

APPENDICES

Appendix A The average monthly temperature, precipitation, sunshine in the study area from 2001 to 2005

Appendix A-1 The average monthly temperature in the study area from 2001 to 2005 (C⁰)

| Year Month | 2001 | 2002 | 2003 | 2004 | 2005 | Average |
|---------------|------|------|------|------|------|---------|
| January | 20.0 | 20.4 | 19.5 | 20.2 | 21.6 | 20.3 |
| February | 23.1 | 20.1 | 22.8 | 21.5 | 20.7 | 21.6 |
| March | 22.1 | 23.4 | 23.1 | 24.1 | 23.4 | 23.2 |
| April | 25.9 | 25.9 | 27.3 | 27.3 | 27.2 | 26.7 |
| May | 28.3 | 27.8 | 28.3 | 27.9 | 27.2 | 27.9 |
| June | 28.8 | 28.0 | 28.4 | 28.3 | 27.7 | 28.2 |
| July | 27.5 | 27.4 | 27.9 | 28.6 | 28.5 | 28.0 |
| August | 27.5 | 27.7 | 27.8 | 27.2 | 27.1 | 27.5 |
| September | 26.8 | 26.0 | 26.3 | 25.7 | 26.7 | 26.3 |
| October | 24.3 | 23.0 | 24.1 | 24.8 | 25.2 | 24.3 |
| November | 23.5 | 22.5 | 22.9 | 22.7 | 21.7 | 22.7 |
| December | 21.1 | 20.0 | 19.7 | 22.2 | 20.3 | 20.7 |

Source: Nam Dong Statistical Department, 2006.

Appendix A-2 The average monthly precipitation in the study area from 2001 to 2005 (mm)

| Year Month | 2001 | 2002 | 2003 | 2004 | 2005 | Average |
|---------------|---------|---------|--------|--------|--------|---------|
| January | 37.10 | 110.30 | 82.90 | 59.10 | 73.70 | 72.62 |
| February | 10.10 | 47.40 | 81.30 | 19.00 | 53.70 | 42.30 |
| March | 128.80 | 66.30 | 57.00 | 47.90 | 215.20 | 103.04 |
| April | 64.90 | 129.50 | 235.90 | 53.00 | 40.90 | 104.84 |
| May | 137.60 | 249.30 | 85.50 | 207.10 | 455.60 | 227.02 |
| June | 84.40 | 237.20 | 174.20 | 211.40 | 59.20 | 153.28 |
| July | 213.40 | 395.40 | 73.70 | 20.50 | 122.00 | 165.00 |
| August | 202.30 | 104.20 | 128.90 | 407.40 | 556.50 | 279.86 |
| September | 523.80 | 241.30 | 398.10 | 735.00 | 95.90 | 398.82 |
| October | 1183.30 | 604.40 | 612.40 | 877.00 | 730.10 | 801.44 |
| November | 714.40 | 1545.80 | 607.60 | 733.50 | 452.80 | 810.82 |
| December | 330.90 | 87.90 | 242.20 | 308.70 | 464.90 | 286.92 |

Source: Nam Dong Statistical Department, 2006.

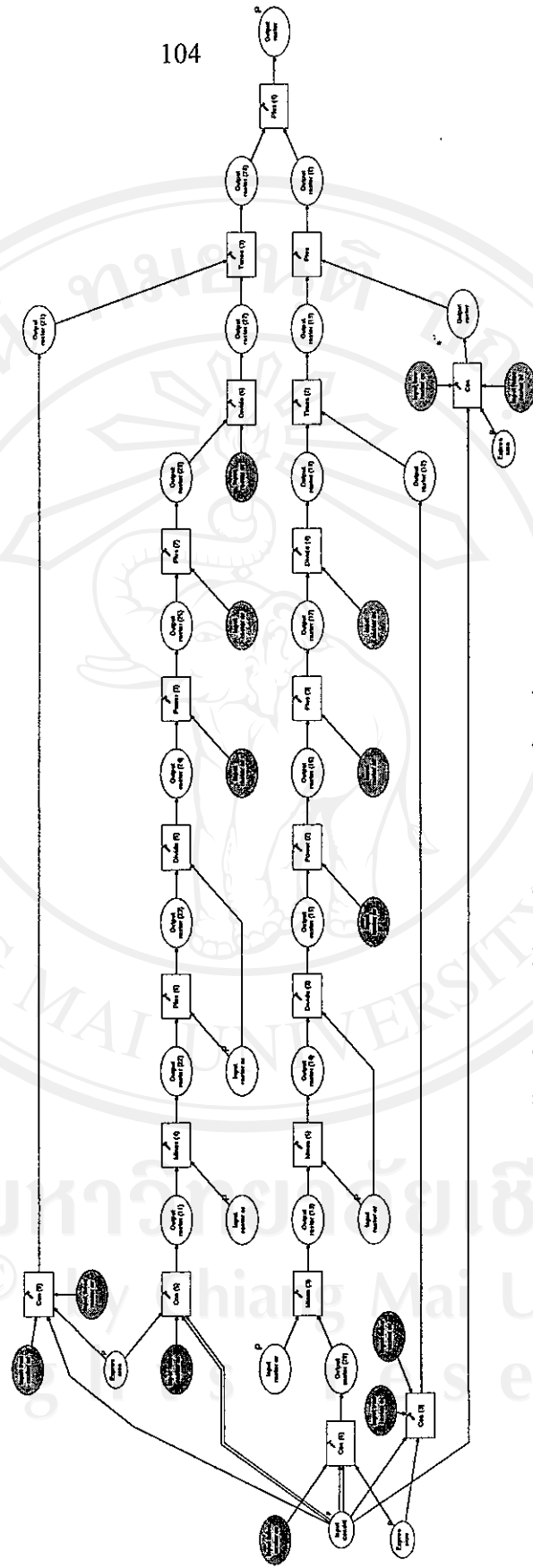
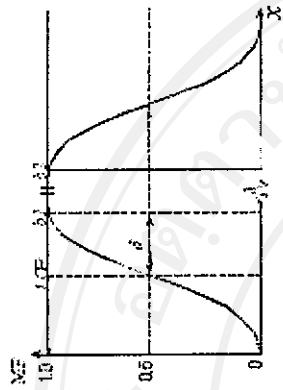
Appendix A-3 The average monthly sunshine in the study area from 2001 to 2005 (hours)

| Year Month | 2001 | 2002 | 2003 | 2004 | 2005 | Average |
|---------------|-------|-------|-------|-------|-------|---------|
| January | 122.0 | 101.0 | 90.0 | 108.0 | 171.0 | 118.4 |
| February | 144.0 | 127.0 | 143.0 | 156.0 | 95.0 | 133.0 |
| March | 128.0 | 140.0 | 140.0 | 166.0 | 205.0 | 155.8 |
| April | 157.0 | 171.0 | 194.0 | 213.0 | 206.0 | 188.2 |
| May | 210.0 | 223.0 | 235.0 | 209.0 | 170.0 | 209.4 |
| June | 197.0 | 235.0 | 230.0 | 233.0 | 179.0 | 214.8 |
| July | 196.0 | 178.0 | 229.0 | 171.0 | 203.0 | 195.4 |
| August | 158.0 | 220.0 | 176.0 | 147.0 | 173.0 | 174.8 |
| September | 150.0 | 134.0 | 131.0 | 86.0 | 182.0 | 136.6 |
| October | 81.0 | 96.0 | 123.0 | 131.0 | 124.0 | 111.0 |
| November | 114.0 | 101.0 | 114.0 | 48.0 | 87.0 | 92.8 |
| December | 6.0 | 109.0 | 26.0 | 80.0 | 57.0 | 55.6 |

Source: Nam Dong Statistical Department, 2006.

