 | 41,342.73 | 73,224.32 | 41,342.73 | 73,224.32 | 104,682.93 | 41,342.73 | 73,224.32 | 104,682.93 | 41,342.73 | 73,224.32 | 104,682.93 | |
| A15-Oppt. Cost 6 | (20,715.80) | 4,789.47 | 36,871.06 | 10,722.70 | 36,227.98 | 68,109.57 | 42,161.21 | 68,109.57 | 97,548.08 | 42,161.21 | 68,109.57 | 97,548.08 | 42,161.21 | 68,109.57 | 97,548.08 | |
| A15-Oppt. Cost 7 | (23,225.22) | 2,276.06 | 33,714.56 | 3,209.29 | 33,714.56 | 65,696.16 | 39,647.80 | 65,696.16 | 97,034.66 | 39,647.80 | 65,696.16 | 97,034.66 | 39,647.80 | 65,696.16 | 97,034.66 | |
| A15-Oppt. Cost 8 | (24,943.97) | (2,836.70) | 29,042.60 | 3,094.54 | 28,599.81 | 60,461.40 | 34,533.04 | 60,461.40 | 91,919.91 | 34,533.04 | 60,461.40 | 91,919.91 | 34,533.04 | 60,461.40 | 91,919.91 | |
| A15-Oppt. Cost 9 | (30,857.38) | (5,352.11) | 26,529.48 | 581.12 | 26,086.40 | 57,967.99 | 32,019.83 | 57,967.99 | 89,406.49 | 32,019.83 | 57,967.99 | 89,406.49 | 32,019.83 | 57,967.99 | 89,406.49 | |
| A15-Norm | 4,151.82 | 21,789.03 | 43,788.06 | 29,158.86 | 46,775.07 | 68,795.34 | 54,166.90 | 68,795.34 | 93,802.32 | 54,166.90 | 68,795.34 | 93,802.32 | 54,166.90 | 68,795.34 | 93,802.32 | |
| A15-Norm | 1,731.98 | 18,348.19 | 41,368.46 | 26,739.02 | 44,355.23 | 66,375.49 | 51,748.06 | 66,375.49 | 91,382.53 | 51,748.06 | 66,375.49 | 91,382.53 | 51,748.06 | 66,375.49 | 91,382.53 | |
| A15-Land | (43,340.28) | (25,724.07) | (3,703.80) | (19,333.24) | (7,177.03) | 21,303.24 | 6,873.80 | 21,303.24 | 46,310.28 | 6,873.80 | 21,303.24 | 46,310.28 | 6,873.80 | 21,303.24 | 46,310.28 | |
| A15-Land | (45,760.12) | (28,143.91) | (6,123.65) | (20,753.08) | (3,136.87) | 18,883.38 | 4,253.88 | 18,883.38 | 43,990.43 | 4,253.88 | 18,883.38 | 43,990.43 | 4,253.88 | 18,883.38 | 43,990.43 | |
| A15-Oppt. Cost 1 | (2,572.88) | 15,043.55 | 37,053.82 | 22,434.39 | 40,050.58 | 62,070.86 | 47,441.42 | 62,070.86 | 84,658.06 | 47,441.42 | 62,070.86 | 84,658.06 | 47,441.42 | 62,070.86 | 84,658.06 | |
| A15-Oppt. Cost 2 | (4,992.50) | 12,623.71 | 34,639.38 | 15,709.81 | 33,326.12 | 59,651.02 | 52,926.54 | 59,651.02 | 80,353.42 | 52,926.54 | 59,651.02 | 80,353.42 | 52,926.54 | 59,651.02 | 80,353.42 | |
| A15-Oppt. Cost 3 | (9,297.13) | 6,319.08 | 30,339.34 | 13,290.06 | 30,806.28 | 52,926.54 | 33,892.47 | 52,926.54 | 73,628.95 | 33,892.47 | 52,926.54 | 73,628.95 | 33,892.47 | 52,926.54 | 73,628.95 | |
| A15-Oppt. Cost 4 | (11,716.98) | 5,899.24 | 27,919.50 | 8,895.43 | 28,601.64 | 49,621.91 | 31,872.63 | 49,621.91 | 71,209.11 | 31,872.63 | 49,621.91 | 71,209.11 | 31,872.63 | 49,621.91 | 71,209.11 | |
| A15-Oppt. Cost 5 | (18,021.61) | 1,584.60 | 23,614.87 | 8,895.43 | 24,181.90 | 46,202.07 | 31,872.63 | 46,202.07 | 66,904.37 | 31,872.63 | 46,202.07 | 66,904.37 | 31,872.63 | 46,202.07 | 66,904.37 | |
| A15-Oppt. Cost 6 | (18,441.45) | (825.24) | 16,890.39 | 2,620.95 | 19,877.17 | 41,897.43 | 27,268.00 | 41,897.43 | 64,484.63 | 27,268.00 | 41,897.43 | 64,484.63 | 27,268.00 | 41,897.43 | 64,484.63 | |
| A15-Oppt. Cost 7 | (22,746.09) | (5,129.87) | 14,470.55 | (158.89) | 17,457.33 | 39,477.59 | 20,643.52 | 39,477.59 | 60,180.00 | 20,643.52 | 39,477.59 | 60,180.00 | 20,643.52 | 39,477.59 | 60,180.00 | |
| A15-Oppt. Cost 8 | (25,165.83) | (7,549.71) | 14,470.55 | (4,485.52) | 13,152.89 | 35,172.96 | 18,123.68 | 35,172.96 | 57,760.16 | 18,123.68 | 35,172.96 | 57,760.16 | 18,123.68 | 35,172.96 | 57,760.16 | |
| A15-Oppt. Cost 9 | (29,470.56) | (11,854.35) | 10,185.92 | (6,883.36) | 10,732.85 | 32,753.12 | 16,733.68 | 32,753.12 | 51,608.68 | 16,733.68 | 32,753.12 | 51,608.68 | 16,733.68 | 32,753.12 | 51,608.68 | |
| A15-Oppt. Cost 10 | (31,890.40) | (14,274.19) | 7,746.08 | (8,883.36) | 10,732.85 | 32,753.12 | 16,733.68 | 32,753.12 | 51,608.68 | 16,733.68 | 32,753.12 | 51,608.68 | 16,733.68 | 32,753.12 | 51,608.68 | |
| A15-Norm | (1,812.70) | 7,895.63 | 20,931.06 | 15,712.48 | 25,420.82 | 33,237.87 | 42,949.01 | 33,237.87 | 55,081.43 | 42,949.01 | 33,237.87 | 55,081.43 | 42,949.01 | 33,237.87 | 55,081.43 | |
| A15-Norm | (4,094.89) | 5,813.38 | 17,748.80 | 13,430.23 | 23,138.57 | 35,273.99 | 30,955.42 | 35,273.99 | 52,799.18 | 30,955.42 | 35,273.99 | 52,799.18 | 30,955.42 | 35,273.99 | 52,799.18 | |
| A15-Land | (48,024.76) | (30,316.43) | (24,181.01) | (29,499.58) | (18,911.24) | (8,655.82) | (10,874.39) | (8,655.82) | 10,869.37 | (10,874.39) | (8,655.82) | 10,869.37 | (10,874.39) | (8,655.82) | 10,869.37 | |
| A15-Land | (48,307.02) | (36,598.68) | (28,463.26) | (30,781.83) | (21,073.49) | (3,938.07) | (13,256.84) | (3,938.07) | 49,470.87 | (13,256.84) | (3,938.07) | 49,470.87 | (13,256.84) | (3,938.07) | 49,470.87 | |
| A15-Oppt. Cost 1 | (7,423.27) | 2,285.07 | 14,420.49 | 10,101.82 | 17,528.00 | 29,683.42 | 25,344.85 | 29,683.42 | 47,188.61 | 25,344.85 | 29,683.42 | 47,188.61 | 25,344.85 | 29,683.42 | 47,188.61 | |
| A15-Oppt. Cost 2 | (9,705.52) | 2,281 | 12,138.24 | 7,819.66 | 14,199.88 | 26,335.11 | 22,016.54 | 26,335.11 | 41,578.04 | 22,016.54 | 26,335.11 | 41,578.04 | 22,016.54 | 26,335.11 | 41,578.04 | |
| A15-Oppt. Cost 3 | (13,033.84) | (3,325.50) | 8,809.92 | 4,481.35 | 14,199.88 | 26,335.11 | 22,016.54 | 26,335.11 | 41,578.04 | 22,016.54 | 26,335.11 | 41,578.04 | 22,016.54 | 26,335.11 | 41,578.04 | |
| A15-Oppt. Cost 4 | (15,318.09) | (5,607.75) | 6,527.67 | 2,208.16 | 11,917.43 | 24,052.88 | 19,784.29 | 24,052.88 | 38,249.74 | 19,784.29 | 24,052.88 | 38,249.74 | 19,784.29 | 24,052.88 | 38,249.74 | |
| A15-Oppt. Cost 5 | (18,644.40) | (8,938.07) | 3,199.35 | (1,119.22) | 20,724.54 | 16,405.97 | 14,059.32 | 16,405.97 | 35,987.48 | 14,059.32 | 16,405.97 | 35,987.48 | 14,059.32 | 16,405.97 | 35,987.48 | |
| A15-Oppt. Cost 6 | (20,826.68) | 917.10 | (3,401.47) | 6,306.87 | 18,442.29 | 14,123.72 | 2 | | | | | | | | | |

5.1.4 Sadao Thai Optimum Investment Lengths

The optimum investment period is the investment length that maximizes the investment's summed present value of benefits (PV benefits) while at the same time minimizing the summed present value of costs (PV costs). At the optimum investment length both the net present value and benefit / cost ratio are maximized.

Tables 5.13 to 5.19 present the optimum investment lengths for each investment type at each price scenario and discount rate. Each table gives the analysis results for only one investment type. The results presented in these tables are derived directly from the values given in both the Sadao Thai NPV and B/C Ratio tables and are based on the four investment periods investigated. The term "0 Year" given in the tables means that a particular scenario was not viable at any of the four investment lengths investigated.

Several general trends can be seen from the information presented in these tables. First, the discount rate affected the investment's optimal length. Lower discount rates tended to have longer investment periods, while at the high discount rate (20%) the optimal investment period tended to be shorter. For example, for the normal Sadao Thai investments at the 15 Baht/Kg – 10,000 Baht/m³ price combination level at the 10% discount rate the optimal investment length showed to be 30 years, but at the 20% discount rate level the optimal length was 15 years. The second trend observed was related to the timber price combinations. When the timber prices were low i.e. 1,000 Baht/m³, the optimal investment length was generally 40 or 30 years. However, when the timber price was 10,000 Baht/m³, the optimum rotation length dropped to 20 or 15 years.

Aside from showing the optimum investment length, the before mentioned tables also show an investment type's overall viability as well. Table 5.13 shows that only one normal Sadao Thai investment scenario was nonviable. Sadao Thai investments including the 50,000 baht land purchase were totally non viable at the 5 Baht/Kg – 1,000 Baht/m³ and 5 Baht/Kg – 5,000 Baht/m³ price combination levels. Overall, 16 investment scenarios including the land purchase were not viable. Investments including the 1,000 baht opportunity cost showed two nonviable scenarios, while investments at the 2,000 baht opportunity cost level had four nonviable scenarios. None of the Investments at the 3,000, 4,000 and 5,000 baht

opportunity cost level were viable at the 5 Baht/Kg – 1,000 Baht/m³ price combination level, and had a total of five, eight, and ten unworkable scenarios respectively.

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Table 5.13 Optimal Investment Periods at Varying Discount Rates for Normal Sadao Thai Investments

| Discount Rate | 5 Baht/Kg | | | 10 Baht/Kg | | | 15 Baht/Kg | | |
|---------------|---------------------------|---------------------------|----------------------------|---------------------------|---------------------------|----------------------------|---------------------------|---------------------------|----------------------------|
| | 1,000 Baht/m ³ | 5,000 Baht/m ³ | 10,000 Baht/m ³ | 1,000 Baht/m ³ | 5,000 Baht/m ³ | 10,000 Baht/m ³ | 1,000 Baht/m ³ | 5,000 Baht/m ³ | 10,000 Baht/m ³ |
| 10% | 30 Year | 20 Year | 10 Year | 40 Year | 30 Year | 20 Year | 40 Year | 30 Year | 20 Year |
| 12% | 30 Year | 15 Year | 15 Year | 40 Year | 20 Year | 20 Year | 40 Year | 30 Year | 20 Year |
| 15% | 30 Year | 15 Year | 15 Year | 40 Year | 20 Year | 15 Year | 40 Year | 20 Year | 20 Year |
| 20% | 0 Year | 15 Year | 15 Year | 30 Year | 15 Year | 15 Year | 40 Year | 20 Year | 15 Year |

Source: Calculations

Note: * Designates scenarios that were only viable with the Government Afforestation Subsidy.

Table 5.14 Optimal Investment Periods at Varying Discount Rates for Sadao Thai Investments Including Land Purchase

| Discount Rate | 5 Baht/Kg | | | 10 Baht/Kg | | | 15 Baht/Kg | | |
|---------------|---------------------------|---------------------------|----------------------------|---------------------------|---------------------------|----------------------------|---------------------------|---------------------------|----------------------------|
| | 1,000 Baht/m ³ | 5,000 Baht/m ³ | 10,000 Baht/m ³ | 1,000 Baht/m ³ | 5,000 Baht/m ³ | 10,000 Baht/m ³ | 1,000 Baht/m ³ | 5,000 Baht/m ³ | 10,000 Baht/m ³ |
| 10% | 0 Year | 0 Year | 20 Year | 40 Year | 30 Year | 20 Year | 40 Year | 30 Year | 30 Year |
| 12% | 0 Year | 0 Year | 15 Year | 40 Year | 20 Year | 20 Year | 30 Year | 30 Year | 20 Year |
| 15% | 0 Year | 0 Year | 0 Year | 40 Year | 20 Year* | 15 Year | 40 Year | 20 Year | 20 Year |
| 20% | 0 Year | 0 Year | 0 Year | 0 Year | 0 Year | 0 Year | 0 Year | 0 Year | 15 Year |

Source: Calculations

Note: * Designates scenarios that were only viable with the Government Afforestation Subsidy.

Table 5.15 Optimal Investment Periods at Varying Discount Rates for Sadao Thai Investments Including 1,000 Baht Opportunity Cost

| Discount Rate | 5 Baht/Kg | | | 10 Baht/Kg | | | 15 Baht/Kg | | |
|---------------|---------------------------|---------------------------|----------------------------|---------------------------|---------------------------|----------------------------|---------------------------|---------------------------|----------------------------|
| | 1,000 Baht/m ³ | 5,000 Baht/m ³ | 10,000 Baht/m ³ | 1,000 Baht/m ³ | 5,000 Baht/m ³ | 10,000 Baht/m ³ | 1,000 Baht/m ³ | 5,000 Baht/m ³ | 10,000 Baht/m ³ |
| 10% | 30 Year | 20 Year | 20 Year | 40 Year | 30 Year | 20 Year | 40 Year | 30 Year | 20 Year |
| 12% | 30 Year | 15 Year | 15 Year | 40 Year | 20 Year | 20 Year | 40 Year | 30 Year | 20 Year |
| 15% | 0 Year | 15 Year | 15 Year | 40 Year | 20 Year | 15 Year | 40 Year | 20 Year | 20 Year |
| 20% | 0 Year | 15 Year | 15 Year | 30 Year | 15 Year | 15 Year | 40 Year | 20 Year | 15 Year |

Source: Calculations

Note: * Designates scenarios that were only viable with the Government Afforestation Subsidy.

Table 5.16 Optimal Investment Periods at Varying Discount Rates for Sadao Thai Investments Including 2,000 Baht Opportunity Cost

| Discount Rate | 5 Baht/Kg | | | 10 Baht/Kg | | | 15 Baht/Kg | | |
|---------------|---------------------------|---------------------------|----------------------------|---------------------------|---------------------------|----------------------------|---------------------------|---------------------------|----------------------------|
| | 1,000 Baht/m ³ | 5,000 Baht/m ³ | 10,000 Baht/m ³ | 1,000 Baht/m ³ | 5,000 Baht/m ³ | 10,000 Baht/m ³ | 1,000 Baht/m ³ | 5,000 Baht/m ³ | 10,000 Baht/m ³ |
| 10% | 30 Year* | 20 Year | 15 Year | 40 Year | 30 Year | 20 Year | 40 Year | 30 Year | 20 Year |
| 12% | 0 Year | 15 Year | 15 Year | 40 Year | 20 Year | 20 Year | 40 Year | 30 Year | 20 Year |
| 15% | 0 Year | 15 Year | 15 Year | 40 Year | 20 Year | 15 Year | 40 Year | 20 Year | 20 Year |
| 20% | 0 Year | 0 Year | 15 Year | 30 Year | 15 Year | 15 Year | 40 Year | 20 Year | 15 Year |

Source: Calculations

Note: * Designates scenarios that were only viable with the Government Afforestation Subsidy.

Table 5.17 Optimal Investment Periods at Varying Discount Rates for Sadao Thai Investments Including 3,000 Baht Opportunity Cost

| Discount Rate | 5 Baht/Kg | | | | 10 Baht/Kg | | | | 15 Baht/Kg | | | |
|---------------|---------------------------|---------------------------|----------------------------|---------|---------------------------|---------------------------|----------------------------|---------|---------------------------|---------------------------|----------------------------|---------|
| | 1,000 Baht/m ² | 5,000 Baht/m ² | 10,000 Baht/m ² | | 1,000 Baht/m ² | 5,000 Baht/m ² | 10,000 Baht/m ² | | 1,000 Baht/m ² | 5,000 Baht/m ² | 10,000 Baht/m ² | |
| | 0 Year | 15 Year | 15 Year | 15 Year | 40 Year | 30 Year | 20 Year | 40 Year | 40 Year | 30 Year | 20 Year | 40 Year |
| 10% | 0 Year | 15 Year | 15 Year | 15 Year | 40 Year | 30 Year | 20 Year | 40 Year | 40 Year | 30 Year | 20 Year | 40 Year |
| 12% | 0 Year | 15 Year | 15 Year | 15 Year | 40 Year | 30 Year | 20 Year | 40 Year | 40 Year | 30 Year | 20 Year | 40 Year |
| 15% | 0 Year | 15 Year* | 15 Year | 15 Year | 40 Year | 15 Year | 15 Year | 40 Year | 40 Year | 20 Year | 15 Year | 40 Year |
| 20% | 0 Year | 0 Year | 15 Year | 0 Year | 30 Year* | 15 Year | 15 Year | 40 Year | 40 Year | 20 Year | 15 Year | 40 Year |

Note: * Designates scenarios that were only viable with the Government Afforestation Subsidy. Source: Calculations

Table 5.18 Optimal Investment Periods at Varying Discount Rates for Sadao Thai Investments Including 4,000 Baht Opportunity Cost

| Discount Rate | 5 Baht/Kg | | | | 10 Baht/Kg | | | | 15 Baht/Kg | | | |
|---------------|---------------------------|---------------------------|----------------------------|---------|---------------------------|---------------------------|----------------------------|---------|---------------------------|---------------------------|----------------------------|---------|
| | 1,000 Baht/m ² | 5,000 Baht/m ² | 10,000 Baht/m ² | | 1,000 Baht/m ² | 5,000 Baht/m ² | 10,000 Baht/m ² | | 1,000 Baht/m ² | 5,000 Baht/m ² | 10,000 Baht/m ² | |
| | 0 Year | 15 Year | 15 Year | 15 Year | 40 Year | 20 Year | 20 Year | 40 Year | 40 Year | 30 Year | 20 Year | 40 Year |
| 10% | 0 Year | 15 Year | 15 Year | 15 Year | 40 Year | 20 Year | 20 Year | 40 Year | 40 Year | 30 Year | 20 Year | 40 Year |
| 12% | 0 Year | 15 Year | 15 Year | 15 Year | 40 Year | 20 Year | 20 Year | 40 Year | 40 Year | 30 Year | 20 Year | 40 Year |
| 15% | 0 Year | 0 Year | 15 Year | 15 Year | 40 Year | 15 Year | 15 Year | 40 Year | 40 Year | 20 Year | 15 Year | 40 Year |
| 20% | 0 Year | 0 Year | 0 Year | 0 Year | 0 Year | 15 Year | 15 Year | 40 Year | 40 Year | 15 Year | 15 Year | 40 Year |

Note: * Designates scenarios that were only viable with the Government Afforestation Subsidy. Source: Calculations

Table 5.19 Optimal Investment Periods at Varying Discount Rates for Sadao Thai Investments Including 5,000 Baht Opportunity Cost

| Discount Rate | 5 Baht/Kg | | | | 10 Baht/Kg | | | | 15 Baht/Kg | | | |
|---------------|---------------------------|---------------------------|----------------------------|---------|---------------------------|---------------------------|----------------------------|---------|---------------------------|---------------------------|----------------------------|---------|
| | 1,000 Baht/m ² | 5,000 Baht/m ² | 10,000 Baht/m ² | | 1,000 Baht/m ² | 5,000 Baht/m ² | 10,000 Baht/m ² | | 1,000 Baht/m ² | 5,000 Baht/m ² | 10,000 Baht/m ² | |
| | 0 Year | 15 Year | 15 Year | 15 Year | 40 Year | 20 Year | 20 Year | 40 Year | 40 Year | 30 Year | 20 Year | 40 Year |
| 10% | 0 Year | 15 Year | 15 Year | 15 Year | 40 Year | 20 Year | 20 Year | 40 Year | 40 Year | 30 Year | 20 Year | 40 Year |
| 12% | 0 Year | 0 Year | 15 Year | 15 Year | 40 Year | 20 Year | 20 Year | 40 Year | 40 Year | 30 Year | 20 Year | 40 Year |
| 15% | 0 Year | 0 Year | 15 Year | 15 Year | 30 Year* | 15 Year | 15 Year | 40 Year | 40 Year | 20 Year | 15 Year | 40 Year |
| 20% | 0 Year | 0 Year | 0 Year | 0 Year | 0 Year | 0 Year | 15 Year | 40 Year | 40 Year | 15 Year | 15 Year | 40 Year |

Note: * Designates scenarios that were only viable with the Government Afforestation Subsidy. Source: Calculations

5.1.5 Sadao Thai Sensitivity Analysis Results

A total of five different sensitivity analyses were run against all of the scenarios represented in the core Sadao Thai investment analysis. These five sensitivity analyses were composed of an increase and decrease of the per tree thinning price, a 25% and 50% decrease in the estimated wood volume, and the inclusion of a 10% inflation hedge.

The full results of the Sadao Thai external sensitivity analysis are presented in Appendices B through F. The following details the trends revealed by the analysis.