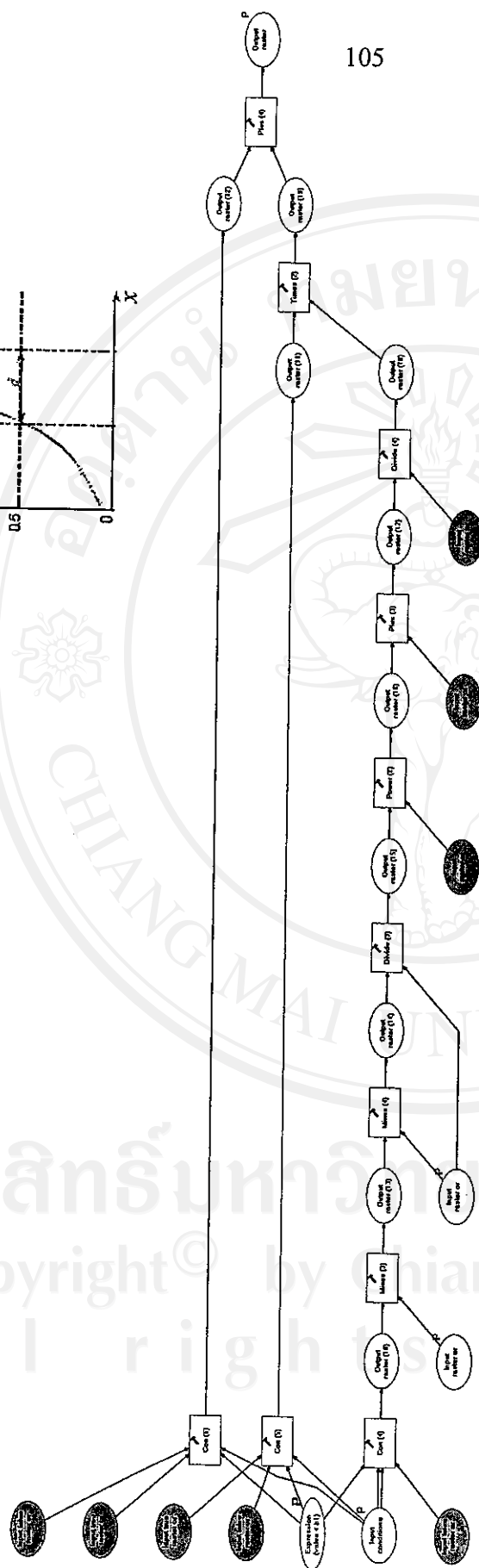
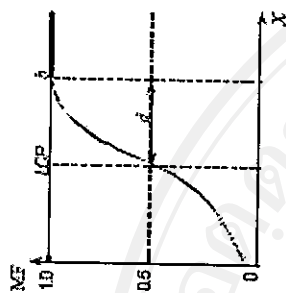
Appendix B The models used to standardize factors in the study area

$$MF(x_i) = 1 \text{ if } (b_1 + d_1) < x_i < (b_2 - d_2)$$



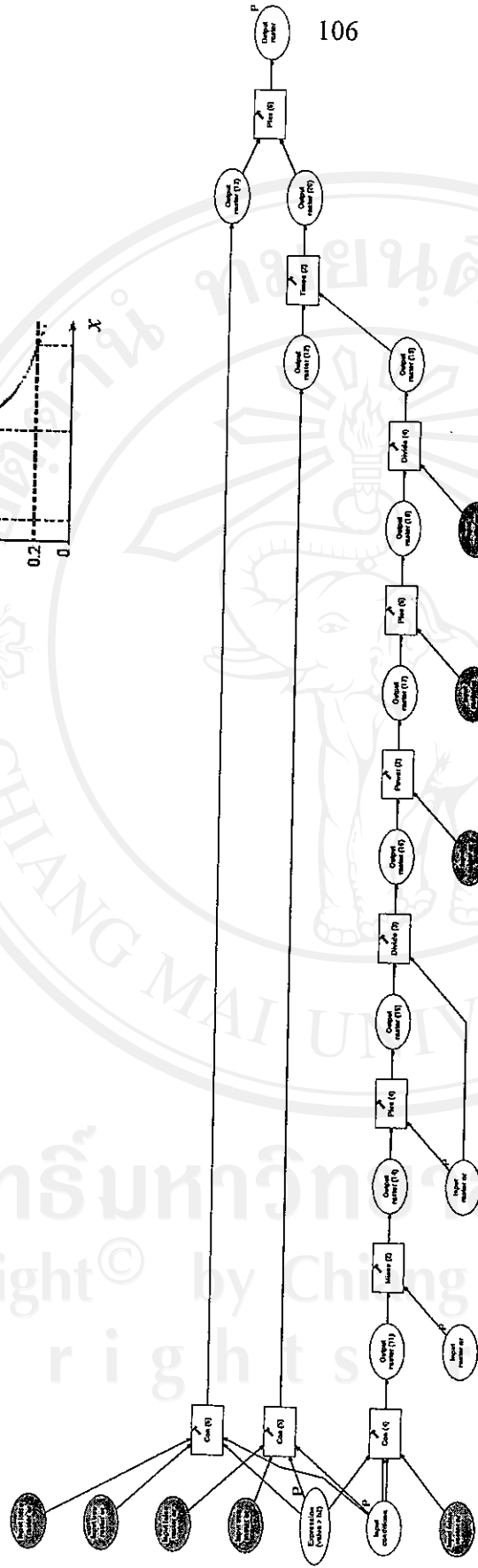
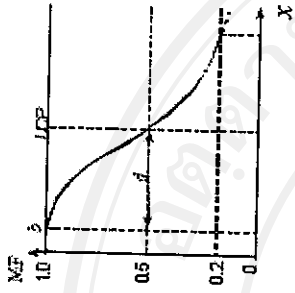
Appendix B-1 The model use to standardize factor with optimum range function

$$MF(x_i) = [1/(1 + \{(x_i - b_1 - d_1)/d_1\}^2)] \text{ if } x_i < (b_1 + d_1)$$



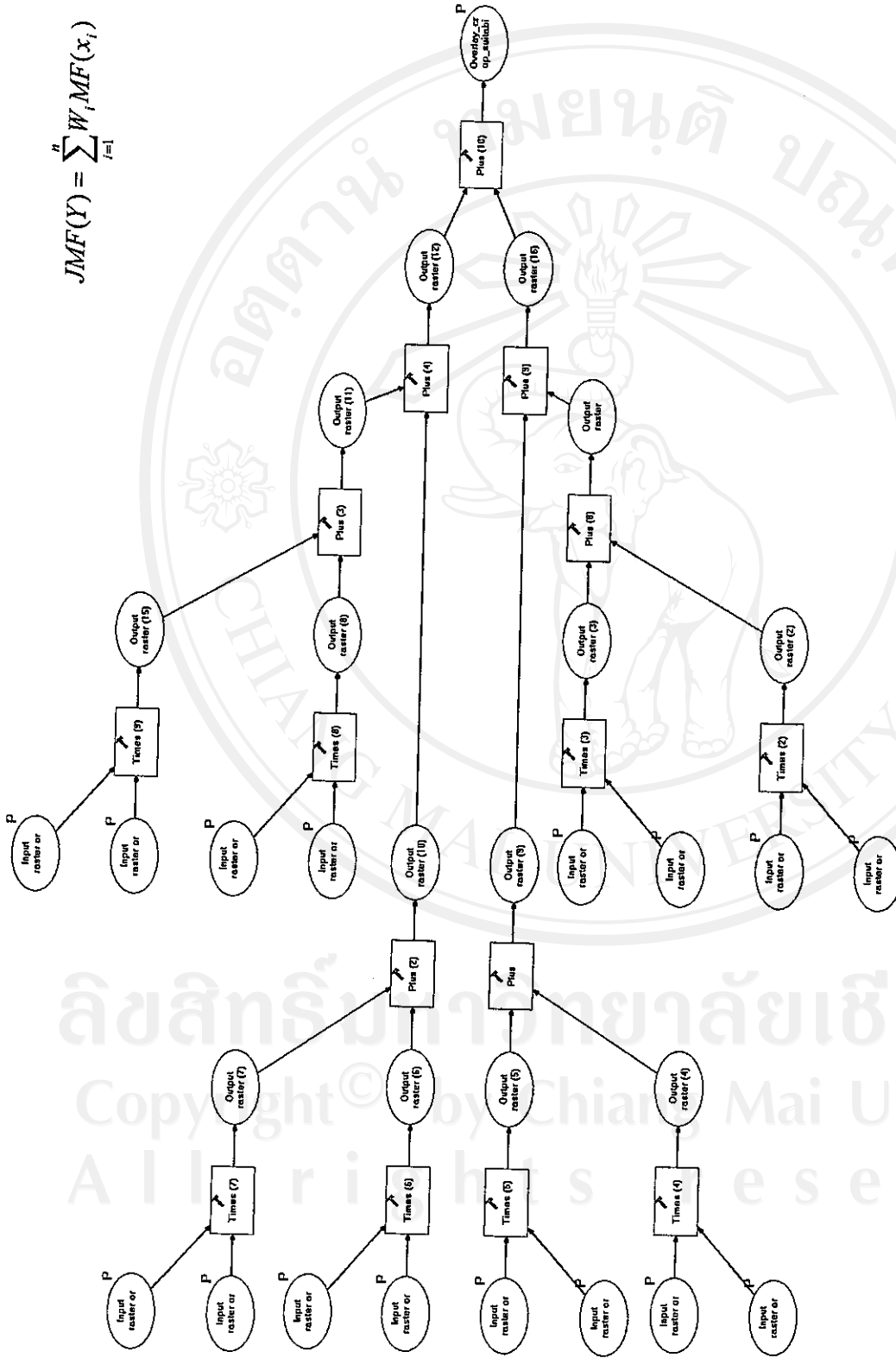
Appendix B-2 The model use to standardize factor with asymmetric left function