5.1.5.1 Sadao Thai IRR and NPV Sensitivity to Changes in Thinning Price

Figures 5.1 through 5.4 graphically express Sadao Thai IRR sensitivity to a thirty Baht decrease and a 90 Baht increase in the thinning price for "normal" investment scenarios not including the government afforestation subsidy. The figures clearly show that the Sadao Thai IRR's are definitely sensitive to changes in thinning price. This sensitivity, however, does not seem to be effected by different investment lengths. The average IRR variance between the 50 and 80 Baht/tree price levels was roughly one percent, while the difference between the 80 and 175 Baht/tree price levels was roughly four percentage points.

Figures 5.5 through 5.8 show that the Sadao Thai NPV's are also sensitive to changes in the thinning price. On average the NPV's of investment scenarios having the 50 Baht/tree thinning price were approximately 2,000 Baht less than those at the 80 Baht/tree price. Likewise, the NPV's of investment scenarios at the 80 Baht/tree thinning price were five to six thousand Baht less than those at the 175 Baht/tree price. These NPV differences did not vary much between the various seed-wood price combinations, or between the four investment periods.

Sadao Thai IRR Sensitivity to Changes in Thinning Price

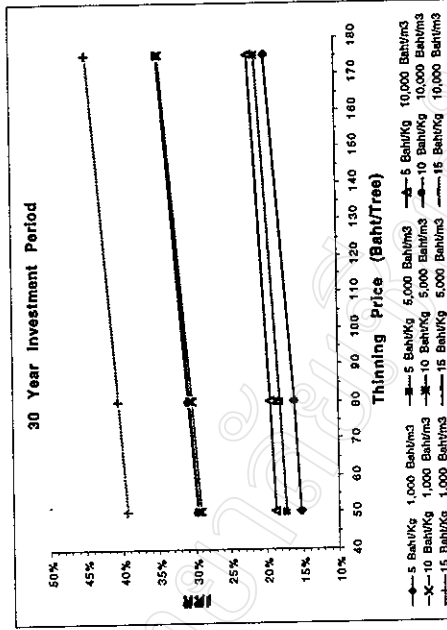


Figure 5.1 IRR Sensitivity to Changes in Thinning Price - 30 Year Investment Period

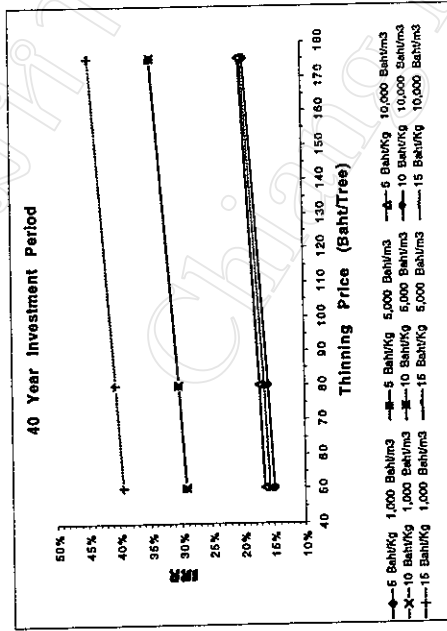


Figure 5.2 IRR Sensitivity to Changes in Thinning Price - 40 Year Investment Period

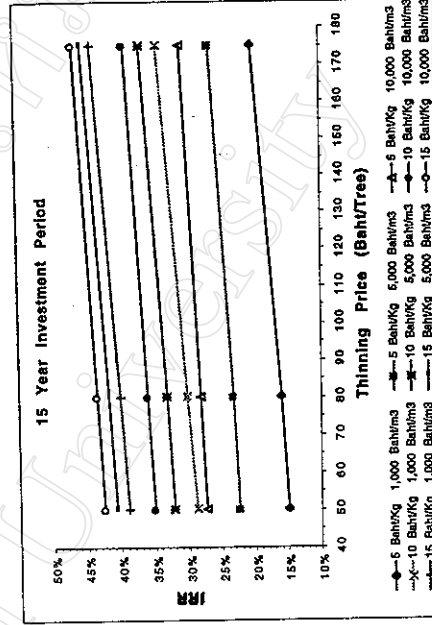


Figure 5.3 IRR Sensitivity to Changes in Thinning Price - 15 Year Investment Period

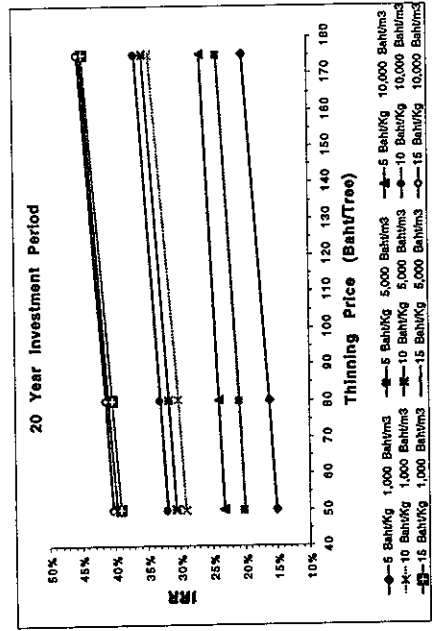


Figure 5.4 IRR Sensitivity to Changes in Thinning Price - 20 Year Investment Period

Sadao Thai NPV Sensitivity to Changes in Thinning Price (Normal Investments not Including Government Afforestation)

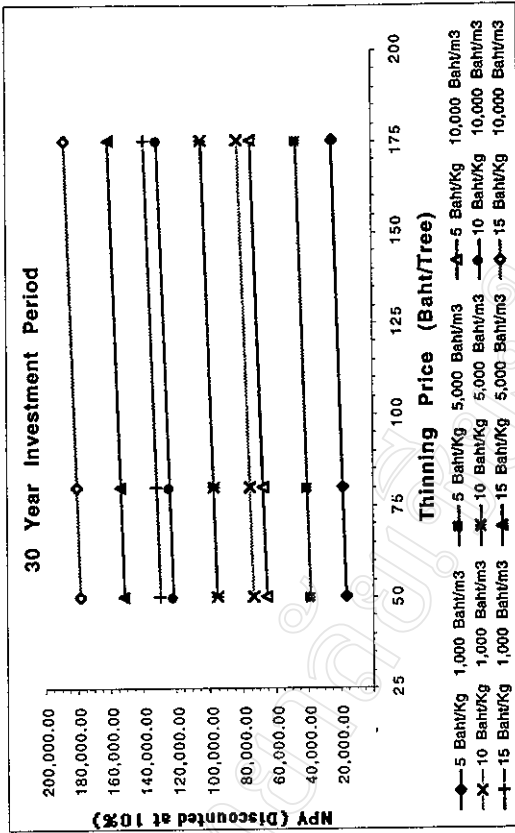


Figure 5.6 NPV Sensitivity to Changes in Thinning Price - 30 Year Investment Period

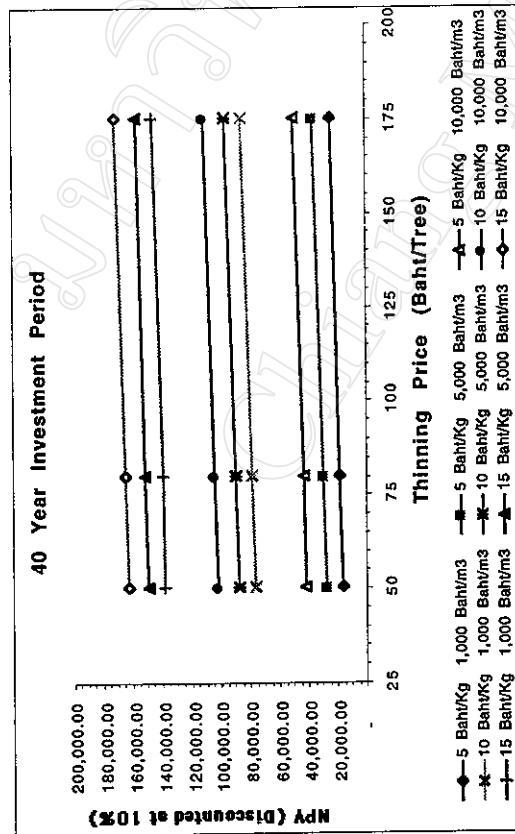


Figure 5.5 NPV Sensitivity to Changes in Thinning Price - 40 Year Investment Period

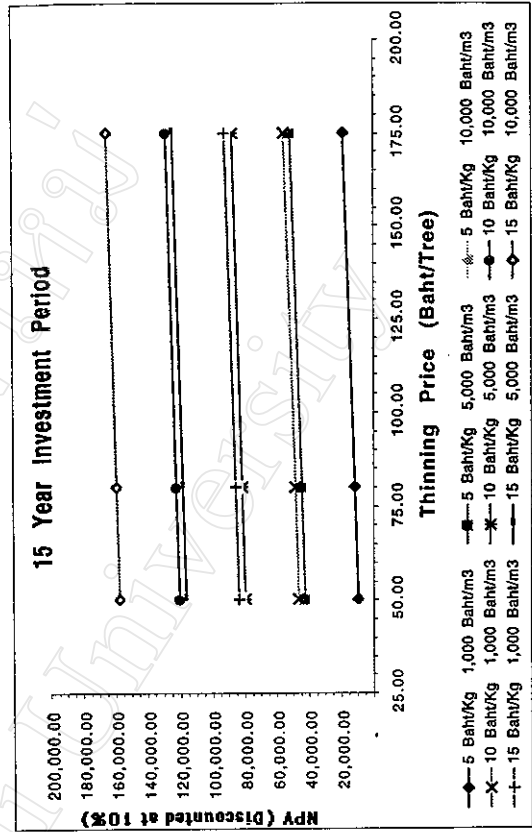


Figure 5.8 NPV Sensitivity to Changes in Thinning Price - 15 Year Investment Period

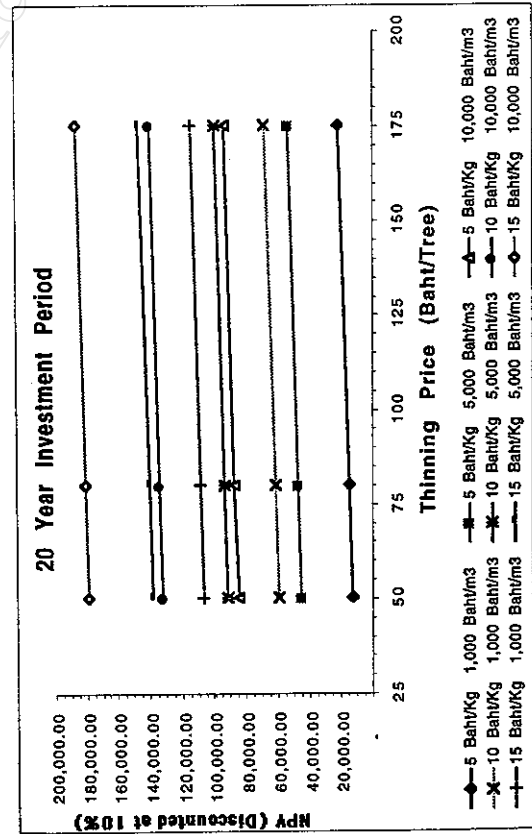


Figure 5.7 NPV Sensitivity to Changes in Thinning Price - 20 Year Investment Period

5.1.5.2 Sadao Thai IRR and NPV Sensitivity to Changes in the Estimated Wood Volume

The Sadao Thai IRR sensitivity to a 25 and 50 percent decrease in the estimated wood volume can be seen in Figures 5.9 through 5.12. The degree of IRR sensitivity to the decreases in the estimated wood volume hinged upon the seed-wood price combinations and the investment length. The results here show three trends. First, investment scenarios with higher seed prices showed less IRR sensitivity than those with lower seed prices i.e. investment scenarios having the 15 Baht/Kg seed price showed the least sensitivity while investments with the 5 Baht/Kg seed price showed the most. Second, the shorter the investment length the greater the IRR sensitivity was. IRR's for investments having only a 15-year length were the most sensitive to decreases in the estimated wood volume. And third, investment scenarios having seed-wood price combinations with the lowest wood price, 1,000 Baht/m³, showed little or no sensitivity to the wood volume decrease.

Figures 5.13 through 5.16 display the Sadao Thai NPV sensitivity to the decrease in estimated wood volume. The NPV sensitivity to decreases in the estimated wood volume follows the same three trends described above. These three trends are even more pronounced for the Sadao Thai NPV's than for the IRR's to the point that many of the NPV values for the various seed-wood price combinations drastically overlap at the shorter investment lengths of 20 and 15 years.

Sadao Thai IRR Sensitivity to Decreases in Estimated Wood Volume

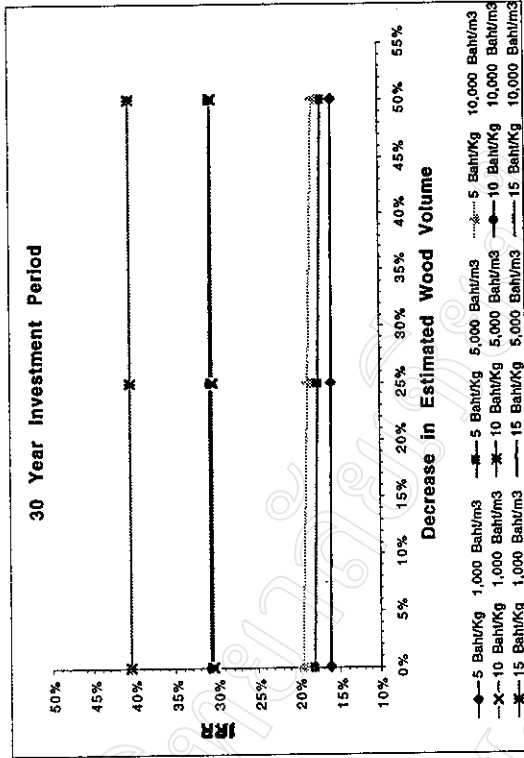


Figure 5.10 IRR Sensitivity to Decreases in Estimated Wood Volume - 30 Year Investment Period.

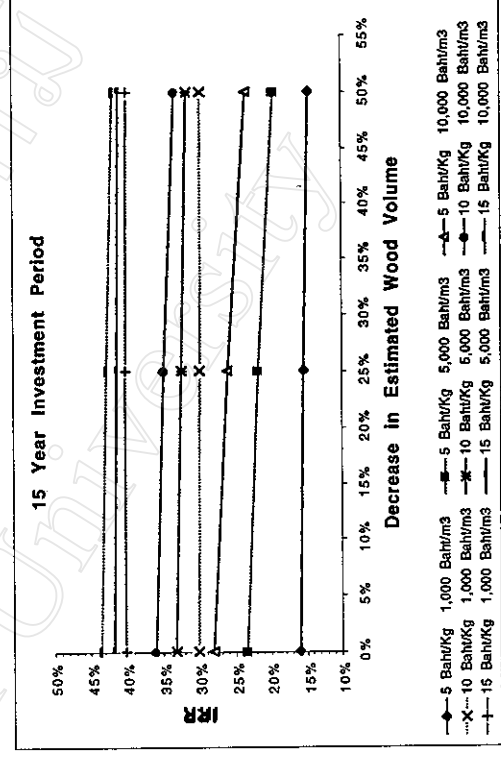


Figure 5.12 IRR Sensitivity to Decreases in Estimated Wood Volume - 15 Year Investment Period

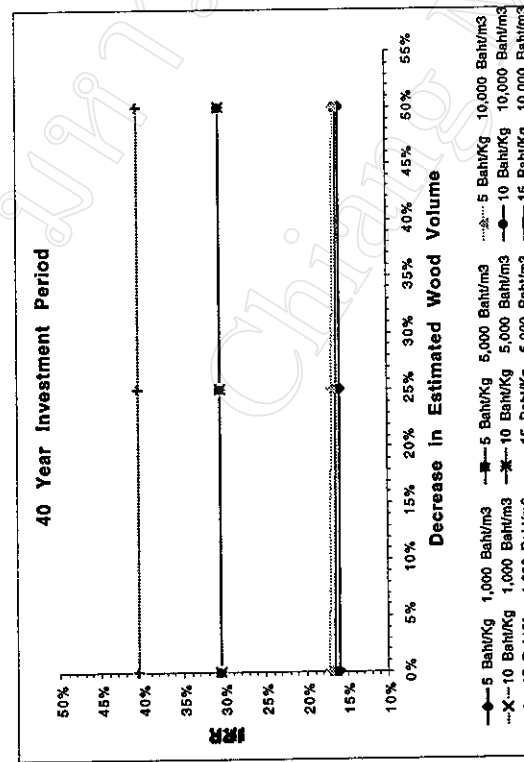


Figure 5.9 IRR Sensitivity to Decreases in Estimated Wood Volume - 40 Year Investment Period.

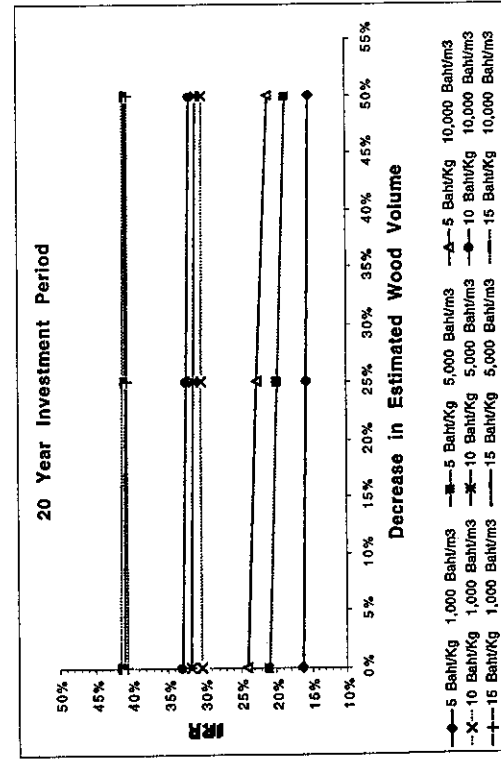


Figure 5.11 IRR Sensitivity to Decreases in Estimated Wood Volume - 20 Year Investment Period.

Sadao Thai NPV Sensitivity to Decreases in Estimated Wood Volume (Normal Investments not Including Government Afforestation Subsidy)

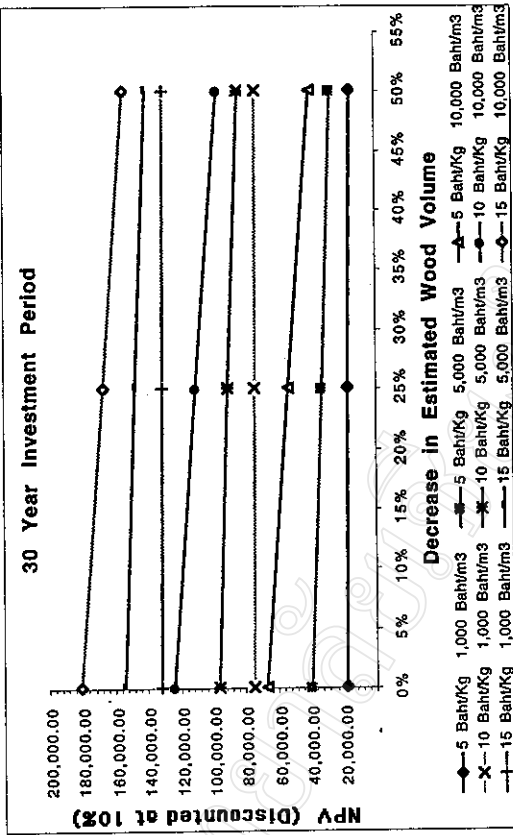


Figure 5.14 NPV Sensitivity to Decreases in Estimated Wood Volume - 30 Year Investment Period

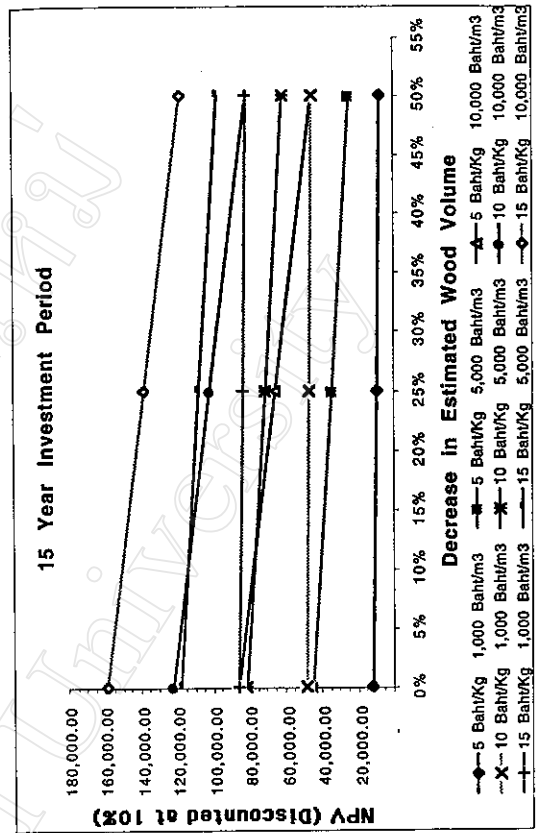


Figure 5.16 NPV Sensitivity to Decreases in Estimated Wood Volume - 15 Year Investment Period

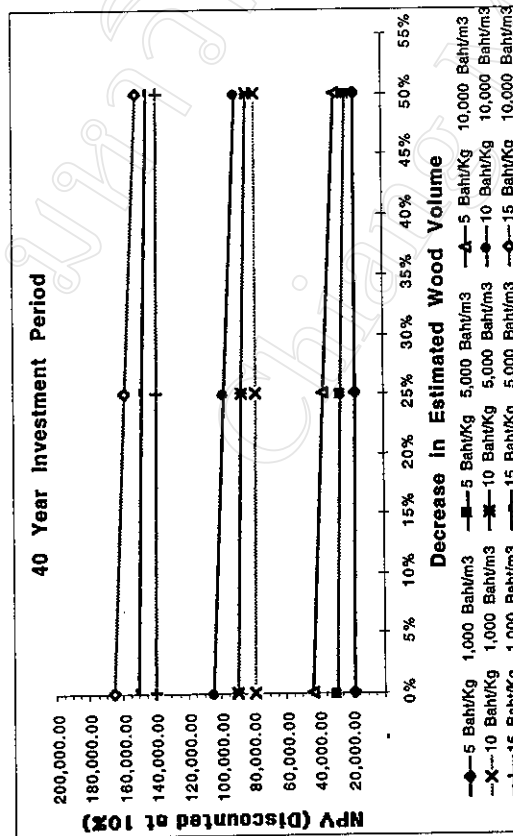


Figure 5.13 NPV Sensitivity to Decreases in Estimated Wood Volume - 40 Year Investment Period

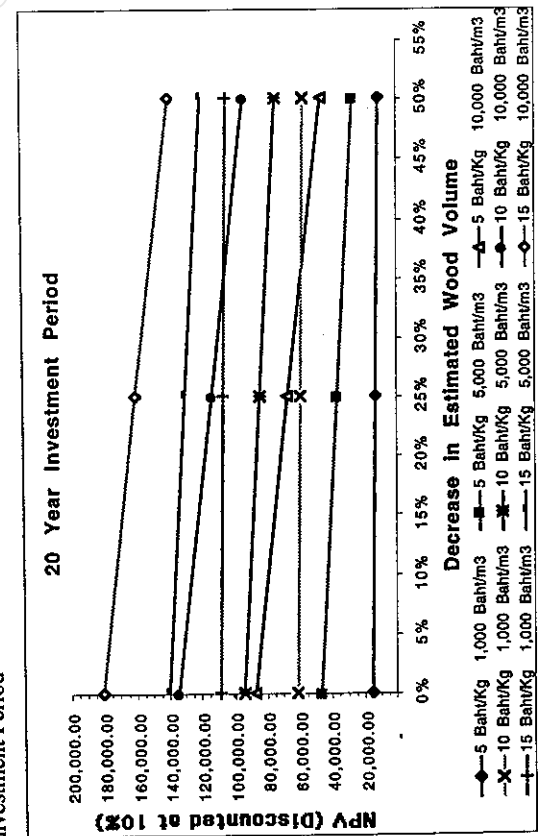


Figure 5.15 NPV Sensitivity to Decreases in Estimated Wood Volume - 20 Year Investment Period

5.1.5.3 Sadao Thai IRR and NPV Sensitivity to the Inclusion of a 10% Inflation Hedge

The IRR sensitivity to an inclusion of a 10% inflation hedge can be seen graphically in Figures 5.17 through 5.20. The results show that Sadao Thai investments are marginally sensitive to the inclusion of the 10% inflation hedge. The overall difference between normal investments (discounted at 10%) that did not include the inflation hedge and those that did ranged between 1.4 to 3.0%. The analysis revealed three trends in the IRR Sensitivity to the inflation hedge. First, the lower the wood price the greater the IRR sensitivity was. Second, scenarios having higher seed prices showed greater sensitivity than those with lower seed prices. Finally, the IRR's of scenarios with longer investment lengths were less sensitive to the inflation hedge than the IRR's of scenarios with shorter investment lengths.