$$MF(x_i) = [1/(1 + \{(x_i - b_2 + d_2)/d_2\}^2)] \text{ if } x_i > (b_2 - d_2)$$

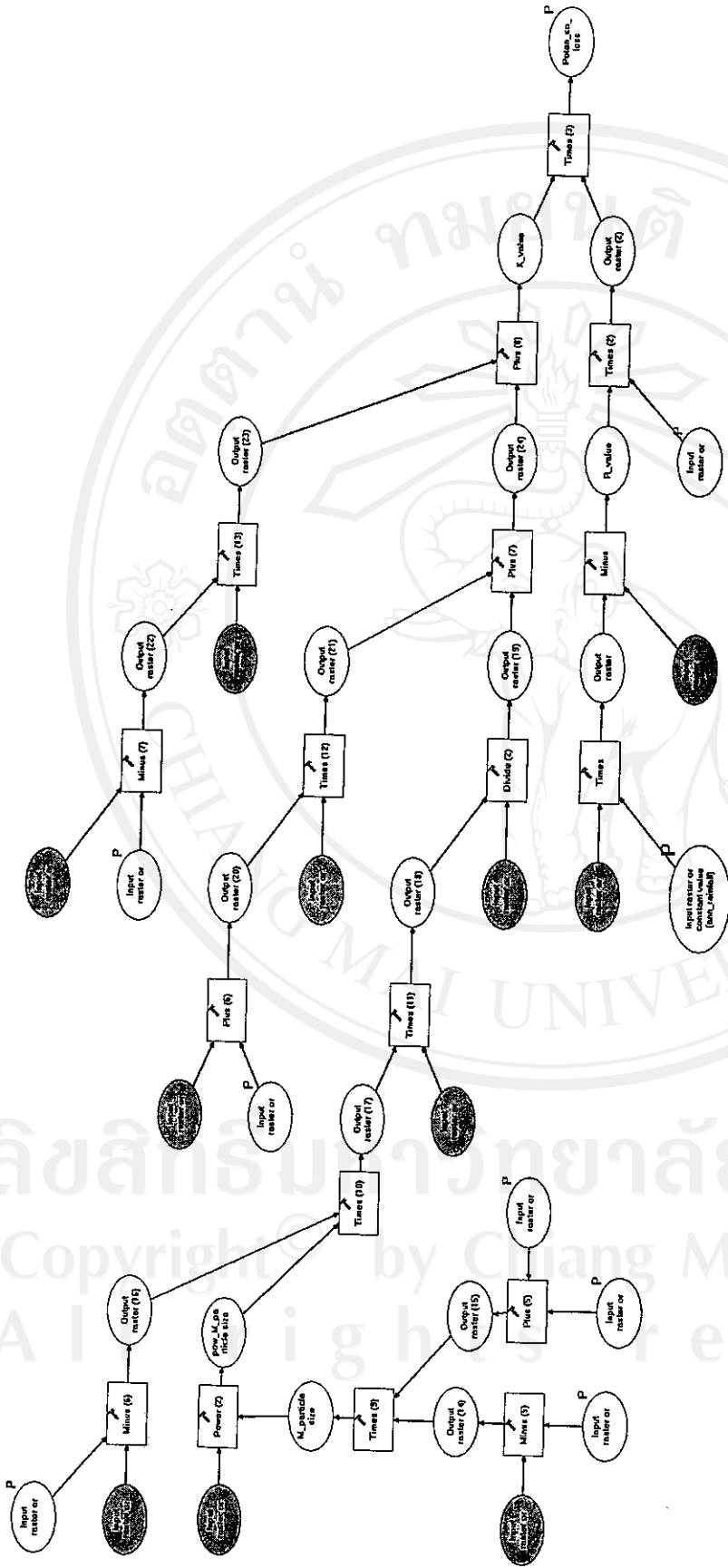


Appendix B-3 The model use to standardize factor with asymmetric right function

$$JMF(Y) = \sum_{i=1}^n W_i MF(x_i)$$

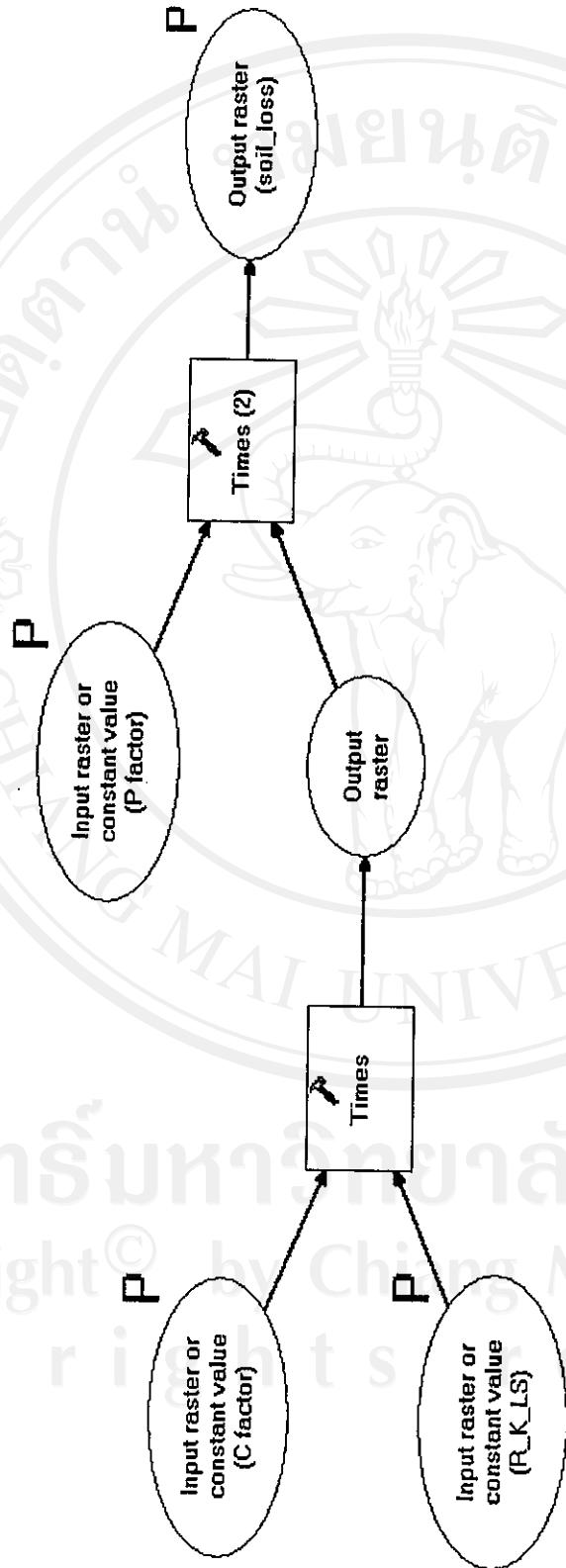


Appendix B-4 The model use to overlay factor maps (joint membership function)

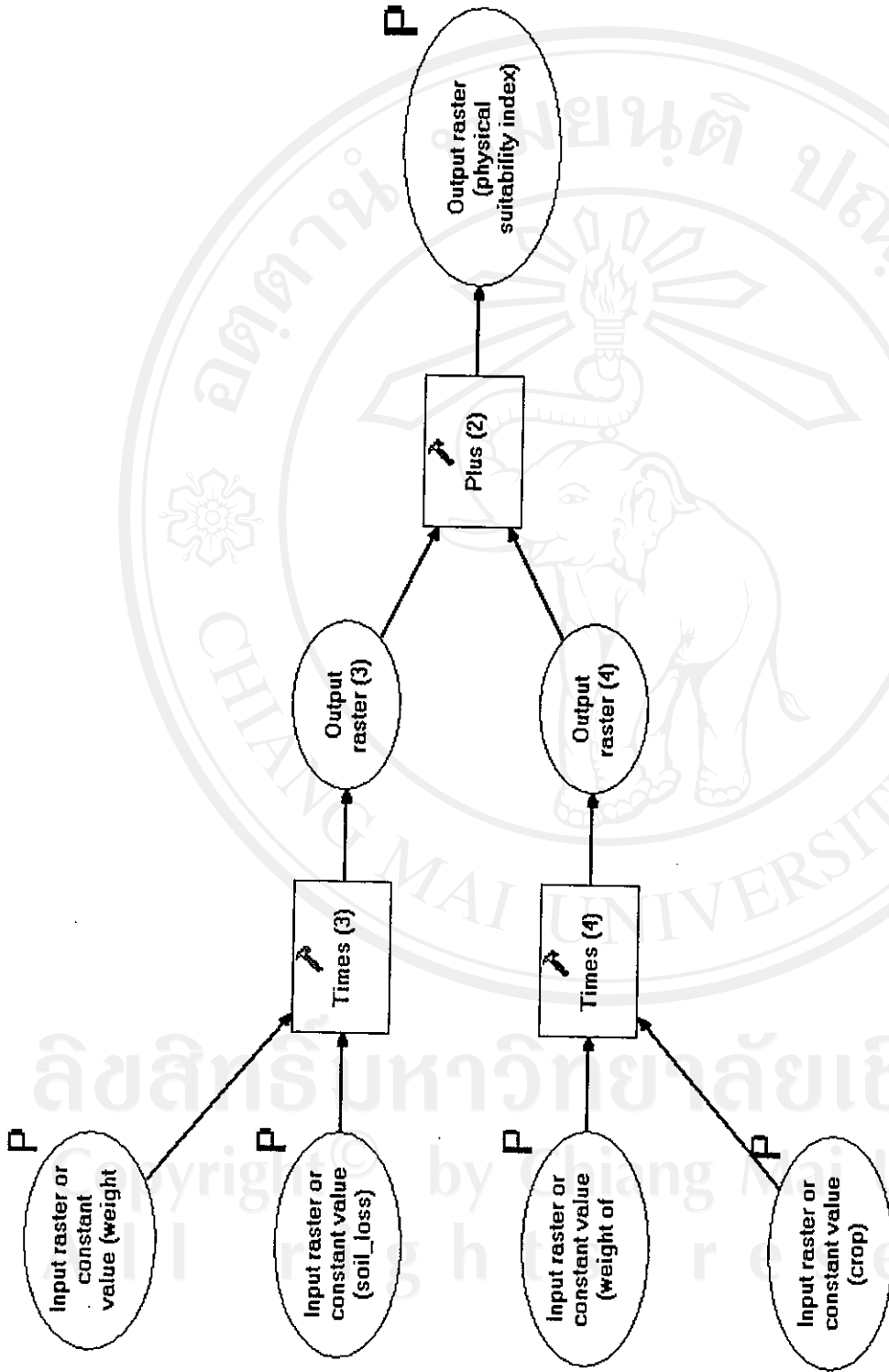


Appendix B-5 The model use to calculate potential soil loss (R_K_LS)

$$A = R \times K \times LS \times C \times P$$



Appendix B-6 The model use to calculate soil loss (R_K_LS_C_P)



Appendix B-7 The model use to calculate physical suitability index

Appendix C The Membership function parameters for eleven crops in the study area

Table C-1 Membership function parameters for rubber

| Diagnostic land characteristic | b ₁ | LCP | d ₁ | b ₂ | UCP | d ₂ |
|--------------------------------|----------------|------|----------------|----------------|-----|----------------|
| Mean annual tem. | 22 | 20 | 2 | | | |
| Mean annual pre. | 1700 | 1450 | 250 | | | |
| Soil depth | 150 | 100 | 50 | | | |
| Soil drainage | | | | 1 | 2 | 1 |
| CEC | 0 | 1 | 1 | | | |
| pH | 5 | 4.5 | 0.5 | 6 | 6.5 | 0.5 |
| OM | 1.2 | 0 | 1.2 | | | |
| Slope | | | | 8 | 16 | 8 |

Table C-2 Membership function parameters for cassava

| Diagnostic land characteristic | b ₁ | LCP | d ₁ | b ₂ | UCP | d ₂ |
|--------------------------------|----------------|-----|----------------|----------------|------|----------------|
| Mean annual tem. | 18 | 16 | 2 | 30 | 38.4 | 8.4 |
| Mean annual pre. | 1000 | 600 | 400 | 2400 | 3446 | 1046 |
| Soil depth | 100 | 75 | 25 | | | |
| Soil drainage | | | | 1 | 2 | 1 |
| CEC | 16 | 0 | 16 | | | |
| pH | 5.2 | 4.8 | 0.4 | 7 | 7.6 | 0.6 |
| OM | 1.5 | 0.8 | 0.7 | | | |
| Slope | | | | 4 | 8 | 4 |

Table C-3 Membership function parameters for maize

| Diagnostic land characteristic | b_1 | LCP | d_1 | b_2 | UCP | d_2 |
|--------------------------------|-------|-----|-------|-------|------|-------|
| Mean tem. of the growing cycle | 18 | 16 | 2 | 32 | 35 | 3 |
| Mean pre. of the growing cycle | 500 | 400 | 100 | 1200 | 1600 | 400 |
| Soil depth | 75 | 50 | 25 | | | |
| Soil drainage | | | | 1 | 2 | 1 |
| CEC | 16 | 0 | 16 | | | |
| pH | 5.8 | 5.5 | 0.3 | 7.8 | 8.2 | 0.4 |
| OM | 1.2 | 0.8 | 0.4 | | | |
| Slope | | | | 4 | 8 | 4 |

Table C-4 Membership function parameters for bean

| Diagnostic land characteristic | b_1 | LCP | d_1 | b_2 | UCP | d_2 |
|--------------------------------|-------|-----|-------|-------|------|-------|
| Mean tem. of the growing cycle | 12 | 10 | 2 | 24 | 27 | 3 |
| Mean pre. of the growing cycle | 350 | 300 | 50 | 600 | 1000 | 400 |
| Soil depth | 75 | 50 | 25 | | | |
| Soil drainage | | | | 1 | 2 | 1 |
| CEC | 16 | 0 | 16 | | | |
| pH | 5.6 | 5.4 | 0.2 | 7.6 | 8 | 0.4 |
| OM | 1.2 | 0.8 | 0.4 | | | |
| Slope | | | | 4 | 8 | 4 |