Sadao Thai NPV's were also marginally sensitive to the inclusion of the 10% inflation hedge. The results, which are presented in Figures 5.21 through 5.24, revealed two very interesting trends. First, the degree of NPV sensitivity depended on the investment length. In contrast to the IRR sensitivity results in which the sensitivity was the greatest for the 15 year investment length, the NPV results showed that the longer the investment length was the greater the NPV sensitivity to the inclusion of the inflation hedge. Thus, NPV's from 40 year investments showed the greatest sensitivity while NPV's from the 15 year investments showed the least sensitivity. Second, the degree of sensitivity was constant through out all of the different seed – wood price combinations. The rate of sensitivity only differed between differing investment lengths. For normal investments that did not including the government afforestation subsidy and which were discounted at 10%, the NPV difference between investments not including the inflation hedge and those that did was 5,049.34 Baht for 40 year investments, 4,893.48 Baht for 30 year investments, 4,489.68 Baht for 20 year investments, and 3,827.74 for 15 year investments.

Sadao Thai IRR Sensitivity to an Inclusion of a 10% Inflation Hedge

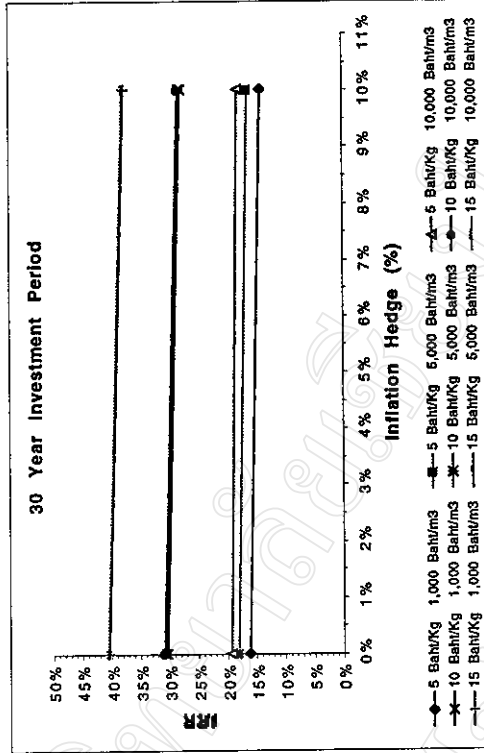


Figure 5.18 IRR Sensitivity to 10% Inflation Hedge - 30 Year Investment Period

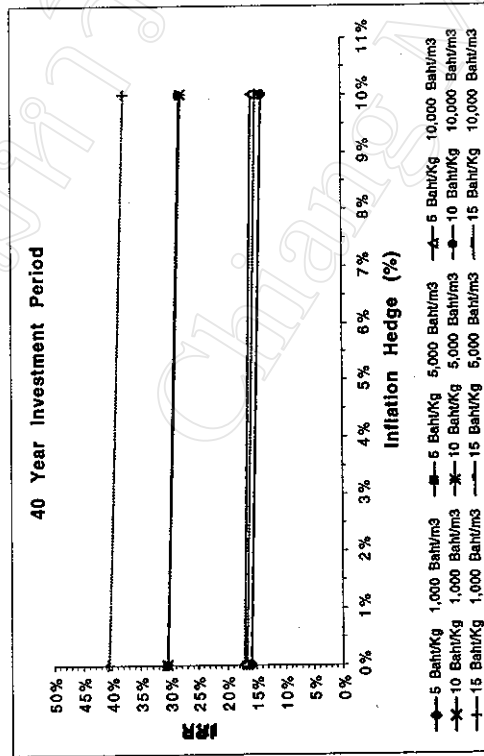


Figure 5.17 IRR Sensitivity to 10% Inflation Hedge - 40 Investment Period

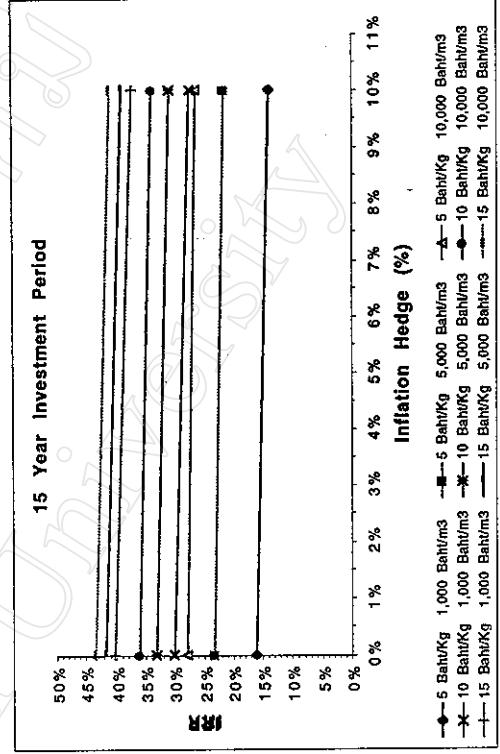


Figure 5.20 IRR Sensitivity to 10% Inflation Hedge - 15 Year Investment Period

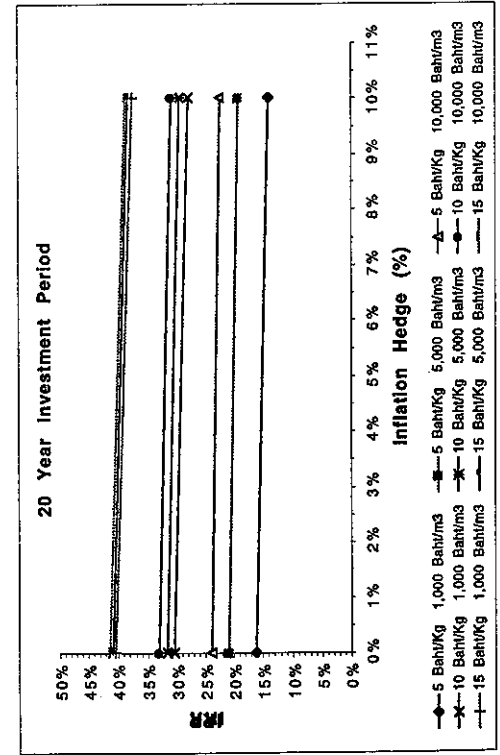


Figure 5.19 IRR Sensitivity to 10% Inflation Hedge - 20 Year Investment Period

Sadao Thai NPV Sensitivity to an Inclusion of a 10% Inflation Hedge (Normal Investments not Including Government Afforestation Subsidy)

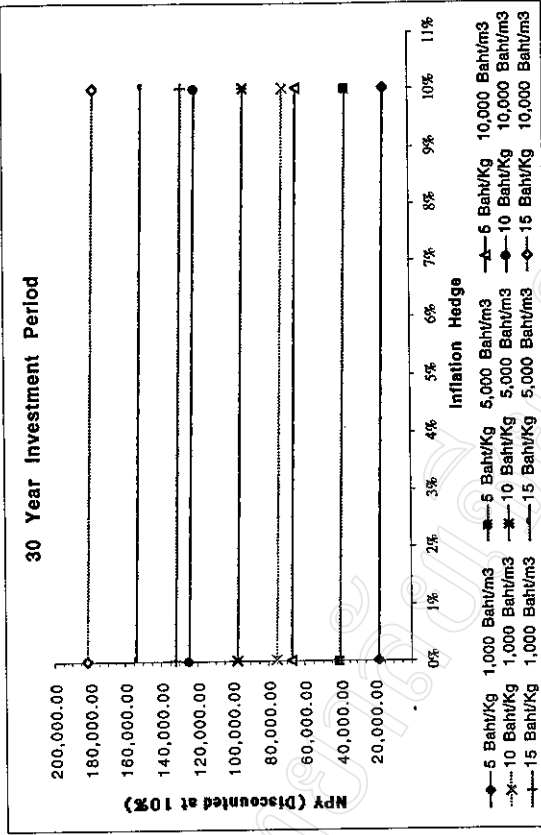


Figure 5.22 NPV Sensitivity to an Inclusion of a 10% Inflation Hedge – 30 Year Investment Period

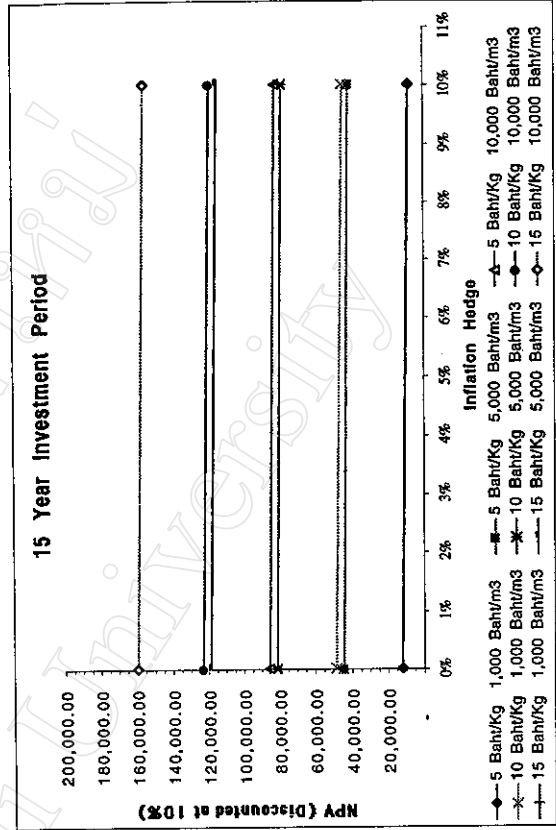


Figure 5.24 NPV Sensitivity to an Inclusion of a 10% Inflation Hedge – 15 Year Investment Period

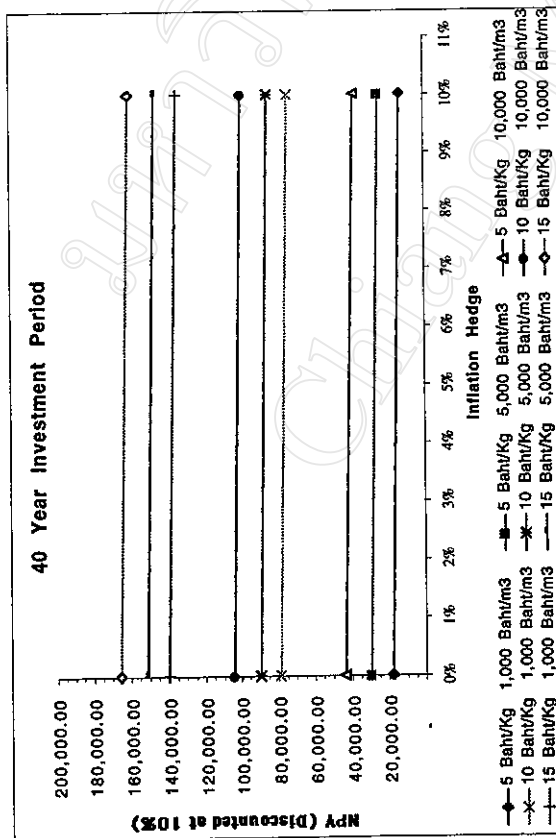


Figure 5.21 NPV Sensitivity to an Inclusion of a 10% Inflation Hedge – 40 Year Investment Period

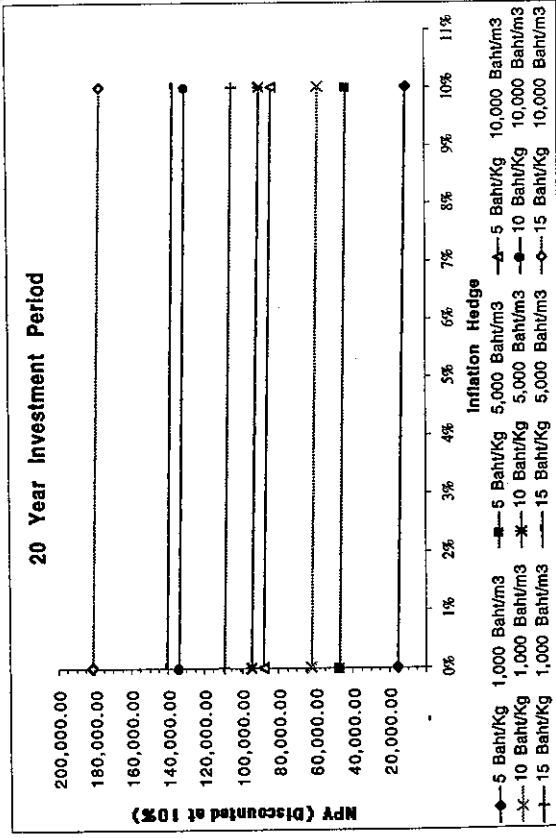


Figure 5.23 NPV Sensitivity to an Inclusion of a 10% Inflation Hedge – 20 Year Investment Period

5.1.5.4 Overall Sadao Thai Investment Viability Sensitivity

Thus far the focus of the sensitivity analysis discussion has been on how it has effected the Sadao Thai IRR's and NPV's. However, besides from analyzing how the different sensitivity analysis's have influenced the IRR and NPV values, it is also important to understand how these sensitivity analysis's have also affected the overall investment viability. Table 5.20 and Table 5.21 summarize the optimal investment period tables by listing the number of viable scenarios for Sadao Thai investments excluding the afforestation subsidy ("B" scenarios) and Sadao Thai investments including the subsidy ("A" scenarios) respectively. Each number represents an investment scenario that was viable at the 10% discount rate or higher and was viable at, at least one of the four investment lengths studied.

Before taking into account the effects of the external sensitivity analysis', the standard investment analysis results show that 202 scenarios or 80.2 percent of the "B" scenarios were viable, which can also be interpreted as meaning that 50 scenarios or 19.8% were not viable. 206 scenarios or 81.7 percent of the standard "A" scenarios were viable having only 46 nonviable scenarios.

Project viability was most greatly effected by the 50% decrease in the estimated wood volume, which lead to 72 nonviable scenarios (28.6%) for the "B" investments and 67 nonviable "A" scenarios (26.6%). Decreasing the estimated wood volume by 25 percent reduced the overall investment viability by 3.2 percent to 77.0 percent.

Decreasing the thinning price to 50 Baht/tree caused the least negative impact on investment viability by reducing the overall "B" investment scenario viability by 1.6% and the overall "A" investment scenario viability by 1.5%. Increasing the thinning price to 175 baht/tree positively increased investment viability 4.3% for "B" scenarios and 4.8% for the "A" investment scenarios.

Including the 10% inflation hedge to the investment analysis produced a 3 percent decrease in the overall "B" scenario viability to 77.0% (194 viable scenarios), and a 1.7 percent decrease in the overall "A" scenario viability to 79.0% (199 viable scenarios).

Table 5.20 Number of Viable Scenarios for Sadao Thai Investments not Including the Government Afforestation Subsidy

| Investment Type | External Sensitivity Analysis ¹ | | | | | | | | | | | |
|---------------------|--|--------------|-------------------------------|--------------|--------------------------------|--------------|---------------------------------------|--------------|---------------------------------------|--------------|-----------------------|--------------|
| | Standard | | Thinning Price = 50 Baht/Tree | | Thinning Price = 175 Baht/Tree | | 25% Decrease in Estimated Wood Volume | | 50% Decrease in Estimated Wood Volume | | Inflation Hedge = 10% | |
| | # of Viable Scenarios | % Viable | # of Viable Scenarios | % Viable | # of Viable Scenarios | % Viable | # of Viable Scenarios | % Viable | # of Viable Scenarios | % Viable | # of Viable Scenarios | % Viable |
| Norm | 35 | 97.2% | 35 | 97.2% | 36 | 100.0% | 35 | 97.2% | 34 | 94.4% | 34 | 94.4% |
| Land Purchase | 19 | 52.8% | 20 | 55.6% | 23 | 63.9% | 18 | 50.0% | 15 | 41.7% | 19 | 52.8% |
| Opportunity Cost #1 | 34 | 94.4% | 32 | 88.9% | 35 | 97.2% | 33 | 91.7% | 32 | 88.9% | 32 | 88.9% |
| Opportunity Cost #2 | 32 | 88.9% | 31 | 86.1% | 32 | 88.9% | 31 | 86.1% | 29 | 80.6% | 31 | 86.1% |
| Opportunity Cost #3 | 29 | 80.6% | 28 | 77.8% | 31 | 86.1% | 28 | 77.8% | 25 | 69.4% | 28 | 77.8% |
| Opportunity Cost #4 | 28 | 77.8% | 27 | 75.0% | 28 | 77.8% | 26 | 72.2% | 24 | 66.7% | 26 | 72.2% |
| Opportunity Cost #5 | 25 | 69.4% | 25 | 69.4% | 27 | 75.0% | 23 | 63.9% | 21 | 58.3% | 24 | 66.7% |
| Total | 202 | 80.2% | 198 | 78.6% | 212 | 84.1% | 194 | 77.0% | 180 | 71.4% | 194 | 77.0% |

Source: Calculations

Note: 1) Total number of scenarios per investment type = 36

2) Total number of scenarios = 252

Table 5.21 Number of Viable Scenarios for Sadao Thai Investments Including the Government Afforestation Subsidy

| Investment Type | External Sensitivity Analysis ¹ | | | | | | | | | | | |
|---------------------|--|--------------|-------------------------------|--------------|--------------------------------|--------------|---------------------------------------|--------------|---------------------------------------|--------------|-----------------------|--------------|
| | Standard | | Thinning Price = 50 Baht/Tree | | Thinning Price = 175 Baht/Tree | | 25% Decrease in Estimated Wood Volume | | 50% Decrease in Estimated Wood Volume | | Inflation Hedge = 10% | |
| | # of Viable Scenarios | % Viable | # of Viable Scenarios | % Viable | # of Viable Scenarios | % Viable | # of Viable Scenarios | % Viable | # of Viable Scenarios | % Viable | # of Viable Scenarios | % Viable |
| Norm | 35 | 97.2% | 35 | 97.2% | 36 | 100.0% | 35 | 97.2% | 35 | 97.2% | 35 | 97.2% |
| Land Purchase | 20 | 55.6% | 20 | 55.6% | 24 | 66.7% | 19 | 52.8% | 16 | 44.4% | 19 | 52.8% |
| Opportunity Cost #1 | 34 | 94.4% | 34 | 94.4% | 35 | 97.2% | 33 | 91.7% | 33 | 91.7% | 32 | 88.9% |
| Opportunity Cost #2 | 32 | 88.9% | 31 | 86.1% | 34 | 94.4% | 31 | 86.1% | 29 | 80.6% | 31 | 86.1% |
| Opportunity Cost #3 | 31 | 86.1% | 29 | 80.6% | 31 | 86.1% | 29 | 80.6% | 27 | 75.0% | 29 | 80.6% |
| Opportunity Cost #4 | 28 | 77.8% | 28 | 77.8% | 30 | 83.3% | 26 | 72.2% | 24 | 66.7% | 28 | 77.8% |
| Opportunity Cost #5 | 26 | 72.2% | 25 | 69.4% | 28 | 77.8% | 24 | 66.7% | 21 | 58.3% | 25 | 69.4% |
| Total | 206 | 81.7% | 202 | 80.2% | 218 | 86.5% | 197 | 78.2% | 185 | 73.4% | 199 | 79.0% |

Source: Calculations

Note: 1) Total number of scenarios per investment type = 36

2) Total number of scenarios = 252

5.2 Data Analysis Results for Sadao Tawai Investments

As was described in Chapter 3, the initial Sadao Tawai investment analysis, not including the various external sensitivity analysis permutations, considered 168 different investment scenarios. These scenarios can be broken down into four groups of 42 investment scenarios following the differing investment lengths of 15, 20, 30, and 40 years. Within each of these four groups, the same seven investment types studied in the Sadao Thai analysis were also studied in the Sadao Tawai analysis. To keep in line with the "A" and "B" coding used in the Sadao Thai analysis, all Sadao Tawai investment types were given the prefix "C". Thus, "C20-Oppt. Cost 5" refers to a Sadao Tawai investment having a 20 year length and including a 5,000 baht opportunity cost.

Each investment type contained six different investment scenarios that represented the six different combinations of flower and wood prices. These combinations were separated out into three major groups following the neem flower price levels of 50, 80, and 100 Baht/Kg. Thus, the three groups contained the following price combinations respectively: 50 Baht/Kg-200 baht/tree and 50 Baht/Kg-300 baht/tree, 80 Baht/Kg-200 baht/tree and 80 Baht/Kg-300 baht/tree, 100 Baht/Kg-200 baht/tree and 100 Baht/Kg-300 baht/tree. These price combinations combined with the differing investment types and investment lengths generated 148 distinct IRR, NPV, and B/C ratio results, which are given below.

5.2.1 Sadao Tawai IRR Results

The results of the Sadao Tawai IRR analysis are presented in Tables 5.22 through 5.25. As was the case earlier with the Sadao Thai IRR tables, the Sadao Tawai tables have been printed out in color using the same color codes.

One important finding of the Sadao Tawai IRR analysis was that the Baht per tree price had almost no impact on the IRR results at all. This means that the economics of the Sadao Tawai tree fall solely on flower production. In addition, all investments at the 80 and 100 Baht/Kg price levels had IRR results equal to or greater than the 20% MAR criterion. However, results at the 50 Baht/Kg level were more mixed. Of all 148 scenarios investigated, 19 scenarios (12.8%) failed to meet the 10% MAR criterion, while 4 scenarios or 2.7% met the 10% criterion. Three

scenarios (2.0%) met the 12% MAR criterion, and five Scenarios (3.0%) met the 15% MAR criterion. All of the remaining 133 investment scenarios (89.9%) were equal to or greater than the 20% MAR criterion.

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Table 5.22 Sadao Tawai Internal Rates of Return (IRR) for 40 Year Investments

| Investment Analysis | 50 Baht/Kg | | 80 Baht/Kg | | 100 Baht/Kg | |
|---------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| | 200 Baht/Tree | 300 Baht/Tree | 200 Baht/Tree | 300 Baht/Tree | 200 Baht/Tree | 300 Baht/Tree |
| C40-Norm | 33.239% | 33.239% | 71.589% | 71.589% | 95.440% | 95.440% |
| C40-Land | 8.848% | 8.883% | 24.102% | 24.103% | 34.583% | 34.583% |
| C40-Oppt. Cost 1 | 26.574% | 26.575% | 63.112% | 63.112% | 85.602% | 85.602% |
| C40-Oppt. Cost 2 | 20.679% | 20.683% | 55.630% | 55.630% | 76.913% | 76.913% |
| C40-Oppt. Cost 3 | 15.422% | 15.438% | 48.985% | 48.985% | 69.194% | 69.194% |
| C40-Oppt. Cost 4 | 10.668% | 10.722% | 43.052% | 43.052% | 62.298% | 62.298% |
| C40-Oppt. Cost 5 | 6.236% | 6.399% | 37.726% | 37.726% | 56.107% | 56.107% |

Source: Calculations

Table 5.23 Sadao Tawai Internal Rates of Return (IRR) for 30 Year Investments

| Investment Analysis | 50 Baht/Kg | | 80 Baht/Kg | | 100 Baht/Kg | |
|---------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| | 200 Baht/Tree | 300 Baht/Tree | 200 Baht/Tree | 300 Baht/Tree | 200 Baht/Tree | 300 Baht/Tree |
| C30-Norm | 33.237% | 33.239% | 71.589% | 71.589% | 95.440% | 95.440% |
| C30-Land | 8.316% | 8.418% | 24.058% | 24.064% | 34.576% | 34.577% |
| C30-Oppt. Cost 1 | 26.564% | 26.573% | 63.112% | 63.112% | 85.602% | 85.602% |
| C30-Oppt. Cost 2 | 20.646% | 20.673% | 55.630% | 55.630% | 76.913% | 76.913% |
| C30-Oppt. Cost 3 | 15.334% | 15.403% | 48.985% | 48.985% | 69.194% | 69.194% |
| C30-Oppt. Cost 4 | 10.468% | 10.630% | 43.051% | 43.051% | 62.298% | 62.298% |
| C30-Oppt. Cost 5 | 5.858% | 6.213% | 37.724% | 37.725% | 56.107% | 56.107% |

Source: Calculations

Table 5.24 Sadao Tawai Internal Rates of Return (IRR) for 20 Year Investments

| Investment Analysis | 50 Baht/Kg | | 80 Baht/Kg | | 100 Baht/Kg | |
|---------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| | 200 Baht/Tree | 300 Baht/Tree | 200 Baht/Tree | 300 Baht/Tree | 200 Baht/Tree | 300 Baht/Tree |
| C20-Norm | 33.188% | 33.237% | 71.588% | 71.589% | 95.440% | 95.440% |
| C20-Land | 6.543% | 6.896% | 23.651% | 23.704% | 34.439% | 34.456% |
| C20-Oppt. Cost 1 | 26.452% | 26.550% | 63.109% | 63.110% | 85.602% | 85.602% |
| C20-Oppt. Cost 2 | 20.419% | 20.602% | 55.622% | 55.625% | 76.912% | 76.913% |
| C20-Oppt. Cost 3 | 14.919% | 15.241% | 48.969% | 48.976% | 69.192% | 69.193% |
| C20-Oppt. Cost 4 | 9.791% | 10.330% | 43.019% | 43.031% | 62.293% | 62.295% |
| C20-Oppt. Cost 5 | 4.866% | 5.740% | 37.666% | 37.687% | 56.098% | 56.100% |

Source: Calculations

Table 5.25 Sadao Tawai Internal Rates of Return (IRR) for 15 Year Investments

| Investment Analysis | 50 Baht/Kg | | 80 Baht/Kg | | 100 Baht/Kg | |
|---------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| | 200 Baht/Tree | 300 Baht/Tree | 200 Baht/Tree | 300 Baht/Tree | 200 Baht/Tree | 300 Baht/Tree |
| C15-Norm | 32.996% | 33.208% | 71.568% | 71.580% | 95.435% | 95.438% |
| C15-Land | 3.936% | 4.697% | 22.602% | 22.783% | 33.907% | 33.986% |
| C15-Oppt. Cost 1 | 26.120% | 26.457% | 63.070% | 63.091% | 85.592% | 85.596% |
| C15-Oppt. Cost 2 | 19.894% | 20.407% | 55.555% | 55.588% | 76.894% | 76.902% |
| C15-Oppt. Cost 3 | 14.151% | 14.906% | 48.858% | 48.909% | 69.160% | 69.173% |
| C15-Oppt. Cost 4 | 8.741% | 9.826% | 42.847% | 42.921% | 62.242% | 62.261% |
| C15-Oppt. Cost 5 | 3.520% | 5.051% | 37.409% | 37.515% | 56.018% | 56.045% |

Source: Calculations

Note: Red: IRR's < 10% Purple: IRR's => 10% but less than 12%
 Green: IRR's => 12% but less than 15% Blue: IRR's => 15% but less than 20%
 Black: IRR's => 20%

5.2.2 Sadao Tawai B/C Ratio Results

The results of the Sadao Tawai Benefit / Cost ratio analysis are presented in Tables 5.26 to 5.29. These results have also been printed out in multiple colors using the same color code as was used for the Sadao Thai B/C ratio results.

Overall, the benefit / cost ratio results followed the pattern of increasing with an increase in the investment length. Therefore, the 15 year long investments had the lowest returns while the 40 year long investments had the greatest B/C ratio results.

As expected, the results showed that the “normal” investment types out performed every other investment type. In fact, the “normal” investments were acceptable at every price combination level and discount rate. In the best case scenario for a “normal” investment type, the investor sells his neem flowers and wood at the 100 Baht/Kg – 300 baht/tree price combination level. At this price combination level for a 40 year long investment, the B/C ratios are 2.83, 2.74, 2.62, and 2.43 at the 10%, 12%, 15%, and 20% discount rates respectively. This means that the summed present value of benefits were 2.83, 2.74, 2.62, or 2.43 times greater the summed present value of costs depending on the discount rate. In the worst case scenario for the Sadao Tawai “normal” investments, the investor would only be able to maintain a 15 year long investment and would only be able to sell at the 50 Baht/Kg – 200 baht/tree price combination level. In such a situation, the investor would only realize a B/C ratio of 1.38, 1.35, 1.29, and 1.20 at the 10%, 12%, 15%, and 20% discount rates respectively.

The most interesting aspect of the Sadao Tawai B/C ratio results is that very little variation was seen in the results between the four investment lengths. This implies that the ratio of the summed present value of benefits to the summed present value of costs remained relatively constant between each time period.

Table 5.26 Sadao Tawai Benefit/Cost, (B/C) Ratios for 40 Year Investment Period

| Discount Rate | Investment Analysis | 50 Baht/Kg | | 80 Baht/Kg | | 100 Baht/Kg | |
|---------------|---------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| | | 200 Baht/Tree | 300 Baht/Tree | 200 Baht/Tree | 300 Baht/Tree | 200 Baht/Tree | 300 Baht/Tree |
| 10% | C40-Norm | 1.41 | 1.42 | 2.26 | 2.26 | 2.82 | 2.83 |
| | C40-Land | 0.96 | 0.96 | 1.53 | 1.53 | 1.91 | 1.91 |
| | C40-Oppt. Cost 1 | 1.29 | 1.29 | 2.06 | 2.06 | 2.57 | 2.57 |
| | C40-Oppt. Cost 2 | 1.18 | 1.18 | 1.88 | 1.89 | 2.35 | 2.36 |
| | C40-Oppt. Cost 3 | 1.09 | 1.09 | 1.74 | 1.74 | 2.17 | 2.18 |
| 12% | C40-Oppt. Cost 4 | 1.01 | 1.01 | 1.62 | 1.62 | 2.02 | 2.02 |
| | C40-Oppt. Cost 5 | 0.94 | 0.94 | 1.51 | 1.51 | 1.88 | 1.89 |
| | C40-Norm | 1.37 | 1.37 | 2.20 | 2.20 | 2.74 | 2.74 |
| | C40-Land | 0.89 | 0.89 | 1.42 | 1.43 | 1.78 | 1.78 |
| | C40-Oppt. Cost 1 | 1.25 | 1.25 | 1.99 | 2.00 | 2.49 | 2.49 |
| 15% | C40-Oppt. Cost 2 | 1.14 | 1.14 | 1.83 | 1.83 | 2.28 | 2.29 |
| | C40-Oppt. Cost 3 | 1.05 | 1.06 | 1.69 | 1.69 | 2.11 | 2.11 |
| | C40-Oppt. Cost 4 | 0.98 | 0.98 | 1.57 | 1.57 | 1.96 | 1.96 |
| | C40-Oppt. Cost 5 | 0.91 | 0.91 | 1.46 | 1.46 | 1.83 | 1.83 |
| | C40-Norm | 1.31 | 1.31 | 2.10 | 2.10 | 2.62 | 2.62 |
| 20% | C40-Land | 0.81 | 0.81 | 1.29 | 1.29 | 1.61 | 1.61 |
| | C40-Oppt. Cost 1 | 1.19 | 1.19 | 1.91 | 1.91 | 2.38 | 2.38 |
| | C40-Oppt. Cost 2 | 1.09 | 1.09 | 1.75 | 1.75 | 2.18 | 2.18 |
| | C40-Oppt. Cost 3 | 1.01 | 1.01 | 1.61 | 1.61 | 2.01 | 2.01 |
| | C40-Oppt. Cost 4 | 0.93 | 0.93 | 1.49 | 1.49 | 1.87 | 1.87 |
| 20% | C40-Oppt. Cost 5 | 0.87 | 0.87 | 1.39 | 1.39 | 1.74 | 1.74 |
| | C40-Norm | 1.22 | 1.22 | 1.95 | 1.95 | 2.43 | 2.43 |
| | C40-Land | 0.69 | 0.69 | 1.11 | 1.11 | 1.39 | 1.39 |
| | C40-Oppt. Cost 1 | 1.10 | 1.10 | 1.77 | 1.77 | 2.21 | 2.21 |
| | C40-Oppt. Cost 2 | 1.01 | 1.01 | 1.62 | 1.62 | 2.02 | 2.02 |
| 20% | C40-Oppt. Cost 3 | 0.93 | 0.93 | 1.49 | 1.49 | 1.86 | 1.86 |
| | C40-Oppt. Cost 4 | 0.86 | 0.86 | 1.38 | 1.38 | 1.73 | 1.73 |
| | C40-Oppt. Cost 5 | 0.81 | 0.81 | 1.29 | 1.29 | 1.61 | 1.61 |

Source: Calculations

Note: Red: B/C Ratios < 1.00, Black: B/C Ratios => 1.00 but < 2.00, Blue: B/C Ratios => 2.00 but < 3.00
 Green: B/C Ratios => 3.00 but < 4.00, Purple: B/C Ratios => 4.00 but < 5.00, Brown: B/C Ratios => 5.00

Table 5.27 Sadao Tawai Benefit/Cost (B/C) Ratios for 30 Year Investment Period

| Discount Rate | Investment Analysis | 50 Baht/Kg | | | 80 Baht/Kg | | | 100 Baht/Kg | | |
|---------------|---------------------|---------------|---------------|-------------|---------------|---------------|-------------|---------------|---------------|-------------|
| | | 200 Baht/Tree | 300 Baht/Tree | 300 Baht/Kg | 200 Baht/Tree | 300 Baht/Tree | 300 Baht/Kg | 200 Baht/Tree | 300 Baht/Tree | 300 Baht/Kg |
| 10% | C30-Norm. | 1.41 | 1.41 | 2.25 | 2.26 | 2.26 | 2.81 | 2.82 | 2.82 | 2.82 |
| | C30-Land | 0.94 | 0.95 | 1.51 | 1.51 | 1.51 | 1.88 | 1.88 | 1.88 | 1.88 |
| | C30-Oppt. Cost 1 | 1.28 | 1.29 | 2.05 | 2.05 | 2.05 | 2.56 | 2.56 | 2.56 | 2.56 |
| | C30-Oppt. Cost 2 | 1.18 | 1.18 | 1.88 | 1.88 | 1.88 | 2.34 | 2.34 | 2.34 | 2.34 |
| | C30-Oppt. Cost 3 | 1.08 | 1.09 | 1.73 | 1.73 | 1.73 | 2.16 | 2.17 | 2.17 | 2.17 |
| 12% | C30-Oppt. Cost 4 | 1.01 | 1.01 | 1.61 | 1.61 | 1.61 | 2.01 | 2.01 | 2.01 | 2.01 |
| | C30-Oppt. Cost 5 | 0.94 | 0.94 | 1.50 | 1.50 | 1.50 | 1.87 | 1.87 | 1.87 | 1.87 |
| | C30-Norm | 1.37 | 1.37 | 2.19 | 2.19 | 2.19 | 2.73 | 2.73 | 2.73 | 2.73 |
| | C30-Land | 0.88 | 0.88 | 1.41 | 1.41 | 1.41 | 1.76 | 1.76 | 1.76 | 1.76 |
| | C30-Oppt. Cost 1 | 1.24 | 1.25 | 1.99 | 1.99 | 1.99 | 2.48 | 2.48 | 2.48 | 2.48 |
| 15% | C30-Oppt. Cost 2 | 1.14 | 1.14 | 1.82 | 1.82 | 1.82 | 2.28 | 2.28 | 2.28 | 2.28 |
| | C30-Oppt. Cost 3 | 1.05 | 1.05 | 1.68 | 1.68 | 1.68 | 2.10 | 2.10 | 2.10 | 2.10 |
| | C30-Oppt. Cost 4 | 0.98 | 0.98 | 1.56 | 1.56 | 1.56 | 1.95 | 1.95 | 1.95 | 1.95 |
| | C30-Oppt. Cost 5 | 0.91 | 0.91 | 1.46 | 1.46 | 1.46 | 1.82 | 1.82 | 1.82 | 1.82 |
| | C30-Norm | 1.31 | 1.31 | 2.09 | 2.09 | 2.09 | 2.62 | 2.62 | 2.62 | 2.62 |
| 18% | C30-Land | 0.80 | 0.80 | 1.28 | 1.28 | 1.28 | 1.60 | 1.60 | 1.60 | 1.60 |
| | C30-Oppt. Cost 1 | 1.19 | 1.19 | 1.90 | 1.90 | 1.90 | 2.38 | 2.38 | 2.38 | 2.38 |
| | C30-Oppt. Cost 2 | 1.09 | 1.09 | 1.74 | 1.74 | 1.74 | 2.18 | 2.18 | 2.18 | 2.18 |
| | C30-Oppt. Cost 3 | 1.01 | 1.01 | 1.61 | 1.61 | 1.61 | 2.01 | 2.01 | 2.01 | 2.01 |
| | C30-Oppt. Cost 4 | 0.93 | 0.93 | 1.49 | 1.49 | 1.49 | 1.86 | 1.86 | 1.86 | 1.86 |
| 20% | C30-Oppt. Cost 5 | 0.87 | 0.87 | 1.39 | 1.39 | 1.39 | 1.74 | 1.74 | 1.74 | 1.74 |
| | C30-Norm | 1.22 | 1.22 | 1.94 | 1.94 | 1.94 | 2.43 | 2.43 | 2.43 | 2.43 |
| | C30-Land | 0.69 | 0.69 | 1.11 | 1.11 | 1.11 | 1.39 | 1.39 | 1.39 | 1.39 |
| | C30-Oppt. Cost 1 | 1.10 | 1.10 | 1.76 | 1.76 | 1.76 | 2.21 | 2.21 | 2.21 | 2.21 |
| | C30-Oppt. Cost 2 | 1.01 | 1.01 | 1.62 | 1.62 | 1.62 | 2.02 | 2.02 | 2.02 | 2.02 |
| 25% | C30-Oppt. Cost 3 | 0.93 | 0.93 | 1.49 | 1.49 | 1.49 | 1.86 | 1.86 | 1.86 | 1.86 |
| | C30-Oppt. Cost 4 | 0.86 | 0.86 | 1.38 | 1.38 | 1.38 | 1.73 | 1.73 | 1.73 | 1.73 |
| | C30-Oppt. Cost 5 | 0.81 | 0.81 | 1.29 | 1.29 | 1.29 | 1.61 | 1.61 | 1.61 | 1.61 |

Source: Calculations

Note: Red: B/C Ratios < 1.00, Black: B/C Ratios => 1.00 but < 2.00, Blue: B/C Ratios => 2.00 but < 3.00
 Green: B/C Ratios => 3.00 but < 4.00, Purple: B/C Ratios => 4.00 but < 5.00, Brown: B/C Ratios => 5.00

Table 5.28 Sadao Tawai Benefit/Cost (B/C) Ratios for 20 Year Investment Period

| Discount Rate | Investment Analysis | 50 Baht/Kg | | | 80 Baht/Kg | | | 100 Baht/Kg | | |
|---------------|---------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| | | 200 Baht/Tree | 300 Baht/Tree | 300 Baht/Tree | 200 Baht/Tree | 300 Baht/Tree | 300 Baht/Tree | 200 Baht/Tree | 300 Baht/Tree | 300 Baht/Tree |
| 10% | C20-Norm | 1.40 | 1.41 | 1.41 | 2.23 | 2.24 | 2.24 | 2.78 | 2.79 | 2.79 |
| | C20-Land | 0.90 | 0.91 | 0.91 | 1.43 | 1.44 | 1.44 | 1.79 | 1.79 | 1.79 |
| | C20-Oppt. Cost 1 | 1.27 | 1.28 | 1.28 | 2.02 | 2.03 | 2.03 | 2.52 | 2.53 | 2.53 |
| | C20-Oppt. Cost 2 | 1.16 | 1.17 | 1.17 | 1.85 | 1.86 | 1.86 | 2.31 | 2.32 | 2.32 |
| | C20-Oppt. Cost 3 | 1.07 | 1.08 | 1.08 | 1.71 | 1.72 | 1.72 | 2.13 | 2.14 | 2.14 |
| 12% | C20-Oppt. Cost 4 | 1.00 | 1.01 | 1.01 | 1.59 | 1.59 | 1.59 | 1.98 | 1.99 | 1.99 |
| | C20-Oppt. Cost 5 | 0.93 | 0.94 | 0.94 | 1.48 | 1.49 | 1.49 | 1.85 | 1.85 | 1.85 |
| | C20-Norm | 1.36 | 1.37 | 1.37 | 2.17 | 2.18 | 2.18 | 2.70 | 2.71 | 2.71 |
| | C20-Land | 0.85 | 0.85 | 0.85 | 1.35 | 1.36 | 1.36 | 1.69 | 1.69 | 1.69 |
| | C20-Oppt. Cost 1 | 1.24 | 1.24 | 1.24 | 1.97 | 1.98 | 1.98 | 2.46 | 2.46 | 2.46 |
| 15% | C20-Oppt. Cost 2 | 1.13 | 1.14 | 1.14 | 1.80 | 1.81 | 1.81 | 2.25 | 2.26 | 2.26 |
| | C20-Oppt. Cost 3 | 1.04 | 1.05 | 1.05 | 1.66 | 1.67 | 1.67 | 2.07 | 2.08 | 2.08 |
| | C20-Oppt. Cost 4 | 0.97 | 0.97 | 0.97 | 1.54 | 1.55 | 1.55 | 1.92 | 1.93 | 1.93 |
| | C20-Oppt. Cost 5 | 0.90 | 0.91 | 0.91 | 1.44 | 1.44 | 1.44 | 1.79 | 1.80 | 1.80 |
| | C20-Norm | 1.30 | 1.31 | 1.31 | 2.08 | 2.08 | 2.08 | 2.59 | 2.60 | 2.60 |
| 18% | C20-Land | 0.78 | 0.78 | 0.78 | 1.24 | 1.25 | 1.25 | 1.55 | 1.56 | 1.56 |
| | C20-Oppt. Cost 1 | 1.18 | 1.19 | 1.19 | 1.89 | 1.89 | 1.89 | 2.35 | 2.36 | 2.36 |
| | C20-Oppt. Cost 2 | 1.08 | 1.09 | 1.09 | 1.73 | 1.73 | 1.73 | 2.16 | 2.16 | 2.16 |
| | C20-Oppt. Cost 3 | 1.00 | 1.00 | 1.00 | 1.59 | 1.60 | 1.60 | 1.99 | 1.99 | 1.99 |
| | C20-Oppt. Cost 4 | 0.93 | 0.93 | 0.93 | 1.48 | 1.48 | 1.48 | 1.84 | 1.85 | 1.85 |
| 20% | C20-Oppt. Cost 5 | 0.86 | 0.87 | 0.87 | 1.38 | 1.38 | 1.38 | 1.72 | 1.72 | 1.72 |
| | C20-Norm | 1.21 | 1.22 | 1.22 | 1.93 | 1.94 | 1.94 | 2.42 | 2.42 | 2.42 |
| | C20-Land | 0.68 | 0.69 | 0.69 | 1.09 | 1.09 | 1.09 | 1.36 | 1.37 | 1.37 |
| | C20-Oppt. Cost 1 | 1.10 | 1.10 | 1.10 | 1.76 | 1.76 | 1.76 | 2.19 | 2.20 | 2.20 |
| | C20-Oppt. Cost 2 | 1.01 | 1.01 | 1.01 | 1.61 | 1.61 | 1.61 | 2.01 | 2.01 | 2.01 |
| 20% | C20-Oppt. Cost 3 | 0.93 | 0.93 | 0.93 | 1.48 | 1.48 | 1.48 | 1.85 | 1.85 | 1.85 |
| | C20-Oppt. Cost 4 | 0.86 | 0.86 | 0.86 | 1.37 | 1.38 | 1.38 | 1.72 | 1.72 | 1.72 |
| | C20-Oppt. Cost 5 | 0.80 | 0.80 | 0.80 | 1.28 | 1.28 | 1.28 | 1.60 | 1.60 | 1.60 |