Table C-5 Membership function parameters for sweet potato

| Diagnostic land characteristic | b_1 | LCP | d_1 | b_2 | UCP | d_2 |
|--------------------------------|-------|-----|-------|-------|------|-------|
| Mean tem. of the growing cycle | 22 | 20 | 2 | 32 | 35 | 3 |
| Mean annual pre. | 650 | 500 | 50 | 1500 | 1700 | 200 |
| Soil depth | 75 | 50 | 25 | | | |
| Soil drainage | | | | 2 | 3 | 1 |
| CEC | 16 | 0 | 16 | | | |
| pH | 5.2 | 4.8 | 0.4 | 8.2 | 8.4 | 0.2 |
| OM | 2 | 1 | 1 | | | |
| Slope | | | | 4 | 8 | 4 |

Table C-6 Membership function parameters for irrigated rice

| Diagnostic land characteristic | b_1 | LCP | d_1 | b_2 | UCP | d_2 |
|--------------------------------|-------|-----|-------|-------|------|-------|
| Mean tem. of the growing cycle | 24 | 18 | 6 | 36 | 38.4 | 2.4 |
| Soil depth | 75 | 50 | 25 | | | |
| Soil drainage | 2 | 1 | 1 | 2 | 3 | 1 |
| CEC | 16 | 0 | 16 | | | |
| pH | 5.5 | 5 | 0.5 | 8.2 | 8.5 | 0.3 |
| OM | 1.5 | 0.8 | 0.7 | | | |
| Slope | | | | 4 | 8 | 4 |

Table C-7 Membership function parameters for citrus

| Diagnostic land characteristic | b_1 | LCP | d_1 | b_2 | UCP | d_2 |
|--------------------------------|-------|------|-------|-------|------|-------|
| Mean annual tem. | 19 | 16 | 3 | 33 | 36 | 3 |
| Mean annual pre. | 1200 | 1000 | 200 | 3000 | 3446 | 446 |
| Soil depth | 150 | 100 | 50 | | | |
| Soil drainage | | | | 1 | 2 | 1 |
| CEC | 16 | 0 | 16 | | | |
| pH | 5.5 | 5.2 | 0.3 | 7.6 | 8 | 0.4 |
| OM | 0.8 | 0 | 0.8 | | | |
| Slope | | | | 4 | 8 | 4 |

Table C-8 Membership function parameters for banana

| Diagnostic land characteristic | b_1 | LCP | d_1 | b_2 | UCP | d_2 |
|--------------------------------|-------|------|-------|-------|-----|-------|
| Mean annual tem. | 18 | 16 | 2 | | | |
| Mean annual pre. | 1500 | 1250 | 250 | | | |
| Soil depth | 75 | 50 | 25 | | | |
| Soil drainage | | | | 2 | 3 | 1 |
| CEC | 16 | 0 | 16 | | | |
| pH | 5.6 | 5.2 | 0.4 | 7.5 | 8 | 0.5 |
| OM | 1.5 | 0.8 | 0.7 | | | |
| Slope | | | | 4 | 8 | 4 |

Table C-9 Membership function parameters for pineapple

| Diagnostic land characteristic | b_1 | LCP | d_1 | b_2 | UCP | d_2 |
|--------------------------------|-------|-----|-------|-------|------|-------|
| Mean annual tem. | 20 | 18 | 2 | 26 | 30 | 4 |
| Mean annual pre. | 1000 | 800 | 200 | 1600 | 2000 | 400 |
| Soil depth | 60 | 40 | 20 | | | |
| Soil drainage | | | | 2 | 3 | 1 |
| CEC | 16 | 0 | 16 | | | |
| pH | 5 | 4.3 | 0.7 | 6.5 | 7 | 0.5 |
| OM | 1.2 | 0.8 | 0.4 | | | |
| Slope | | | | 4 | 8 | 4 |

Table C-10 Membership function parameters for sugarcane

| Diagnostic land characteristic | b_1 | LCP | d_1 | b_2 | UCP | d_2 |
|------------------------------------|-------|------|-------|-------|-----|-------|
| Mean day tem. for vegetative stage | 22 | 20 | 2 | 32 | 35 | 3 |
| Sunshine | 1800 | 1400 | 400 | | | |
| Soil depth | 80 | 50 | 30 | | | |
| Soil drainage | | | | 2 | 3 | 1 |
| CEC | 16 | 0 | 16 | | | |
| pH | 5.5 | 5 | 0.5 | 7.5 | 8 | 0.5 |
| OM | 1.5 | 1 | 0.5 | | | |
| Slope | | | | 4 | 8 | 4 |

Table C-11 Membership function parameters for rainfed upland rice

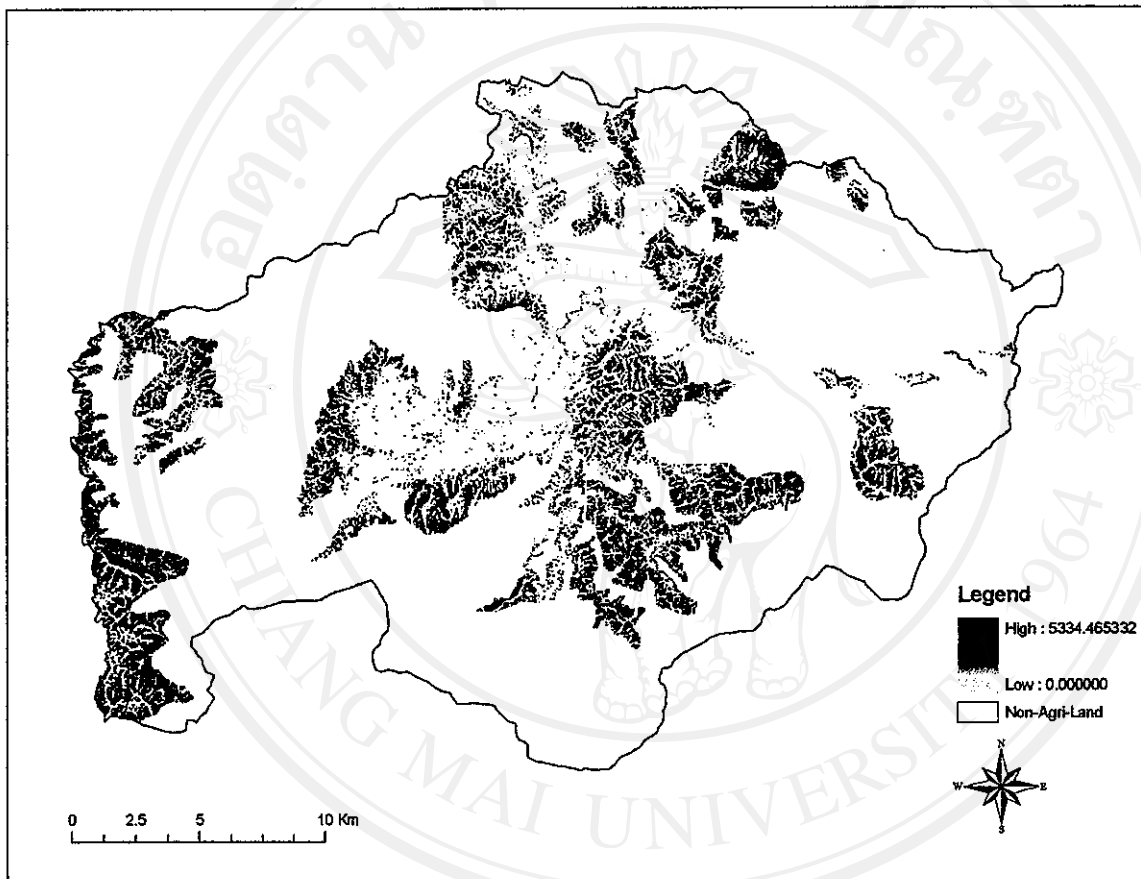
| Diagnostic land characteristic | b_1 | LCP | d_1 | b_2 | UCP | d_2 |
|--------------------------------|-------|-----|-------|-------|------|-------|
| Mean tem. of the growing cycle | 24 | 18 | 6 | 36 | 38.4 | 2.4 |
| Mean pre. of the growing cycle | 50 | 0 | 50 | 400 | 550 | 150 |
| Soil depth | 90 | 50 | 40 | | | |
| Soil drainage | 2 | 1 | 1 | 2 | 3 | 1 |
| CEC | 16 | 0 | 16 | | | |
| pH | 5.5 | 5 | 0.5 | 7.5 | 7.9 | 0.4 |
| OM | 1.5 | 0.8 | 0.7 | | | |
| Slope | | | | 8 | 16 | 8 |