Source: Calculations

Note: B/C Ratios < 1.00, Black: B/C Ratios => 1.00 but < 2.00, Blue: B/C Ratios => 2.00 but < 3.00

Green: B/C Ratios => 3.00 but < 4.00, Purple: B/C Ratios => 4.00 but < 5.00, Brown: B/C Ratios => 5.00

Table 5.29 Sadao Tawai Benefit/Cost (B/C) Ratios for 15 Year Investment Period

| Discount Rate | Investment Analysis | 50 Baht/Kg | | 80 Baht/Kg | | 100 Baht/Kg | |
|---------------|---------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| | | 200 Baht/Tree | 300 Baht/Tree | 200 Baht/Tree | 300 Baht/Tree | 200 Baht/Tree | 300 Baht/Tree |
| 10% | C15-Norm | 1.38 | 1.40 | 2.19 | 2.21 | 2.73 | 2.75 |
| | C15-Land | 0.85 | 0.86 | 1.35 | 1.36 | 1.68 | 1.69 |
| | C15-Oppt. Cost 1 | 1.26 | 1.27 | 1.99 | 2.00 | 2.47 | 2.49 |
| | C15-Oppt. Cost 2 | 1.15 | 1.17 | 1.82 | 1.84 | 2.26 | 2.28 |
| | C15-Oppt. Cost 3 | 1.06 | 1.08 | 1.68 | 1.69 | 2.09 | 2.10 |
| 12% | C15-Oppt. Cost 4 | 0.98 | 1.00 | 1.56 | 1.57 | 1.94 | 1.95 |
| | C15-Oppt. Cost 5 | 0.92 | 0.93 | 1.45 | 1.46 | 1.81 | 1.82 |
| | C15-Norm | 1.35 | 1.36 | 2.13 | 2.15 | 2.66 | 2.67 |
| | C15-Land | 0.81 | 0.82 | 1.28 | 1.29 | 1.60 | 1.61 |
| | C15-Oppt. Cost 1 | 1.22 | 1.24 | 1.94 | 1.95 | 2.41 | 2.43 |
| 15% | C15-Oppt. Cost 2 | 1.12 | 1.13 | 1.77 | 1.79 | 2.21 | 2.22 |
| | C15-Oppt. Cost 3 | 1.03 | 1.04 | 1.63 | 1.65 | 2.03 | 2.05 |
| | C15-Oppt. Cost 4 | 0.96 | 0.97 | 1.51 | 1.53 | 1.89 | 1.90 |
| | C15-Oppt. Cost 5 | 0.89 | 0.90 | 1.41 | 1.42 | 1.76 | 1.77 |
| | C15-Norm | 1.29 | 1.31 | 2.05 | 2.06 | 2.56 | 2.57 |
| 20% | C15-Land | 0.75 | 0.76 | 1.19 | 1.20 | 1.48 | 1.49 |
| | C15-Oppt. Cost 1 | 1.17 | 1.18 | 1.86 | 1.87 | 2.32 | 2.33 |
| | C15-Oppt. Cost 2 | 1.07 | 1.08 | 1.70 | 1.71 | 2.12 | 2.13 |
| | C15-Oppt. Cost 3 | 0.99 | 1.00 | 1.57 | 1.58 | 1.96 | 1.97 |
| | C15-Oppt. Cost 4 | 0.92 | 0.93 | 1.45 | 1.46 | 1.81 | 1.82 |
| | C15-Oppt. Cost 5 | 0.85 | 0.86 | 1.36 | 1.37 | 1.69 | 1.70 |
| | C15-Norm | 1.20 | 1.21 | 1.91 | 1.92 | 2.39 | 2.40 |
| | C15-Land | 0.67 | 0.67 | 1.06 | 1.06 | 1.32 | 1.33 |
| | C15-Oppt. Cost 1 | 1.09 | 1.10 | 1.74 | 1.74 | 2.17 | 2.17 |
| | C15-Oppt. Cost 2 | 1.00 | 1.01 | 1.59 | 1.60 | 1.98 | 1.99 |
| | C15-Oppt. Cost 3 | 0.92 | 0.93 | 1.46 | 1.47 | 1.83 | 1.83 |
| | C15-Oppt. Cost 4 | 0.85 | 0.86 | 1.36 | 1.36 | 1.69 | 1.70 |
| | C15-Oppt. Cost 5 | 0.80 | 0.80 | 1.27 | 1.27 | 1.58 | 1.59 |

Source: Calculations

Note: Red: B/C Ratios < 1.00, Black: B/C Ratios => 1.00 but < 2.00, Blue: B/C Ratios => 2.00 but < 3.00
 Green: B/C Ratios => 3.00 but < 4.00, Purple: B/C Ratios => 4.00 but < 5.00, Brown: B/C Ratios => 5.00

5.2.3 Sadao Tawai NPV Results

Tables 5.30 to 5.33 give the results of the Sadao Tawai net present value analysis. The Sadao Tawai NPV result tables mirror the results of the B/C ratio tables. Like the B/C ratio results, the Sadao Tawai NPV's were the greatest at the forty-year investment length and the lowest at the fifteen year investment length.

In the best case investment scenario, the investor would not have to buy land or pay an opportunity cost and could sell his neem flowers and wood at the 100 Baht/Kg – 300 baht/tree price combination level. Depending on whether the discount rate is 10%, 12%, 15%, or 20%; the maximum NPV that the investor could possibly attain is 196,863.02, 160,403.55, 122,633.35 or 84,365.25 baht respectively.

The worst case scenario for "normal" investment type is that the investor could only invest for 15 years and could only sell his neem flowers and wood at the 50 Baht/Kg -200 baht/tree price combination level. In such a scenario the maximum NPV that the investor might possibly realize, is 31,484.66, 25,872.46, 122,633.35 or 84,365.25 baht depending on whether the investor's MAR was 10%, 12%, 15%, or 20% respectively.

| Discount Rate | Investment Analysis | 50 Baht/Kg | | 80 Baht/Kg | | 100 Baht/Kg | |
|---------------|---------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| | | 200 Baht/Tree | 300 Baht/Tree | 200 Baht/Tree | 300 Baht/Tree | 200 Baht/Tree | 300 Baht/Tree |
| 10% | C40-Norm | 44,612.14 | 44,767.69 | 135,869.34 | 136,024.89 | 196,707.47 | 196,863.02 |
| | C40-Land | (6,759.27) | (6,603.72) | 84,497.93 | 84,653.48 | 145,336.07 | 145,491.62 |
| | C40-Oppt. Cost 1 | 33,855.18 | 34,010.73 | 125,112.38 | 125,267.93 | 185,950.52 | 186,106.07 |
| | C40-Oppt. Cost 2 | 23,098.23 | 23,253.78 | 114,355.43 | 114,510.98 | 175,193.56 | 175,349.11 |
| | C40-Oppt. Cost 3 | 12,341.27 | 12,496.82 | 103,598.47 | 103,754.02 | 164,436.61 | 164,592.16 |
| 12% | C40-Oppt. Cost 4 | 1,584.32 | 1,739.86 | 92,841.52 | 92,997.07 | 153,679.65 | 153,835.20 |
| | C40-Oppt. Cost 5 | (9,172.64) | (9,017.09) | 82,084.56 | 82,240.11 | 142,922.70 | 143,078.24 |
| | C40-Norm | 34,262.23 | 34,339.26 | 109,900.80 | 109,977.83 | 160,326.52 | 160,403.55 |
| | C40-Land | (15,476.62) | (15,399.59) | 60,161.95 | 60,238.98 | 110,587.66 | 110,664.70 |
| | C40-Oppt. Cost 1 | 25,029.20 | 25,106.23 | 100,667.77 | 100,744.80 | 151,093.49 | 151,170.52 |
| 15% | C40-Oppt. Cost 2 | 15,796.17 | 15,873.20 | 91,434.74 | 91,511.77 | 141,860.46 | 141,937.49 |
| | C40-Oppt. Cost 3 | 6,563.14 | 6,640.17 | 82,201.71 | 82,278.74 | 132,627.43 | 132,704.46 |
| | C40-Oppt. Cost 4 | (2,669.89) | (2,592.86) | 72,968.68 | 73,045.72 | 123,394.40 | 123,471.43 |
| | C40-Oppt. Cost 5 | (11,902.92) | (11,825.89) | 63,735.65 | 63,812.69 | 114,161.37 | 114,238.40 |
| | C40-Norm | 23,564.27 | 23,591.75 | 82,989.23 | 83,016.71 | 122,605.87 | 122,633.35 |
| 20% | C40-Land | (23,927.83) | (23,900.35) | 35,497.13 | 35,524.61 | 75,113.77 | 75,141.25 |
| | C40-Oppt. Cost 1 | 15,926.23 | 15,953.70 | 75,351.19 | 75,378.66 | 114,967.83 | 114,995.30 |
| | C40-Oppt. Cost 2 | 8,288.18 | 8,315.66 | 67,713.14 | 67,740.62 | 107,329.78 | 107,357.26 |
| | C40-Oppt. Cost 3 | 650.14 | 677.61 | 60,075.10 | 60,102.57 | 99,691.74 | 99,719.21 |
| | C40-Oppt. Cost 4 | (6,987.91) | (6,960.43) | 52,437.05 | 52,464.53 | 92,053.69 | 92,081.17 |
| 20% | C40-Oppt. Cost 5 | (14,625.95) | (14,598.48) | 44,799.01 | 44,826.48 | 84,415.65 | 84,443.12 |
| | C40-Norm | 12,730.08 | 12,735.30 | 55,708.05 | 55,713.27 | 84,360.02 | 84,365.25 |
| | C40-Land | (31,481.99) | (31,476.76) | 11,495.98 | 11,501.21 | 40,147.96 | 40,153.19 |
| | C40-Oppt. Cost 1 | 6,734.16 | 6,739.38 | 49,712.13 | 49,717.35 | 78,364.11 | 78,369.33 |
| | C40-Oppt. Cost 2 | 738.24 | 743.47 | 43,716.21 | 43,721.43 | 72,368.19 | 72,373.41 |
| 20% | C40-Oppt. Cost 3 | (5,257.68) | (5,252.45) | 37,720.29 | 37,725.52 | 66,372.27 | 66,377.50 |
| | C40-Oppt. Cost 4 | (11,253.60) | (11,248.37) | 31,724.37 | 31,729.60 | 60,376.35 | 60,381.58 |
| | C40-Oppt. Cost 5 | (17,249.51) | (17,244.29) | 25,728.46 | 25,733.68 | 54,380.44 | 54,385.66 |

Source: Calculations

Table 5.31 Sadao Tawai Net Present Values (NPV's) for 30 Year Investment Period

| Discount Rate | Investment Analysis | 50 Baht/Kg | | 80 Baht/Kg | | 100 Baht/Kg | |
|---------------|---------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| | | 200 Baht/Tree | 300 Baht/Tree | 200 Baht/Tree | 300 Baht/Tree | 200 Baht/Tree | 300 Baht/Tree |
| 10% | C30-Norm | 42,512.99 | 42,916.44 | 129,703.01 | 130,106.47 | 187,829.70 | 188,233.15 |
| | C30-Land | (8,858.42) | (8,454.97) | 78,331.61 | 78,735.06 | 136,458.29 | 136,861.74 |
| | C30-Oppt. Cost 1 | 32,143.38 | 32,546.83 | 119,333.41 | 119,736.86 | 177,460.09 | 177,863.55 |
| | C30-Oppt. Cost 2 | 21,773.77 | 22,177.23 | 108,963.80 | 109,367.25 | 167,090.49 | 167,493.94 |
| | C30-Oppt. Cost 3 | 11,404.17 | 11,807.62 | 98,594.20 | 98,997.65 | 156,720.88 | 157,124.33 |
| 12% | C30-Oppt. Cost 4 | 1,034.56 | 1,438.01 | 88,224.59 | 88,628.04 | 146,351.28 | 146,754.73 |
| | C30-Oppt. Cost 5 | (9,335.04) | (8,931.59) | 77,854.98 | 78,258.44 | 135,981.67 | 136,385.12 |
| | C30-Norm | 33,175.96 | 33,415.21 | 106,596.68 | 106,835.93 | 155,543.83 | 155,783.08 |
| | C30-Land | (16,562.90) | (16,323.64) | 56,857.83 | 57,097.08 | 105,804.98 | 106,044.23 |
| | C30-Oppt. Cost 1 | 24,154.15 | 24,393.40 | 97,574.87 | 97,814.13 | 146,522.02 | 146,761.27 |
| 15% | C30-Oppt. Cost 2 | 15,132.34 | 15,371.60 | 88,553.07 | 88,792.32 | 137,500.22 | 137,739.47 |
| | C30-Oppt. Cost 3 | 6,110.54 | 6,349.79 | 79,531.26 | 79,770.51 | 128,478.41 | 128,717.66 |
| | C30-Oppt. Cost 4 | (2,911.27) | (2,672.02) | 70,509.45 | 70,748.71 | 119,456.60 | 119,695.86 |
| | C30-Oppt. Cost 5 | (11,933.07) | (11,693.82) | 61,487.65 | 61,726.90 | 110,434.80 | 110,674.05 |
| | C30-Norm | 23,152.12 | 23,263.28 | 81,661.81 | 81,772.97 | 120,668.27 | 120,779.43 |
| 20% | C30-Land | (24,339.98) | (24,228.82) | 34,169.71 | 34,280.87 | 73,176.17 | 73,287.33 |
| | C30-Oppt. Cost 1 | 15,601.24 | 15,712.40 | 74,110.93 | 74,222.09 | 113,117.39 | 113,228.55 |
| | C30-Oppt. Cost 2 | 8,050.37 | 8,161.52 | 66,560.06 | 66,671.22 | 105,566.52 | 105,677.68 |
| | C30-Oppt. Cost 3 | 499.49 | 610.65 | 59,009.18 | 59,120.34 | 98,015.64 | 98,126.80 |
| | C30-Oppt. Cost 4 | (7,051.39) | (6,940.23) | 51,458.30 | 51,569.46 | 90,464.76 | 90,575.92 |
| 20% | C30-Oppt. Cost 5 | (14,602.26) | (14,491.11) | 43,907.43 | 44,018.59 | 82,913.89 | 83,025.05 |
| | C30-Norm | 12,644.49 | 12,676.84 | 55,399.92 | 55,432.27 | 83,903.54 | 83,935.90 |
| | C30-Land | (31,567.57) | (31,535.22) | 11,187.86 | 11,220.21 | 39,691.48 | 39,723.83 |
| | C30-Oppt. Cost 1 | 6,669.77 | 6,702.12 | 49,425.20 | 49,457.55 | 77,928.82 | 77,961.17 |
| | C30-Oppt. Cost 2 | 695.04 | 727.40 | 43,450.47 | 43,482.83 | 71,954.09 | 71,986.45 |
| 20% | C30-Oppt. Cost 3 | (5,279.68) | (5,247.33) | 37,475.75 | 37,508.10 | 65,979.37 | 66,011.72 |
| | C30-Oppt. Cost 4 | (11,254.41) | (11,222.05) | 31,501.03 | 31,533.38 | 60,004.65 | 60,037.00 |
| | C30-Oppt. Cost 5 | (17,229.13) | (17,196.78) | 25,526.30 | 25,558.66 | 54,029.92 | 54,062.28 |

Source: Calculations

Table 5.32 Sadao Tawai Net Present Values (NPV's) for 20 Year Investment Period

| Discount Rate | Investment Analysis | 50 Baht/Kg | | 80 Baht/Kg | | 100 Baht/Kg | |
|---------------|---------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| | | 200 Baht/Tree | 300 Baht/Tree | 200 Baht/Tree | 300 Baht/Tree | 200 Baht/Tree | 300 Baht/Tree |
| 10% | C20-Norm | 37,068.32 | 38,114.78 | 113,709.15 | 114,755.60 | 164,803.04 | 165,849.49 |
| | C20-Land | (14,303.08) | (13,256.63) | 62,337.74 | 63,384.19 | 113,431.63 | 114,478.08 |
| | C20-Oppt. Cost 1 | 27,703.40 | 28,749.86 | 104,344.23 | 105,390.68 | 155,438.12 | 156,484.57 |
| | C20-Oppt. Cost 2 | 18,338.48 | 19,384.93 | 94,979.31 | 96,025.76 | 146,073.20 | 147,119.65 |
| | C20-Oppt. Cost 3 | 8,973.56 | 10,020.01 | 85,614.39 | 86,660.84 | 136,708.28 | 137,754.73 |
| 12% | C20-Oppt. Cost 4 | (391.36) | 655.09 | 76,249.47 | 77,295.92 | 127,343.36 | 128,389.81 |
| | C20-Oppt. Cost 5 | (9,756.28) | (8,709.83) | 66,884.55 | 67,931.00 | 117,978.44 | 119,024.89 |
| | C20-Norm | 29,802.16 | 30,545.24 | 96,334.57 | 97,077.66 | 140,689.52 | 141,432.60 |
| | C20-Land | (19,936.69) | (19,193.61) | 46,595.72 | 47,338.81 | 90,950.67 | 91,693.75 |
| | C20-Oppt. Cost 1 | 21,436.38 | 22,179.47 | 87,968.80 | 88,711.88 | 132,323.74 | 133,066.83 |
| 15% | C20-Oppt. Cost 2 | 13,070.60 | 13,813.69 | 79,603.02 | 80,346.10 | 123,957.97 | 124,701.05 |
| | C20-Oppt. Cost 3 | 4,704.83 | 5,447.91 | 71,237.24 | 71,980.33 | 115,592.19 | 116,335.27 |
| | C20-Oppt. Cost 4 | (3,660.95) | (2,917.87) | 62,871.47 | 63,614.55 | 107,226.41 | 107,969.50 |
| | C20-Oppt. Cost 5 | (12,026.73) | (11,283.64) | 54,505.69 | 55,248.77 | 98,860.63 | 99,603.72 |
| | C20-Norm | 21,484.73 | 21,934.43 | 76,291.65 | 76,741.35 | 112,829.59 | 113,279.29 |
| 20% | C20-Land | (26,007.37) | (25,557.67) | 28,799.55 | 29,249.25 | 65,337.49 | 65,787.19 |
| | C20-Oppt. Cost 1 | 14,286.50 | 14,736.20 | 69,093.42 | 69,543.11 | 105,631.36 | 106,081.06 |
| | C20-Oppt. Cost 2 | 7,088.27 | 7,537.97 | 61,895.18 | 62,344.88 | 98,433.13 | 98,882.83 |
| | C20-Oppt. Cost 3 | (109.96) | 339.74 | 54,696.95 | 55,146.65 | 91,234.90 | 91,684.59 |
| | C20-Oppt. Cost 4 | (7,308.19) | (6,858.49) | 47,498.72 | 47,948.42 | 84,036.67 | 84,486.36 |
| 20% | C20-Oppt. Cost 5 | (14,506.42) | (14,056.73) | 40,300.49 | 40,750.19 | 76,838.43 | 77,288.13 |
| | C20-Norm | 12,114.56 | 12,314.89 | 53,492.10 | 53,692.42 | 81,077.12 | 81,277.45 |
| | C20-Land | (32,097.50) | (31,897.18) | 9,280.04 | 9,480.36 | 36,865.06 | 37,065.39 |
| | C20-Oppt. Cost 1 | 6,271.06 | 6,471.39 | 47,648.60 | 47,848.93 | 75,233.63 | 75,433.95 |
| | C20-Oppt. Cost 2 | 427.57 | 627.89 | 41,805.11 | 42,005.43 | 69,390.13 | 69,590.46 |
| 20% | C20-Oppt. Cost 3 | (5,415.93) | (5,215.60) | 35,961.61 | 36,161.94 | 63,546.64 | 63,746.96 |
| | C20-Oppt. Cost 4 | (11,259.42) | (11,059.10) | 30,118.12 | 30,318.44 | 57,703.14 | 57,903.47 |
| | C20-Oppt. Cost 5 | (17,102.92) | (16,902.59) | 24,274.62 | 24,474.95 | 51,859.64 | 52,059.97 |