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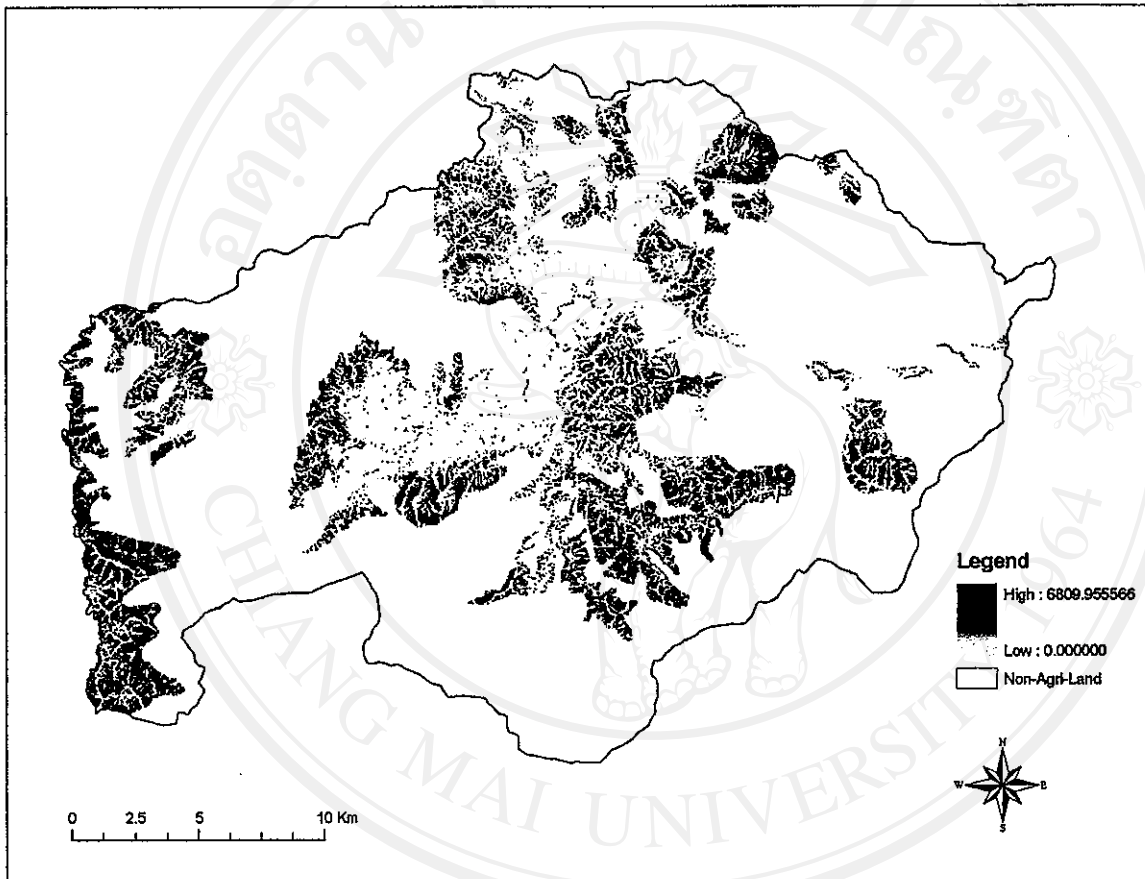
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Appendix D The annual soil loss correlate with each crops in the study area



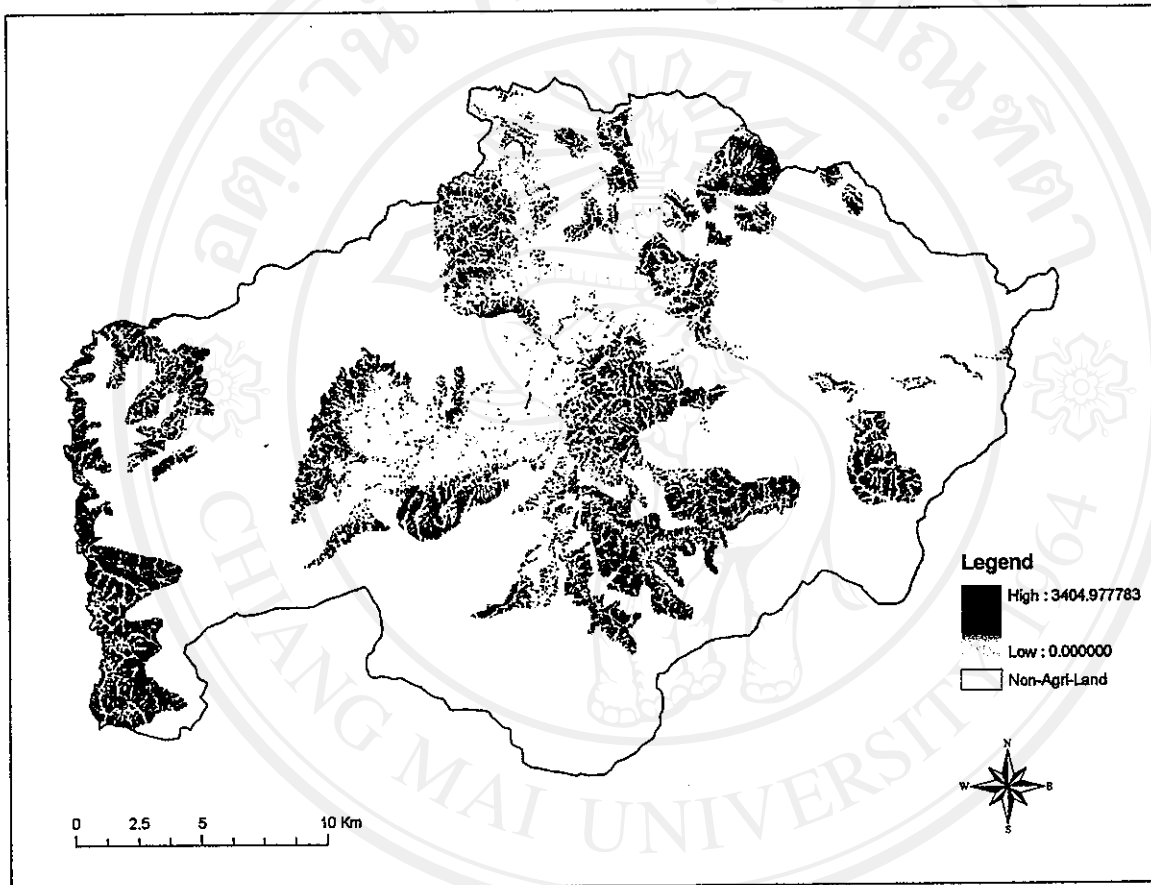
Appendix D-1 The annual soil loss in Nam Dong district covered by bean

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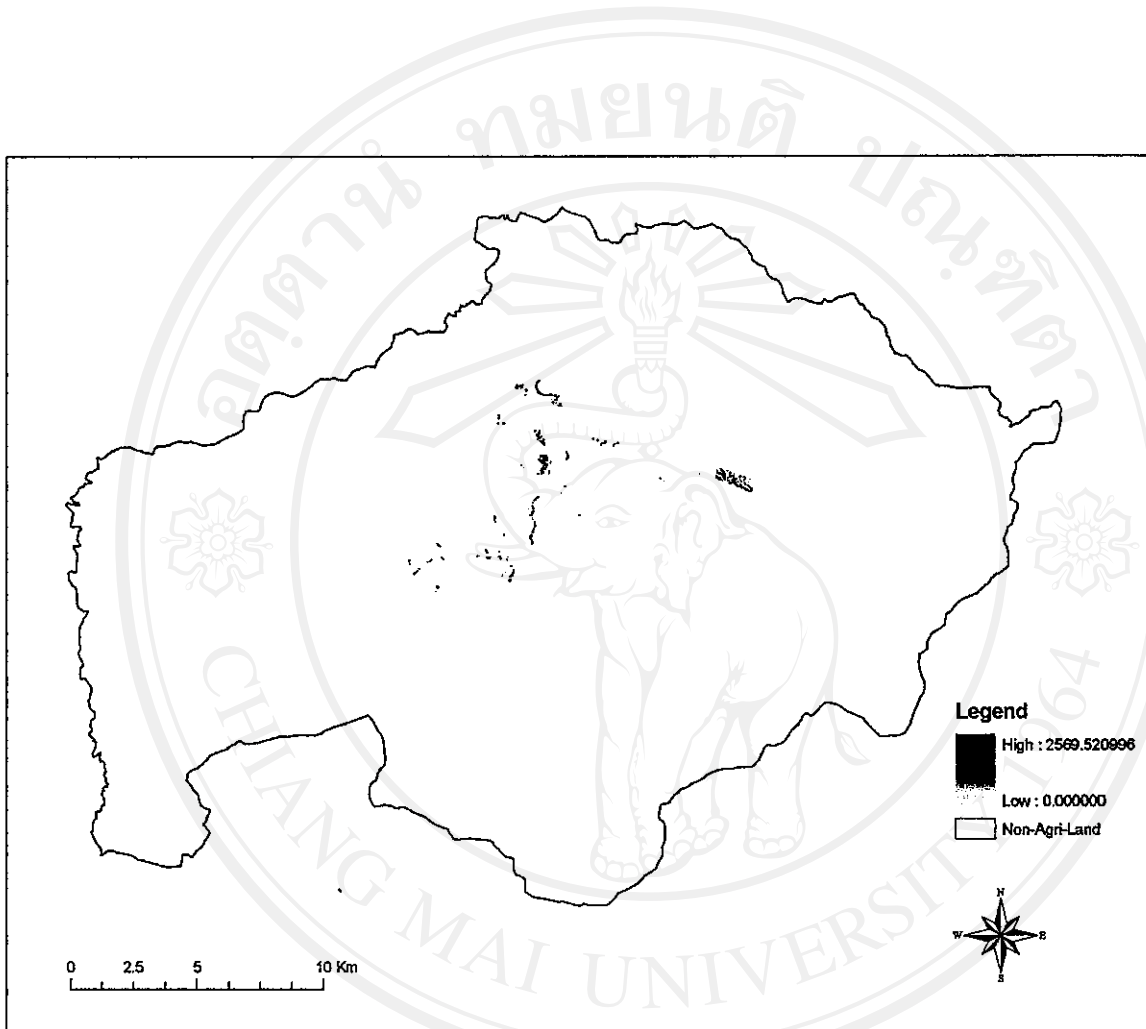
Appendix D-2 The annual soil loss in Nam Dong district covered by cassava

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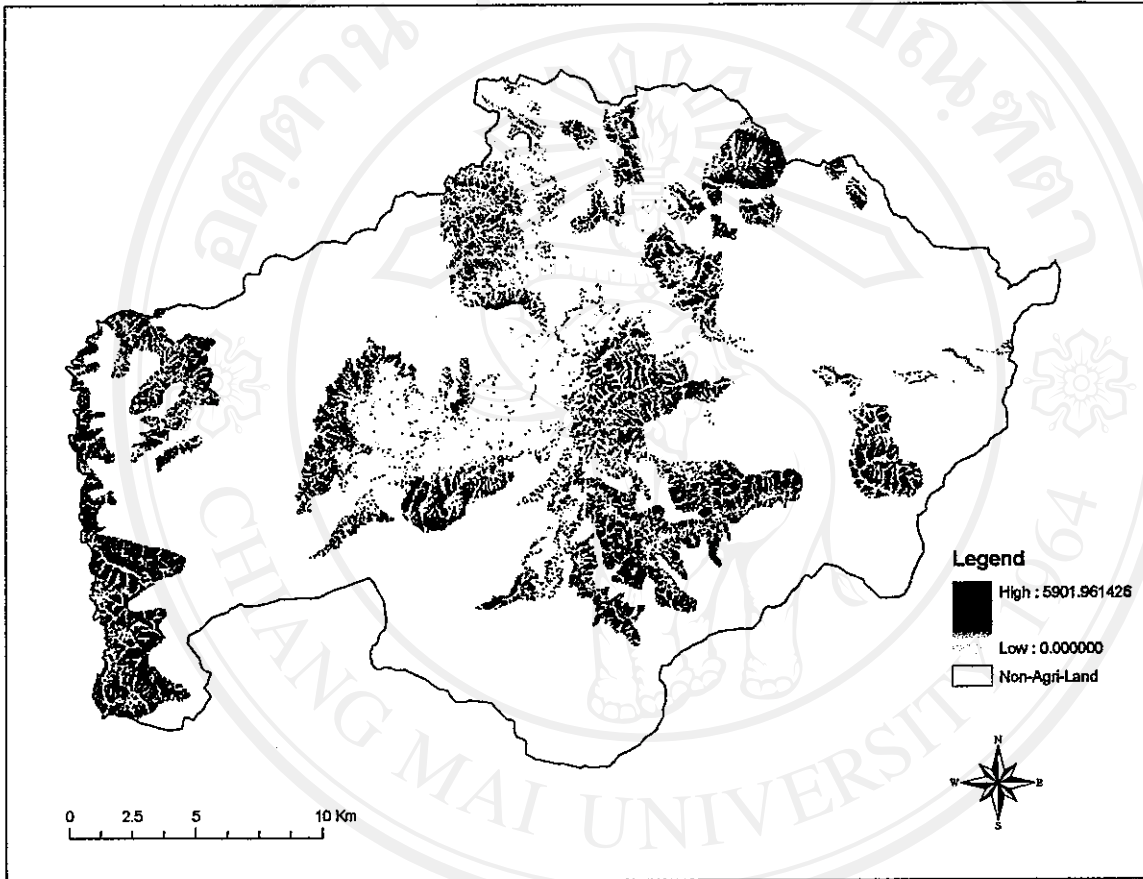
Appendix D-3 The annual soil loss in Nam Dong district covered by fruit-tree (banana, citrus, and pineapple)

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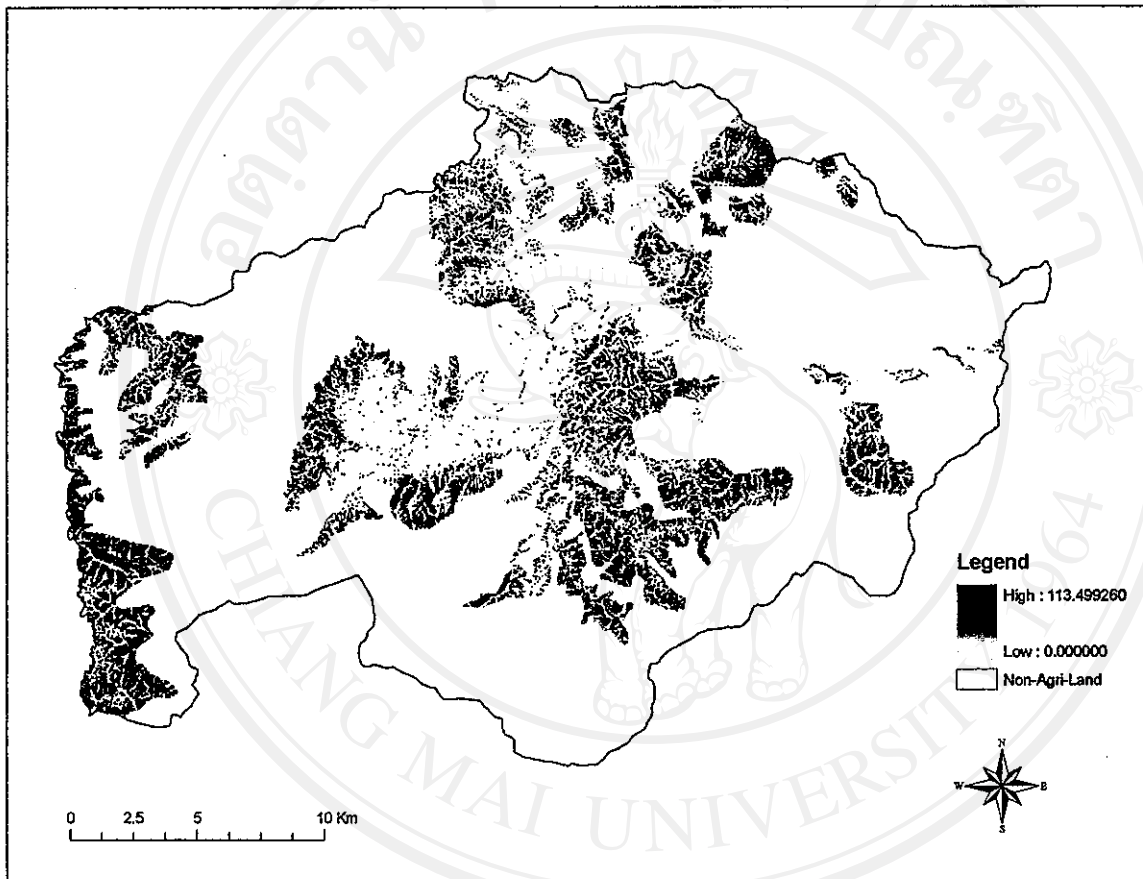
Appendix D-4 The annual soil loss in Nam Dong district covered by irrigated-rice