Source: Calculations

Table 5.33 Sadao Tawai Net Present Values (NPV's) for 15 Year Investment Period

| Discount Rate | Investment Analysis | 50 Baht/Kg | | | 80 Baht/Kg | | | 100 Baht/Kg | | |
|---------------|---------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|--|
| | | 200 Baht/Tree | 300 Baht/Tree | 300 Baht/Tree | 200 Baht/Tree | 300 Baht/Tree | 300 Baht/Tree | 200 Baht/Tree | 300 Baht/Tree | |
| 10% | C15-Norm | 31,484.66 | 33,169.98 | 97,644.05 | 99,329.37 | 141,750.30 | 143,435.62 | 90,378.90 | 92,064.22 | |
| | C15-Land | (19,886.74) | (18,201.42) | 46,272.64 | 47,957.96 | 133,383.62 | 135,068.94 | 90,378.90 | 92,064.22 | |
| | C15-Oppt. Cost 1 | 23,117.98 | 24,803.30 | 89,277.36 | 90,962.68 | 125,016.93 | 126,702.25 | 90,378.90 | 92,064.22 | |
| | C15-Oppt. Cost 2 | 14,751.29 | 16,436.61 | 80,910.67 | 82,595.99 | 116,650.24 | 118,335.56 | 90,378.90 | 92,064.22 | |
| | C15-Oppt. Cost 3 | 6,384.60 | 8,069.92 | 72,543.99 | 74,229.31 | 108,283.55 | 109,968.87 | 90,378.90 | 92,064.22 | |
| 12% | C15-Oppt. Cost 4 | (1,982.09) | (296.77) | 64,177.30 | 65,862.62 | 99,916.87 | 101,602.19 | 90,378.90 | 92,064.22 | |
| | C15-Oppt. Cost 5 | (10,348.77) | (8,663.45) | 55,810.61 | 57,495.93 | 123,851.67 | 125,536.99 | 90,378.90 | 92,064.22 | |
| | C15-Norm | 25,872.46 | 27,182.03 | 84,659.99 | 85,969.55 | 123,851.67 | 125,536.99 | 90,378.90 | 92,064.22 | |
| | C15-Land | (23,866.39) | (22,556.82) | 34,921.14 | 36,230.70 | 74,112.82 | 75,422.39 | 90,378.90 | 92,064.22 | |
| | C15-Oppt. Cost 1 | 18,244.29 | 19,553.86 | 77,031.82 | 78,341.39 | 116,223.50 | 117,533.07 | 90,378.90 | 92,064.22 | |
| 15% | C15-Oppt. Cost 2 | 10,616.13 | 11,925.69 | 69,403.65 | 70,713.22 | 108,595.33 | 109,904.90 | 90,378.90 | 92,064.22 | |
| | C15-Oppt. Cost 3 | 2,987.96 | 4,297.52 | 61,775.48 | 63,085.05 | 100,967.17 | 102,276.73 | 90,378.90 | 92,064.22 | |
| | C15-Oppt. Cost 4 | (4,640.21) | (3,330.64) | 54,147.31 | 55,456.88 | 93,339.00 | 94,648.57 | 90,378.90 | 92,064.22 | |
| | C15-Oppt. Cost 5 | (12,268.38) | (10,958.81) | 46,519.15 | 47,828.71 | 85,710.83 | 87,020.40 | 90,378.90 | 92,064.22 | |
| | C15-Norm | 19,149.58 | 20,054.08 | 68,982.06 | 69,886.56 | 102,203.71 | 103,108.21 | 90,378.90 | 92,064.22 | |
| 20% | C15-Land | (28,342.52) | (27,438.02) | 21,489.96 | 22,394.46 | 54,711.61 | 55,616.11 | 90,378.90 | 92,064.22 | |
| | C15-Oppt. Cost 1 | 12,425.10 | 13,329.60 | 62,257.58 | 63,162.08 | 95,479.24 | 96,383.74 | 90,378.90 | 92,064.22 | |
| | C15-Oppt. Cost 2 | 5,700.62 | 6,605.13 | 55,533.11 | 56,437.61 | 88,754.76 | 89,659.26 | 90,378.90 | 92,064.22 | |
| | C15-Oppt. Cost 3 | (1,023.85) | (119.35) | 48,808.63 | 49,713.13 | 82,030.28 | 82,934.79 | 90,378.90 | 92,064.22 | |
| | C15-Oppt. Cost 4 | (7,748.33) | (6,843.82) | 42,084.15 | 42,988.66 | 75,305.81 | 76,210.31 | 90,378.90 | 92,064.22 | |
| 20% | C15-Oppt. Cost 5 | (14,472.80) | (13,568.30) | 35,359.68 | 36,264.18 | 68,581.33 | 69,485.84 | 90,378.90 | 92,064.22 | |
| | C15-Norm | 11,120.99 | 11,619.46 | 50,052.78 | 50,551.25 | 76,007.30 | 76,505.78 | 90,378.90 | 92,064.22 | |
| | C15-Land | (33,091.07) | (32,592.60) | 5,840.71 | 6,339.19 | 31,795.24 | 32,293.71 | 90,378.90 | 92,064.22 | |
| | C15-Oppt. Cost 1 | 5,510.42 | 6,008.89 | 44,442.21 | 44,940.68 | 70,396.73 | 70,895.21 | 90,378.90 | 92,064.22 | |
| | C15-Oppt. Cost 2 | (100.15) | 398.33 | 38,831.64 | 39,330.12 | 64,786.17 | 65,284.64 | 90,378.90 | 92,064.22 | |
| 20% | C15-Oppt. Cost 3 | (5,710.71) | (5,212.24) | 33,221.07 | 33,719.55 | 59,175.60 | 59,674.07 | 90,378.90 | 92,064.22 | |
| | C15-Oppt. Cost 4 | (11,321.28) | (10,822.81) | 27,610.51 | 28,108.98 | 53,565.03 | 54,063.51 | 90,378.90 | 92,064.22 | |
| | C15-Oppt. Cost 5 | (16,931.85) | (16,433.37) | 21,999.94 | 22,498.41 | 47,954.47 | 48,452.94 | 90,378.90 | 92,064.22 | |

Source: Calculations

5.2.4 Sadao Tawai Optimum Investment Lengths

Tables 5.34 to 5.40 summarize the results of the Sadao Tawai NPV tables in the same way as the Sadao Thai Optimum Investment tables did. The tables overwhelmingly point out that the optimum Sadao Tawai investment length for every investment type and price combination is forty years. All viable investment scenarios had the highest net present values at the forty-year investment length.

These tables also show that at the 80 and 100 Baht/Kg neem flower price level all of the different investment scenarios were viable. At the 50 Baht/Kg price level, a more moderate pattern is expressed with all normal investments, and investments including the 1,000 and 2,000 baht opportunity cost being viable. However, investments including the 50,000 baht land purchase were not viable at this price level, nor were investments that included the 5,000 baht opportunity cost. Investments that included the 3,000 baht opportunity cost were viable at every discount rate except for 20%, while investments including the 4,000 baht opportunity cost were only viable at the 10% discount rate.

Table 5.34 Optimal Investment Periods at Varying Discount Rates for Normal Sadao Tawai Investments

| Discount Rate | 50 Baht/Kg | | 80 Baht/Kg | | 100 Baht/Kg | |
|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| | 200 Baht/Tree | 300 Baht/Tree | 200 Baht/Tree | 300 Baht/Tree | 200 Baht/Tree | 300 Baht/Tree |
| 10% | 40 Year | 40 Year | 40 Year | 40 Year | 40 Year | 40 Year |
| 12% | 40 Year | 40 Year | 40 Year | 40 Year | 40 Year | 40 Year |
| 15% | 40 Year | 40 Year | 40 Year | 40 Year | 40 Year | 40 Year |
| 20% | 40 Year | 40 Year | 40 Year | 40 Year | 40 Year | 40 Year |

Source: Calculations

Table 5.35 Optimal Investment Periods at Varying Discount Rates for Sadao Tawai Investments Including Land Purchase

| Discount Rate | 50 Baht/Kg | | 80 Baht/Kg | | 100 Baht/Kg | |
|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| | 200 Baht/Tree | 300 Baht/Tree | 200 Baht/Tree | 300 Baht/Tree | 200 Baht/Tree | 300 Baht/Tree |
| 10% | 0 Year | 0 Year | 40 Year | 40 Year | 40 Year | 40 Year |
| 12% | 0 Year | 0 Year | 40 Year | 40 Year | 40 Year | 40 Year |
| 15% | 0 Year | 0 Year | 40 Year | 40 Year | 40 Year | 40 Year |
| 20% | 0 Year | 0 Year | 40 Year | 40 Year | 40 Year | 40 Year |

Source: Calculations

Table 5.36 Optimal Investment Periods at Varying Discount Rates for Sadao Tawai Investments Including 1,000 Baht Opportunity Cost

| Discount Rate | 50 Baht/Kg | | 80 Baht/Kg | | 100 Baht/Kg | |
|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| | 200 Baht/Tree | 300 Baht/Tree | 200 Baht/Tree | 300 Baht/Tree | 200 Baht/Tree | 300 Baht/Tree |
| 10% | 40 Year | 40 Year | 40 Year | 40 Year | 40 Year | 40 Year |
| 12% | 40 Year | 40 Year | 40 Year | 40 Year | 40 Year | 40 Year |
| 15% | 40 Year | 40 Year | 40 Year | 40 Year | 40 Year | 40 Year |
| 20% | 40 Year | 40 Year | 40 Year | 40 Year | 40 Year | 40 Year |

Source: Calculations

Table 5.37 Optimal Investment Periods at Varying Discount Rates for Sadao Tawai Investments Including 2,000 Baht Opportunity Cost

| Discount Rate | 50 Baht/Kg | | 80 Baht/Kg | | 100 Baht/Kg | |
|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| | 200 Baht/Tree | 300 Baht/Tree | 200 Baht/Tree | 300 Baht/Tree | 200 Baht/Tree | 300 Baht/Tree |
| 10% | 40 Year | 40 Year | 40 Year | 40 Year | 40 Year | 40 Year |
| 12% | 40 Year | 40 Year | 40 Year | 40 Year | 40 Year | 40 Year |
| 15% | 40 Year | 40 Year | 40 Year | 40 Year | 40 Year | 40 Year |
| 20% | 40 Year | 40 Year | 40 Year | 40 Year | 40 Year | 40 Year |

Source: Calculations

| Discount Rate | 50 Baht/Kg | | 80 Baht/Kg | | 100 Baht/Kg | |
|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| | 200 Baht/Tree | 300 Baht/Tree | 200 Baht/Tree | 300 Baht/Tree | 200 Baht/Tree | 300 Baht/Tree |
| 10% | 40 Year | 40 Year | 40 Year | 40 Year | 40 Year | 40 Year |
| 12% | 40 Year | 40 Year | 40 Year | 40 Year | 40 Year | 40 Year |
| 15% | 40 Year | 40 Year | 40 Year | 40 Year | 40 Year | 40 Year |
| 20% | 0 Year | 0 Year | 40 Year | 40 Year | 40 Year | 40 Year |

Source: Calculations

Table 5.39 Optimal Investment Periods at Varying Discount Rates for Sadao Tawai Investments Including 4,000 Baht Opportunity Cost

| Discount Rate | 50 Baht/Kg | | 80 Baht/Kg | | 100 Baht/Kg | |
|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| | 200 Baht/Tree | 300 Baht/Tree | 200 Baht/Tree | 300 Baht/Tree | 200 Baht/Tree | 300 Baht/Tree |
| 10% | 40 Year | 40 Year | 40 Year | 40 Year | 40 Year | 40 Year |
| 12% | 0 Year | 0 Year | 40 Year | 40 Year | 40 Year | 40 Year |
| 15% | 0 Year | 0 Year | 40 Year | 40 Year | 40 Year | 40 Year |
| 20% | 0 Year | 0 Year | 40 Year | 40 Year | 40 Year | 40 Year |

Source: Calculations

Table 5.40 Optimal Investment Periods at Varying Discount Rates for Sadao Tawai Investments Including 5,000 Baht Opportunity Cost

| Discount Rate | 50 Baht/Kg | | 80 Baht/Kg | | 100 Baht/Kg | |
|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| | 200 Baht/Tree | 300 Baht/Tree | 200 Baht/Tree | 300 Baht/Tree | 200 Baht/Tree | 300 Baht/Tree |
| 10% | 0 Year | 0 Year | 40 Year | 40 Year | 40 Year | 40 Year |
| 12% | 0 Year | 0 Year | 40 Year | 40 Year | 40 Year | 40 Year |
| 15% | 0 Year | 0 Year | 40 Year | 40 Year | 40 Year | 40 Year |
| 20% | 0 Year | 0 Year | 40 Year | 40 Year | 40 Year | 40 Year |

Source: Calculations

5.2.5 Sadao Tawai Sensitivity Analysis Results

Only one external sensitivity analysis was conducted for the Sadao Tawai investments, which was the inclusion of a 10% inflation hedge. The complete results of this sensitivity analysis are provided in Appendix G. The following details the trends observed from the Sadao Tawai sensitivity analysis.

5.2.5.1 Sadao Tawai IRR and NPV Sensitivity to the Inclusion of a 10% Inflation Hedge

The Sadao Tawai IRR's were found to be more sensitive to the inclusion of the 10% inflation hedge than were the Sadao Thai IRR's. Figures 5.25 through 5.28 graphically present the Sadao Tawai IRR sensitivity results. Investment length did not significantly effect IRR sensitivity. However, the neem flower price level did influence the degree of IRR sensitivity to the inflation hedge. Investment scenarios with flower price levels set at 50 Baht/Kg saw a 6.554 to 6.739 percent IRR decrease with the inclusion of the inflation hedge. Investment scenarios that had flower prices set at 80 Baht/Kg saw a 8.87 to 8.89 percent decrease, while investment scenarios that had flower prices set at 100 Baht/Kg saw a 10.772 to a 10.778 percentage point decrease in IRR value.

The Sadao Tawai NPV sensitivity results are depicted in figures 5.29 through 5.32. These results mimicked those of the Sadao Thai NPV sensitivity results, in regards to the inclusion of the 10% inflation hedge, by showing the same two major trends. First, investments with longer lengths were more IRR sensitive than the same investments with shorter lengths. Second, The rate of sensitivity only differed between the different investment lengths and was not influenced by the various flower-wood price combinations. For normal investments (discounted at 10%), the NPV difference between investments that did not include the inflation hedge and those that did was 10,779.43 Baht for 40 year investments, 10,361.06 Baht for 30 year investments, 9,275.93 Baht for 20 year investments, and 8,215.16 for 15 year investments.

Sadao Tawai IRR Sensitivity to an Inclusion of a 10% Inflation Hedge

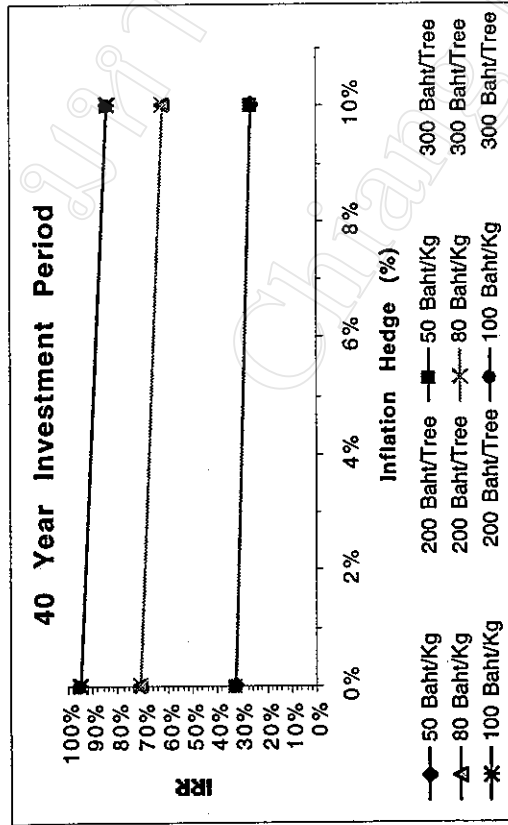


Figure 5.25 Sadao Tawai NPV Sensitivity to a 10% Inflation Hedge – 40 Year Investment

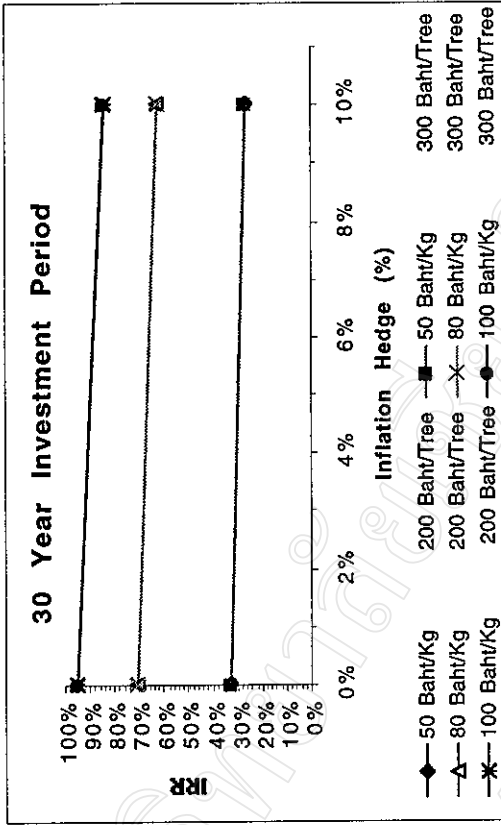


Figure 5.26 Sadao Tawai NPV Sensitivity to a 10% Inflation Hedge – 30 Year Investment

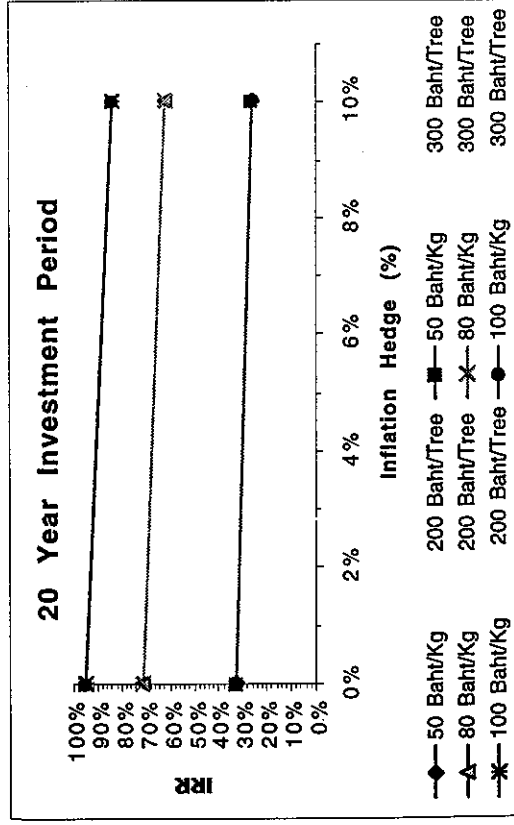


Figure 5.27 Sadao Tawai NPV Sensitivity to a 10% Inflation Hedge – 20 Year Investment

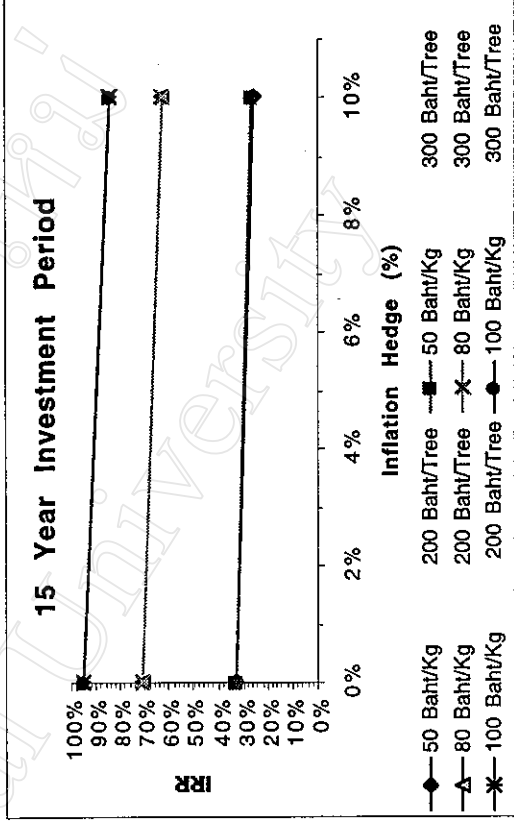


Figure 5.28 Sadao Tawai NPV Sensitivity to a 10% Inflation Hedge – 15 Year Investment

Sadao Tawai NPV (Discounted at 10%) Sensitivity to an Inclusion of a 10% Inflation Hedge

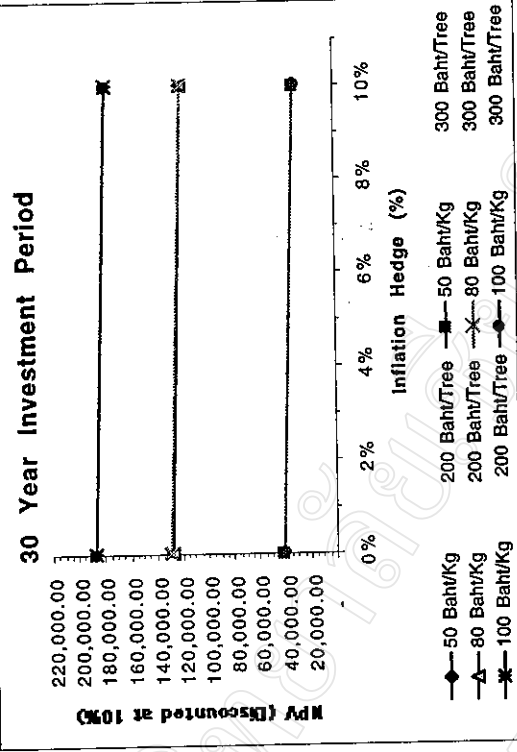


Figure 5.30 Sadao Tawai NPV Sensitivity to 10% Inflation Hedge – 30 Year Investment

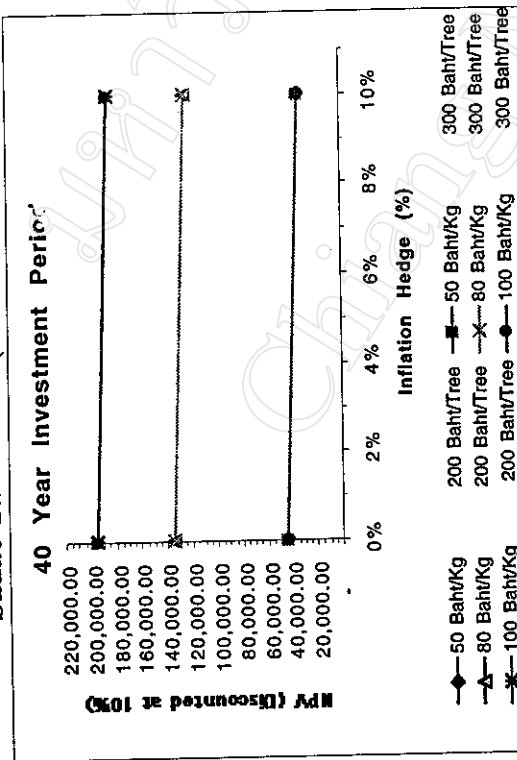


Figure 5.29 Sadao Tawai NPV Sensitivity to 10% Inflation Hedge – 40 Year Investment

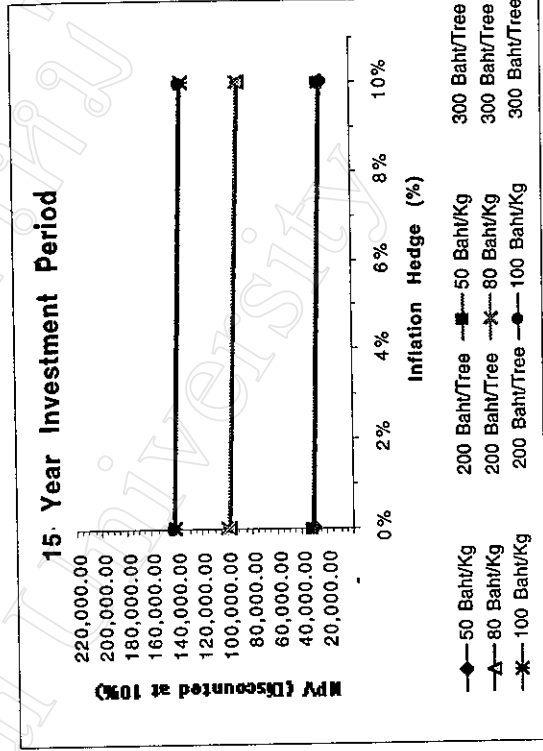


Figure 5.32 Sadao Tawai NPV Sensitivity to 10% Inflation Hedge – 15 Year Investment

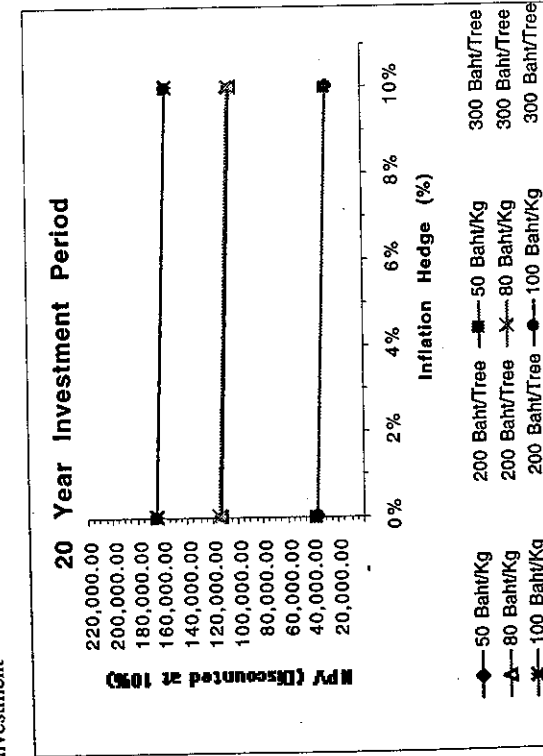


Figure 5.31 Sadao Tawai NPV Sensitivity to 10% Inflation Hedge – 20 Year Investment

5.2.5.2 Overall Sadao Tawai Investment Viability Sensitivity

The overall viability of the Sadao Tawai investment scenarios for both the standard analysis and for the analysis including the 10% inflation hedge are presented in Table 5.41. The standard analysis saw an overall viability of 85.7% or 144 viable scenarios out of 168 total scenarios. Showing only minor sensitivity to the inclusion of the 10% inflation hedge, the number of viable Sadao Tawai scenarios found after running the external sensitivity analysis dropped by 8 to 136 viable scenarios translating into an overall viability of 81.0 percent.

Table 5.41 Number of Viable Sadao Tawai Investments Scenarios

| Investment Type | Standard | | External Sensitivity Analysis' | |
|---------------------|-----------------------|--------------|--------------------------------|--------------|
| | | | 10% Inflation Hedge | |
| | # of Viable Scenarios | % Viable | # of Viable Scenarios | % Viable |
| Norm | 24 | 100.0% | 24 | 100.0% |
| Land Purchase | 16 | 66.7% | 16 | 66.7% |
| Opportunity Cost #1 | 24 | 100.0% | 24 | 100.0% |
| Opportunity Cost #2 | 24 | 100.0% | 22 | 91.7% |
| Opportunity Cost #3 | 22 | 91.7% | 18 | 75.0% |
| Opportunity Cost #4 | 18 | 75.0% | 16 | 66.7% |
| Opportunity Cost #5 | 16 | 66.7% | 16 | 66.7% |
| Total | 144 | 85.7% | 136 | 81.0% |

Source: Calculations

Note: 1) Total number of scenarios per investment type = 24

2) Total number of scenarios = 168

5.3 Investment Comparisons

The following comparisons of the investment potential between the Sadao Thai and the Sadao Tawai investments is conducted in a straight forward manner by comparing their IRR's, B/C Ratio's, and NPV's. Each investment's IRR's, B/C Ratio's, and NPV's are only compared with its counterpart for the same investment length.

A difficulty does arise, however, in comparing the two investment types. Because the Sadao Thai investment type is composed of three wood price combinations while the Sadao Tawai is only composed of two wood price combinations, a direct comparison cannot be drawn. As a result, the following analysis will focus more on the seed and flower, price levels.

5.3.1 IRR Comparison Results

It is clear from Figures 5.33 to 5.36 that the Sadao Tawai IRR's clearly dominate those of the Sadao Thai investments at every seed and flower, price level. In fact, there is at least a 50 percent difference between the highest seed and flower price levels at every investment length. For example, for the 40 year investment period the Sadao Tawai's 100 Baht/Kg – 300 Baht/Tree price combination registered an IRR of 95.440% while the Sadao Thai's IRR at the 15 Baht/Kg – 10,000 Baht/m³ was only 40.593%.

Internal Rate of Return (IRR) Comparisons

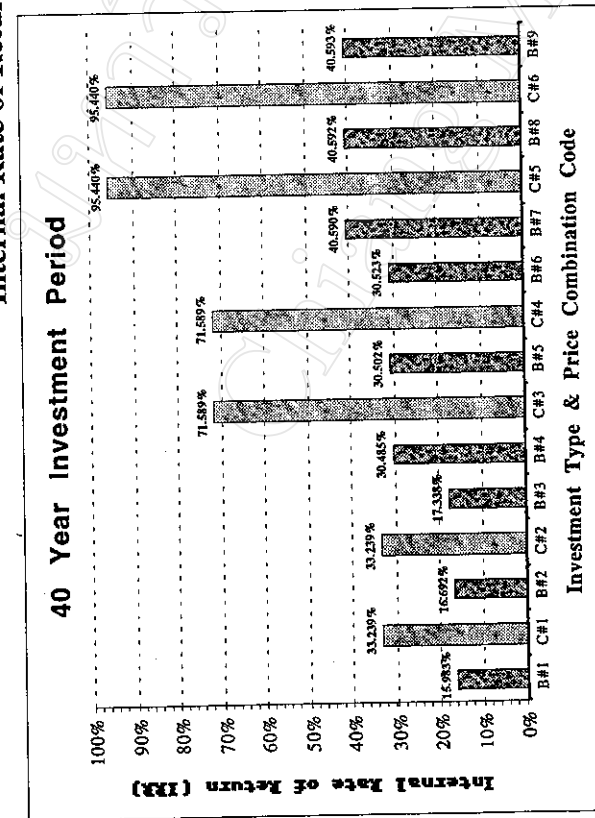
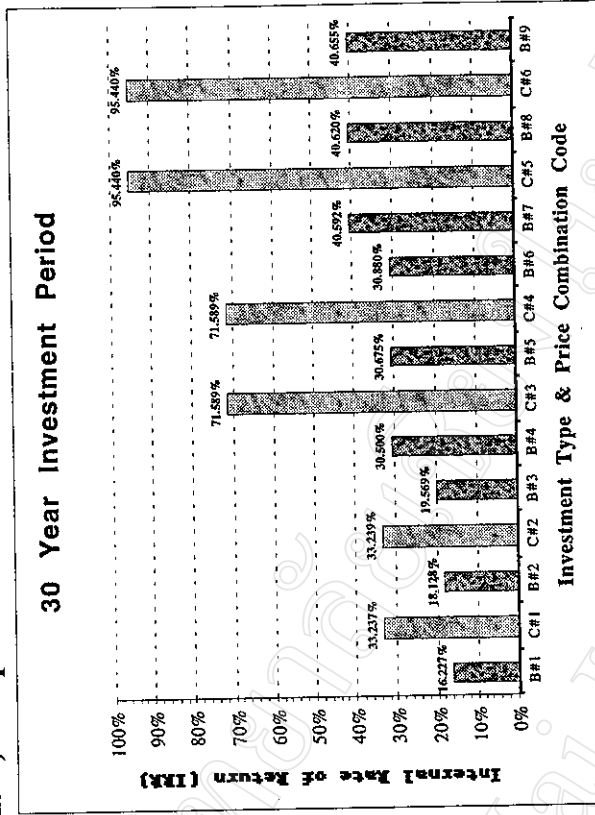


Figure 5.34 Sadao That a Sadao Tawai IRR Comparisons - 30 Year Investment Period

Figure 5.33 Sadao That a Sadao Tawai IRR Comparisons - 40 Year Investment Period

Graph Legend

| Investment Type & Price Combination Code | Sadao That Investments (Norm) | | Sadao Tawai Investments (Norm) | |
|--|-------------------------------|-----------------------------------|--------------------------------|------------------------|
| | Seed Price (Baht/Kg) | Wood Price (Baht/m ³) | Flower Price (Baht/Kg) | Wood Price (Baht/Tree) |
| B#1 | 5.00 | 1,000.00 | 50.00 | 200.00 |
| B#2 | 5.00 | 5,000.00 | 50.00 | 300.00 |
| B#3 | 5.00 | 10,000.00 | 80.00 | 200.00 |
| B#4 | 10.00 | 1,000.00 | 80.00 | 300.00 |
| B#5 | 10.00 | 5,000.00 | 100.00 | 200.00 |
| B#6 | 10.00 | 10,000.00 | 100.00 | 300.00 |
| B#7 | 15.00 | 1,000.00 | | |
| B#8 | 15.00 | 5,000.00 | | |
| B#9 | 15.00 | 10,000.00 | | |

Internal Rate of Return (IRR) Comparisons

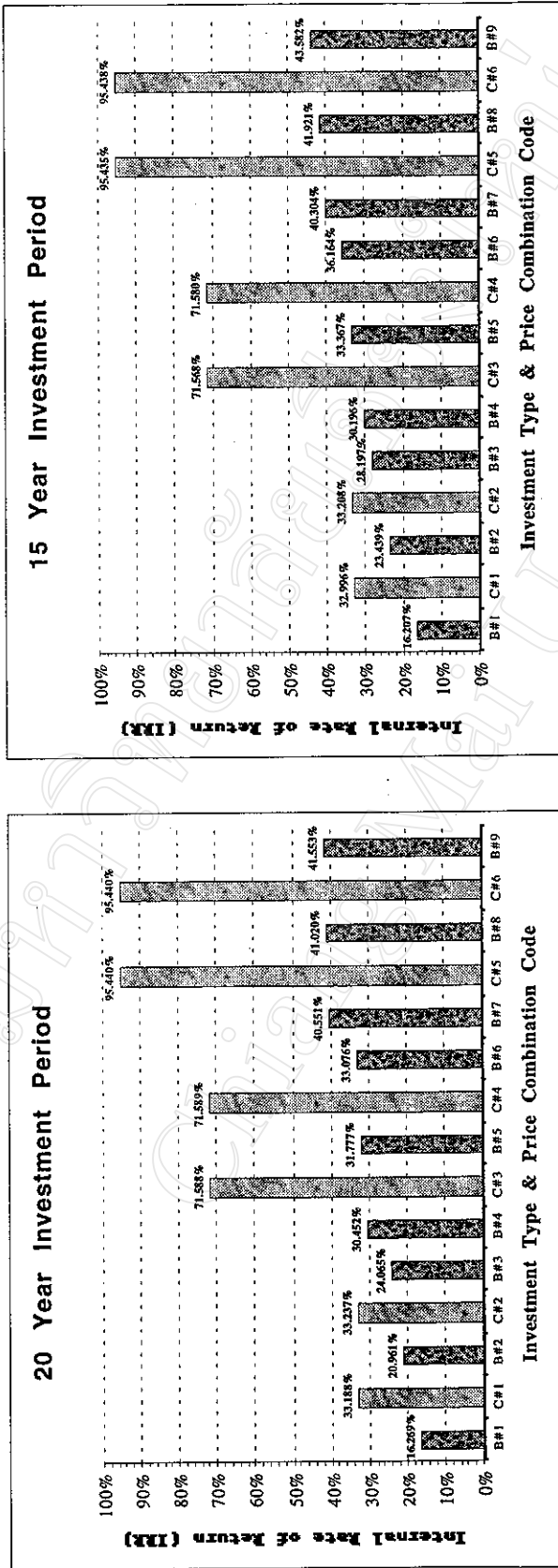


Figure 5.35 Sadao Thai a Sadao Tawai IRR Comparisons – 20 Year Investment Period

Figure 5.36 Sadao Thai a Sadao Tawai IRR Comparisons – 15 Year Investment Period

Graph Legend

| Investment Type & Price Combination Code | Sadao Thai Investments (Norm) | | Sadao Tawai Investments (Norm) | |
|--|-------------------------------|-----------------------------------|--------------------------------|------------------------|
| | Seed Price (Baht/Kg) | Wood Price (Baht/m ³) | Flower Price (Baht/Kg) | Wood Price (Baht/Tree) |
| B#1 | 5.00 | 1,000.00 | 50.00 | 200.00 |
| B#2 | 5.00 | 5,000.00 | 50.00 | 300.00 |
| B#3 | 5.00 | 10,000.00 | 80.00 | 200.00 |
| B#4 | 10.00 | 1,000.00 | 80.00 | 300.00 |
| B#5 | 10.00 | 5,000.00 | 100.00 | 200.00 |
| B#6 | 10.00 | 10,000.00 | 100.00 | 300.00 |
| B#7 | 15.00 | 1,000.00 | | |
| B#8 | 15.00 | 5,000.00 | | |
| B#9 | 15.00 | 10,000.00 | | |

5.3.2 B/C Ratio Comparison Results

Figures 5.37 through 5.40 show that when the B/C ratio is discounted at 10% the Sadao Thai investments out perform the Sadao Tawai investments. Nevertheless, when the B/C ratio is discounted at 20%, the results are much closer and neither investment type surpasses the other in each time period. Please see Figures 5.41 through 5.44.

These results conflict with both the IRR results and the following NPV results. The reason for this being is that the slopes of the Sadao Thai and Sadao Tawai B/C ratio curves are very different (Figure 5.45). The Sadao Thai B/C ratio curves show rather steep slopes, while the Sadao Tawai curves are rather shallow. Due to this, the Sadao Thai investments show higher B/C ratios at lower discount rates, but at higher discount rates the Sadao Thai B/C ratios drop off below 1 while the Sadao Tawai investments show viable B/C ratios out over the 75% discount rate.

Because the slopes of each of these two investment types differ widely, the B/C ratio cannot be used in this case to determine which of these mutually exclusive investments should be chosen. However, as is shown by Figure 5.46, the slopes of the Sadao Thai and Sadao Tawai NPV curves are much more in line with each other. Therefore, the NPV results can be used to properly determine which of these two mutually exclusive projects has the greatest financial potential and should be chosen.

Benefit / Cost (B/C) Ratio Comparisons (Discounted at 10%)

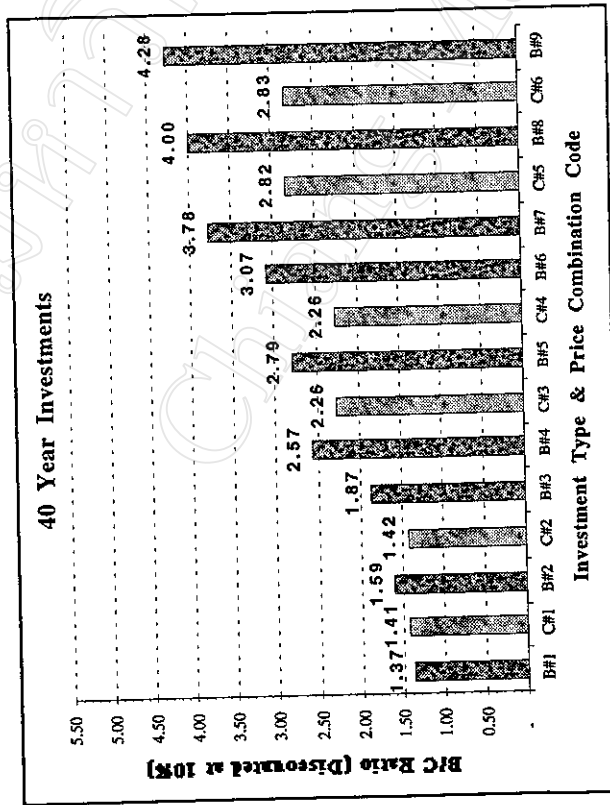


Figure 5.37 Sadao Thai and Sadao Tawai B/C Ratio Comparisons - 40 Year Investment Period

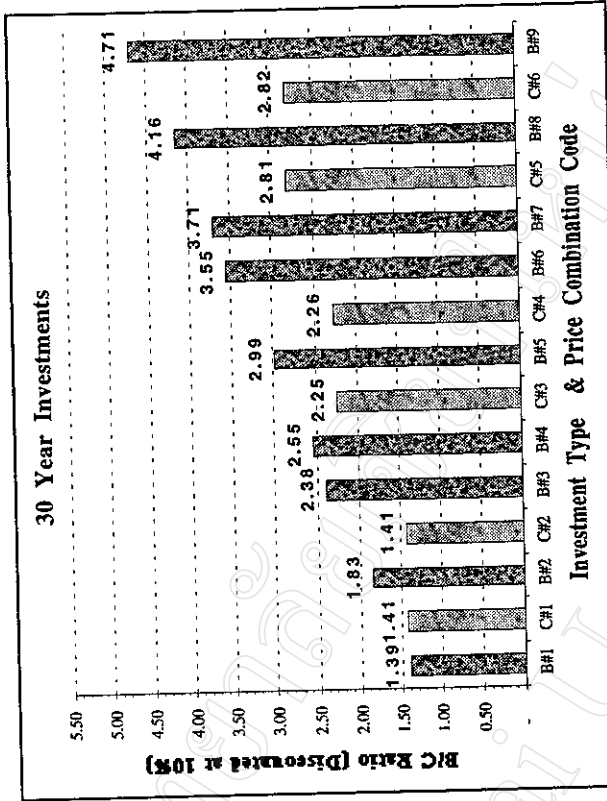


Figure 5.38 Sadao Thai and Sadao Tawai B/C Ratio Comparisons - 30 Year Investment Period

Graph Legend

| Investment Type & Price Combination Code | Sadao Thai Investments (Norm) | | Sadao Tawai Investments (Norm) | |
|--|-------------------------------|-----------------------------------|--------------------------------|------------------------|
| | Seed Price (Baht/Kg) | Wood Price (Baht/m ³) | Flower Price (Baht/Kg) | Wood Price (Baht/Tree) |
| B#1 | 5.00 | 1,000.00 | 50.00 | 200.00 |
| B#2 | 5.00 | 5,000.00 | 50.00 | 300.00 |
| B#3 | 5.00 | 10,000.00 | 80.00 | 200.00 |
| B#4 | 10.00 | 1,000.00 | 80.00 | 300.00 |
| B#5 | 10.00 | 5,000.00 | 100.00 | 200.00 |
| B#6 | 10.00 | 10,000.00 | 100.00 | 300.00 |
| B#7 | 15.00 | 1,000.00 | | |
| B#8 | 15.00 | 5,000.00 | | |
| B#9 | 15.00 | 10,000.00 | | |

Benefit / Cost (B/C) Ratio Comparisons (Discounted at 10%)

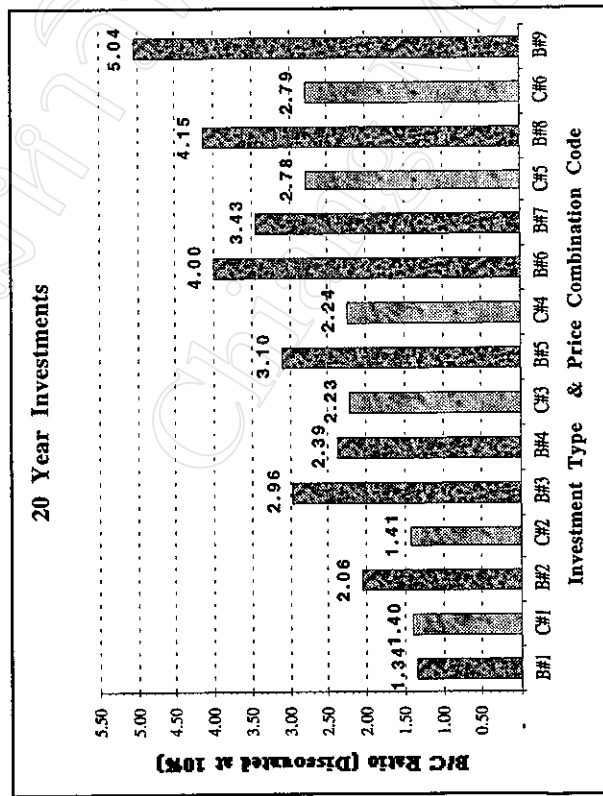


Figure 5.39 Sadao Thai and Sadao Tawai B/C Ratio Comparisons – 20 Year Investment Period

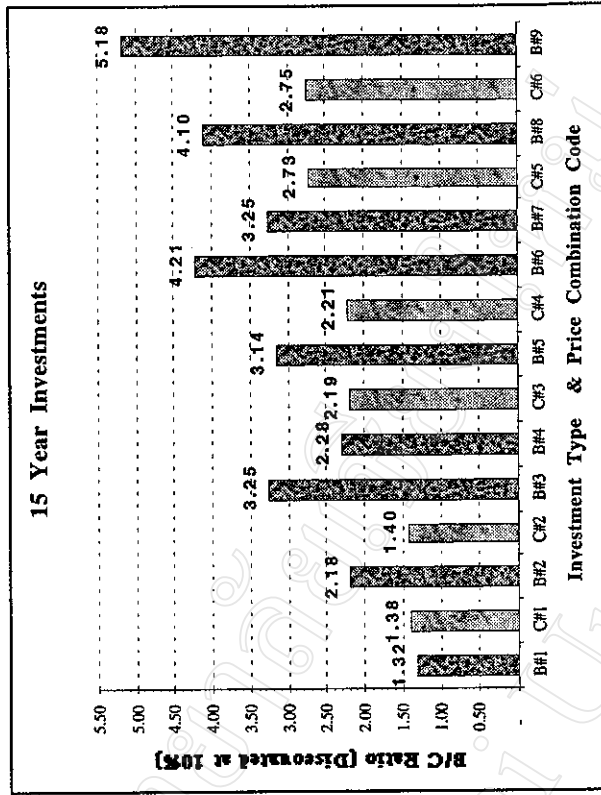


Figure 5.40 Sadao Thai and Sadao Tawai B/C Ratio Comparisons – 15 Year Investment Period

Graph Legend

| Investment Type & Price Combination Code | Sadao Thai Investments (Norm) | | Sadao Tawai Investments (Norm) | |
|--|-------------------------------|-----------------------------------|--------------------------------|------------------------|
| | Seed Price (Baht/Kg) | Wood Price (Baht/m ³) | Flower Price (Baht/Kg) | Wood Price (Baht/Tree) |
| B#1 | 5.00 | 1,000.00 | 50.00 | 300.00 |
| B#2 | 5.00 | 5,000.00 | 50.00 | 300.00 |
| B#3 | 5.00 | 10,000.00 | 80.00 | 200.00 |
| B#4 | 10.00 | 1,000.00 | 80.00 | 300.00 |
| B#5 | 10.00 | 5,000.00 | 100.00 | 200.00 |
| B#6 | 10.00 | 10,000.00 | 100.00 | 300.00 |
| B#7 | 15.00 | 1,000.00 | | |
| B#8 | 15.00 | 5,000.00 | | |
| B#9 | 15.00 | 10,000.00 | | |

Benefit / Cost (B/C) Ratio Comparisons (Discounted at 20%)

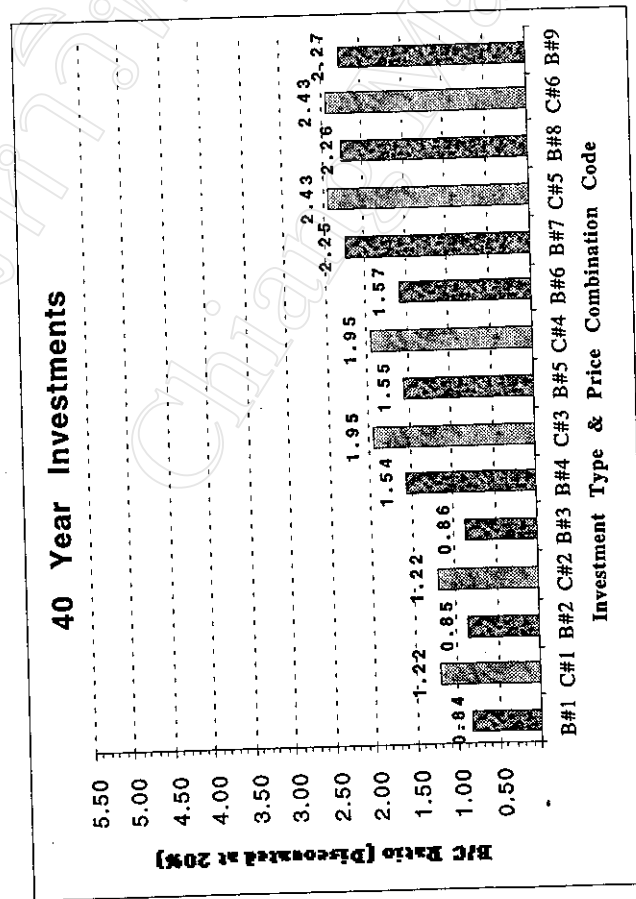
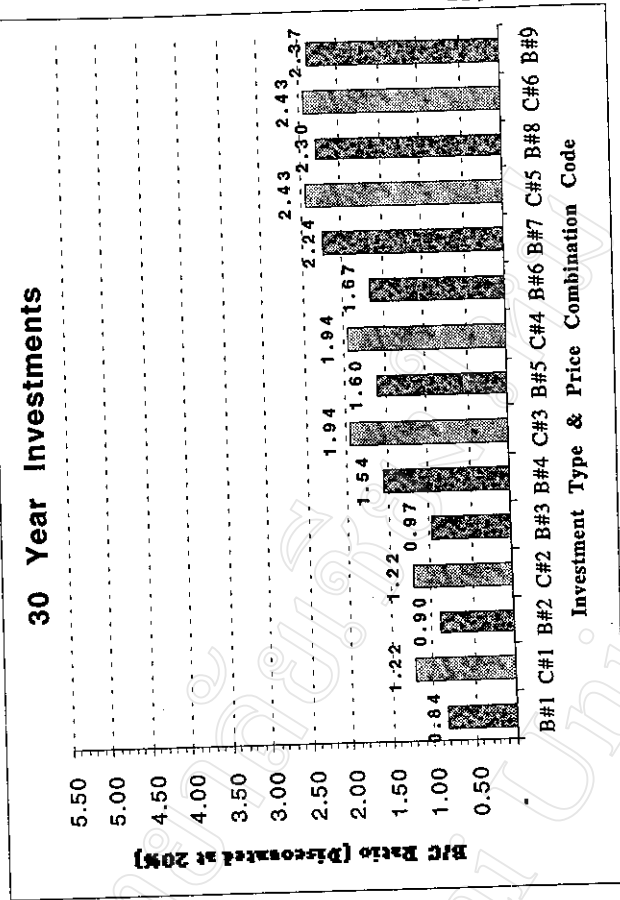


Figure 5.42 B/C Ratio Comparisons (Discounted at 20%) – 30 Year Investment Period

Figure 5.41 B/C Ratio Comparisons (Discounted at 20%) – 40 Year Investment Period

Graph Legend

| Investment Type & Price Combination Code | Sadao Thal Investments (Norm) | | Sadao Tawal Investments (Norm) | |
|--|-------------------------------|-----------------------------------|--------------------------------|------------------------|
| | Seed Price (Baht/Kg) | Wood Price (Baht/m ³) | Flower Price (Baht/Kg) | Wood Price (Baht/Tree) |
| B#1 | 5.00 | 1,000.00 | 50.00 | 200.00 |
| B#2 | 5.00 | 5,000.00 | 50.00 | 300.00 |
| B#3 | 5.00 | 10,000.00 | 80.00 | 200.00 |
| B#4 | 10.00 | 1,000.00 | 80.00 | 300.00 |
| B#5 | 10.00 | 5,000.00 | 100.00 | 200.00 |
| B#6 | 10.00 | 10,000.00 | 100.00 | 300.00 |
| B#7 | 15.00 | 1,000.00 | | |
| B#8 | 15.00 | 5,000.00 | | |
| B#9 | 15.00 | 10,000.00 | | |

Benefit / Cost (B/C) Ratio Comparisons (Discounted at 20%)

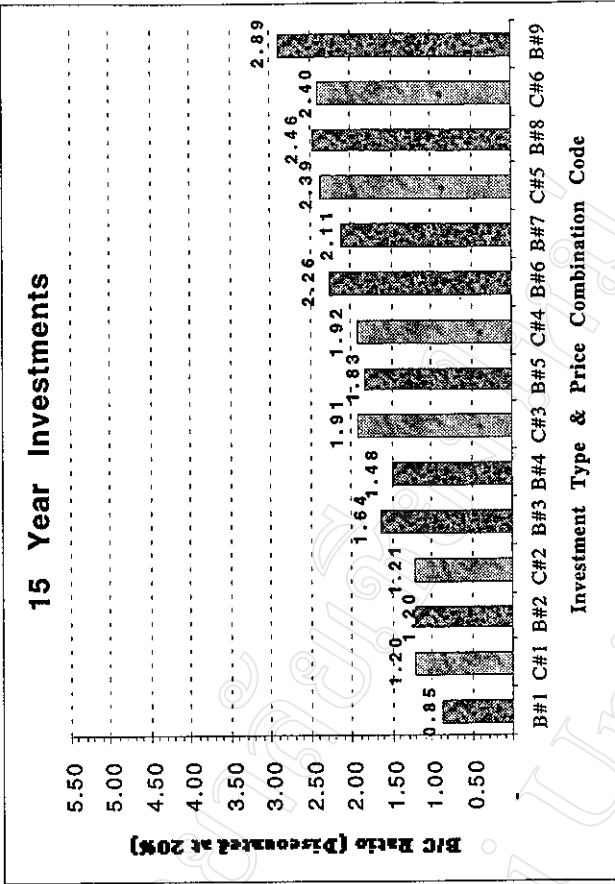
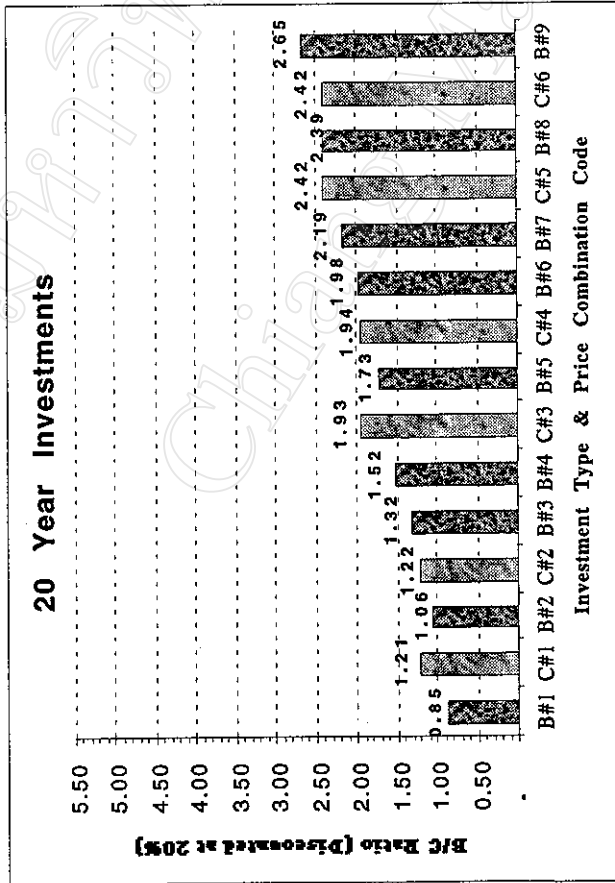


Figure 5.43 B/C Ratio Comparisons (Discounted at 20%) – 20 Year Investment Period

Figure 5.44 B/C Ratio Comparisons (Discounted at 20%) – 15 Year Investment Period

Graph Legend

| Investment Type & Price Combination Code | Sadao Thai Investments (Norm) | | Sadao Tawal Investments (Norm) | |
|--|-------------------------------|-----------------------------------|--------------------------------|------------------------|
| | Seed Price (Baht/Kg) | Wood Price (Baht/m ³) | Flower Price (Baht/Kg) | Wood Price (Baht/Tree) |
| B#1 | 5.00 | 1,000.00 | 50.00 | 200.00 |
| B#2 | 5.00 | 5,000.00 | 50.00 | 300.00 |
| B#3 | 5.00 | 10,000.00 | 80.00 | 200.00 |
| B#4 | 10.00 | 1,000.00 | 80.00 | 300.00 |
| B#5 | 10.00 | 5,000.00 | 100.00 | 200.00 |
| B#6 | 10.00 | 10,000.00 | 100.00 | 300.00 |
| B#7 | 15.00 | 1,000.00 | | |
| B#8 | 15.00 | 5,000.00 | | |
| B#9 | 15.00 | 10,000.00 | | |

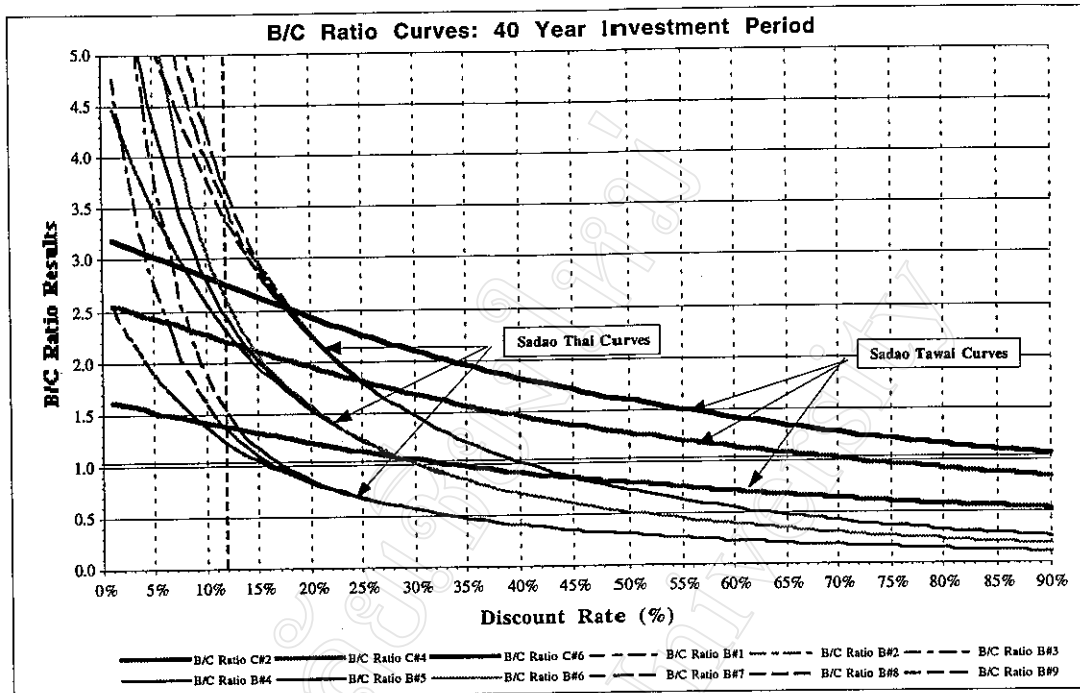


Figure 5.45 Sadao Thai & Sadao Tawai B/C Ratio Curves - 40 Year Investment Period

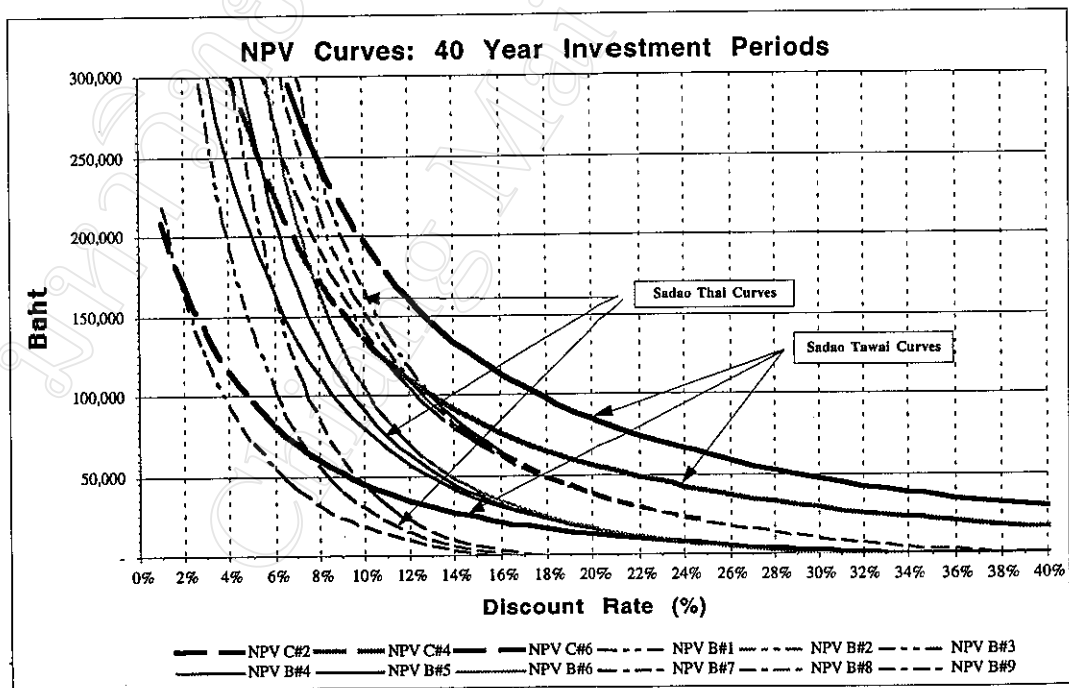


Figure 5.46 Sadao Thai & Sadao Tawai NPV Curves - 40 Year Investment Period

5.3.3 NPV Comparison Results

Figures 5.47 through 5.50 graphically show the Sadao Thai and Sadao Tawai net present value (NPV) comparisons. The comparison analysis found that for 40 and 30 year long investments the Sadao Tawai investment type showed a higher NPV flower price level. However, for 20 and 15 year long investments, the Sadao Thai investments having the 5 Baht/Kg – 10,000 Baht/m³, 10 Baht/Kg – 10,000 Baht/m³, and 15 Baht/Kg – 10,000 Baht/m³ price combinations bested the Sadao Tawai investments at the comparable flower price levels.

Assuming that an investment's net present value is the best predictor of its financial potential, the Sadao Tawai investment scenarios show the greatest overall financial potential of the two investment types.

Net Present Value (NPV) Comparisons

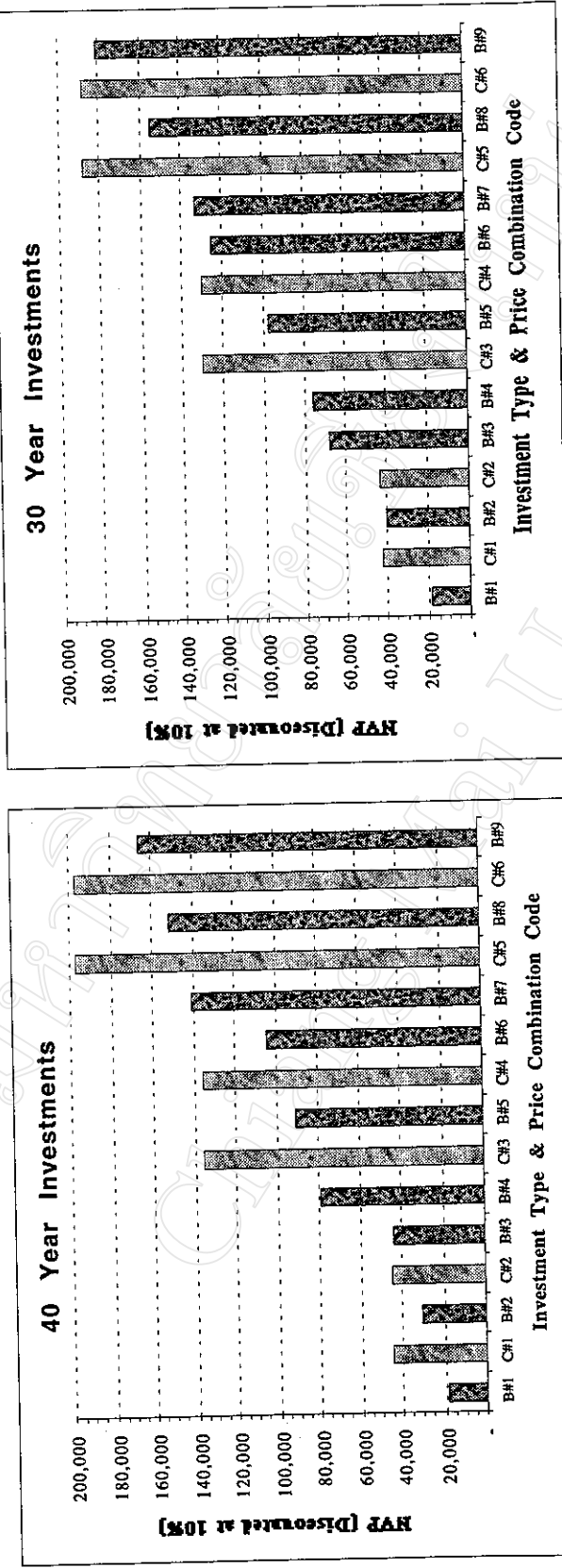


Figure 5.47 Sadao Thai and Sadao Tawai NPV Comparisons – 40 Year Investment period

Figure 5.48 Sadao Thai and Sadao Tawai NPV Comparisons – 30 Year Investment period

Graph Legend

| Sadao Thai Investments (Norm) | | Sadao Tawai Investments (Norm) | | | |
|--|----------------------|-----------------------------------|--|------------------------|------------------------|
| Investment Type & Price Combination Code | Price Combinations | | Investment Type & Price Combination Code | Price Combinations | |
| | Seed Price (Baht/Kg) | Wood Price (Baht/m ³) | | Flower Price (Baht/kg) | Wood Price (Baht/Tree) |
| B#1 | 5.00 | 1,000.00 | C#1 | 50.00 | 200.00 |
| B#2 | 5.00 | 5,000.00 | C#2 | 50.00 | 300.00 |
| B#3 | 5.00 | 10,000.00 | C#3 | 80.00 | 200.00 |
| B#4 | 10.00 | 1,000.00 | C#4 | 80.00 | 300.00 |
| B#5 | 10.00 | 5,000.00 | C#5 | 100.00 | 200.00 |
| B#6 | 10.00 | 10,000.00 | C#6 | 100.00 | 300.00 |
| B#7 | 15.00 | 1,000.00 | | | |
| B#8 | 15.00 | 5,000.00 | | | |
| B#9 | 15.00 | 10,000.00 | | | |

Net Present Value (NPV) Comparisons

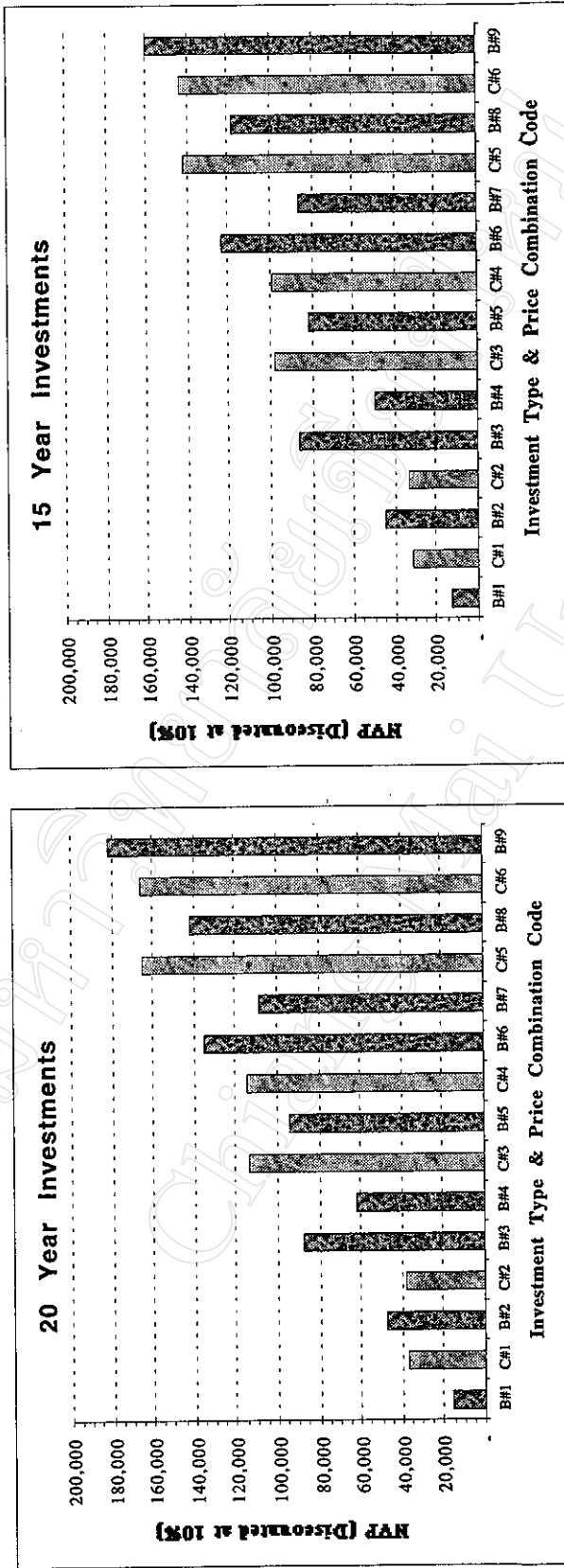


Figure 5.49 Sadao Thai and Sadao Tawai NPV Comparisons – 20 Year Investment period

Figure 5.50 Sadao Thai and Sadao Tawai NPV Comparisons – 40 Year Investment period

Graph Legend

| Investment Type & Price Combination Code | Sadao Thai Investments (Norm) | | Sadao Tawai Investments (Norm) | |
|--|-------------------------------|-----------------------------------|--------------------------------|------------------------|
| | Seed Price (Baht/Kg) | Wood Price (Baht/m ³) | Flower Price (Baht/Kg) | Wood Price (Baht/Tree) |
| B#1 | 5.00 | 1,000.00 | 50.00 | 200.00 |
| B#2 | 5.00 | 5,000.00 | 50.00 | 300.00 |
| B#3 | 5.00 | 10,000.00 | 80.00 | 200.00 |
| B#4 | 10.00 | 1,000.00 | 80.00 | 300.00 |
| B#5 | 10.00 | 5,000.00 | 100.00 | 200.00 |
| B#6 | 10.00 | 10,000.00 | 100.00 | 300.00 |
| B#7 | 15.00 | 1,000.00 | | |
| B#8 | 15.00 | 5,000.00 | | |
| B#9 | 15.00 | 10,000.00 | | |