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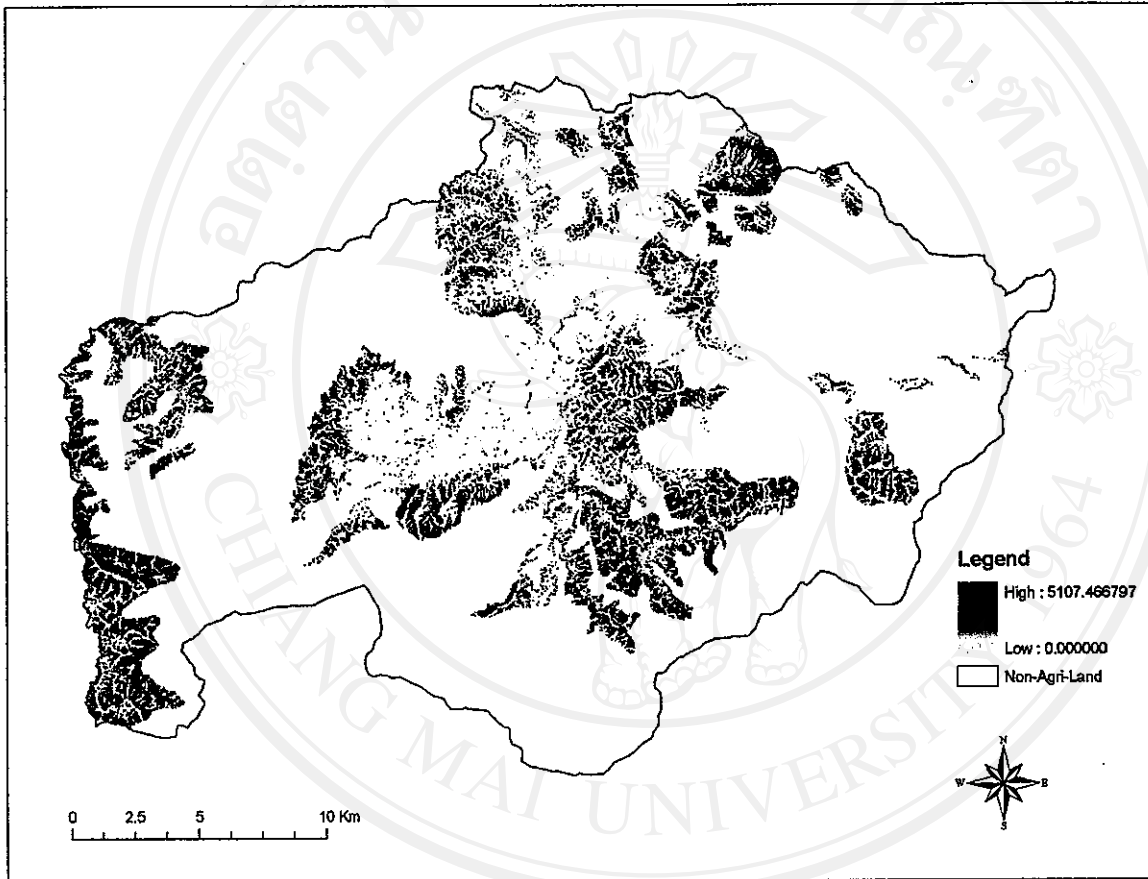
Appendix D-5 The annual soil loss in Nam Dong district covered by maize

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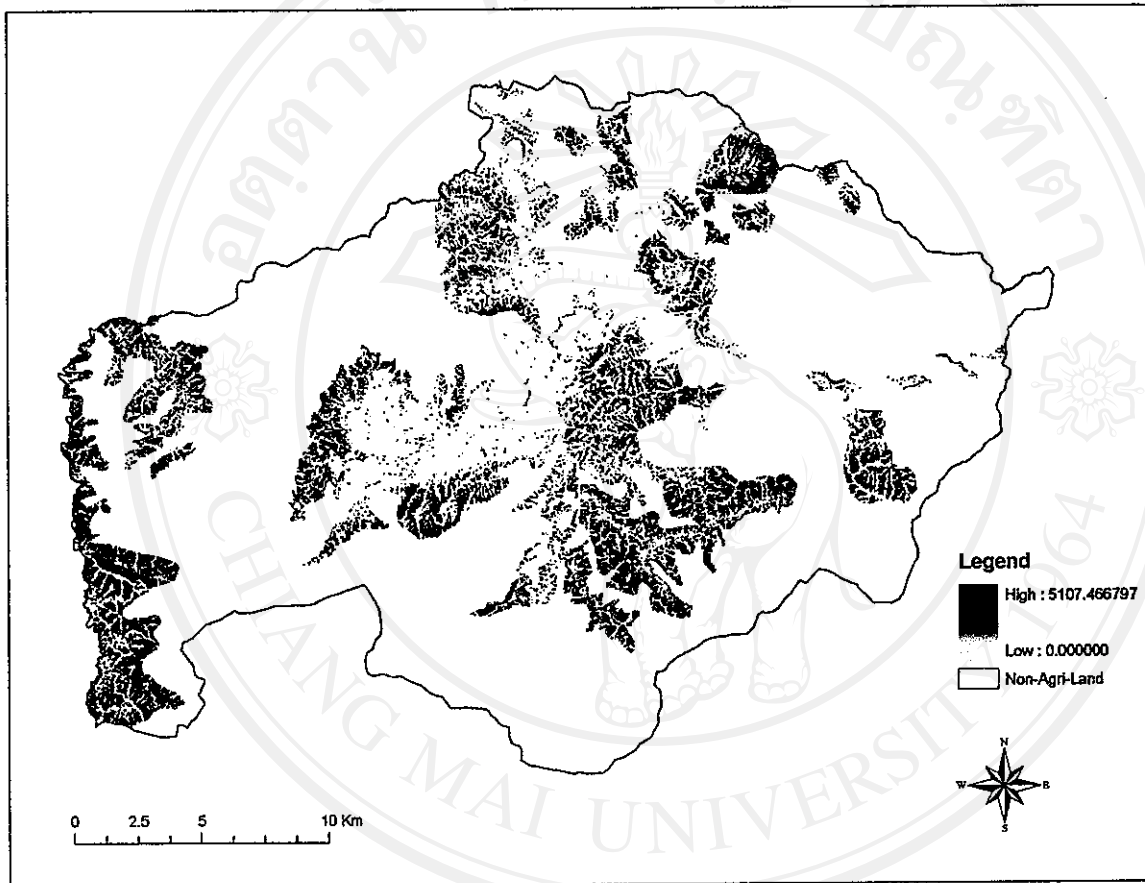
Appendix D-6 The annual soil loss in Nam Dong district covered by rubber

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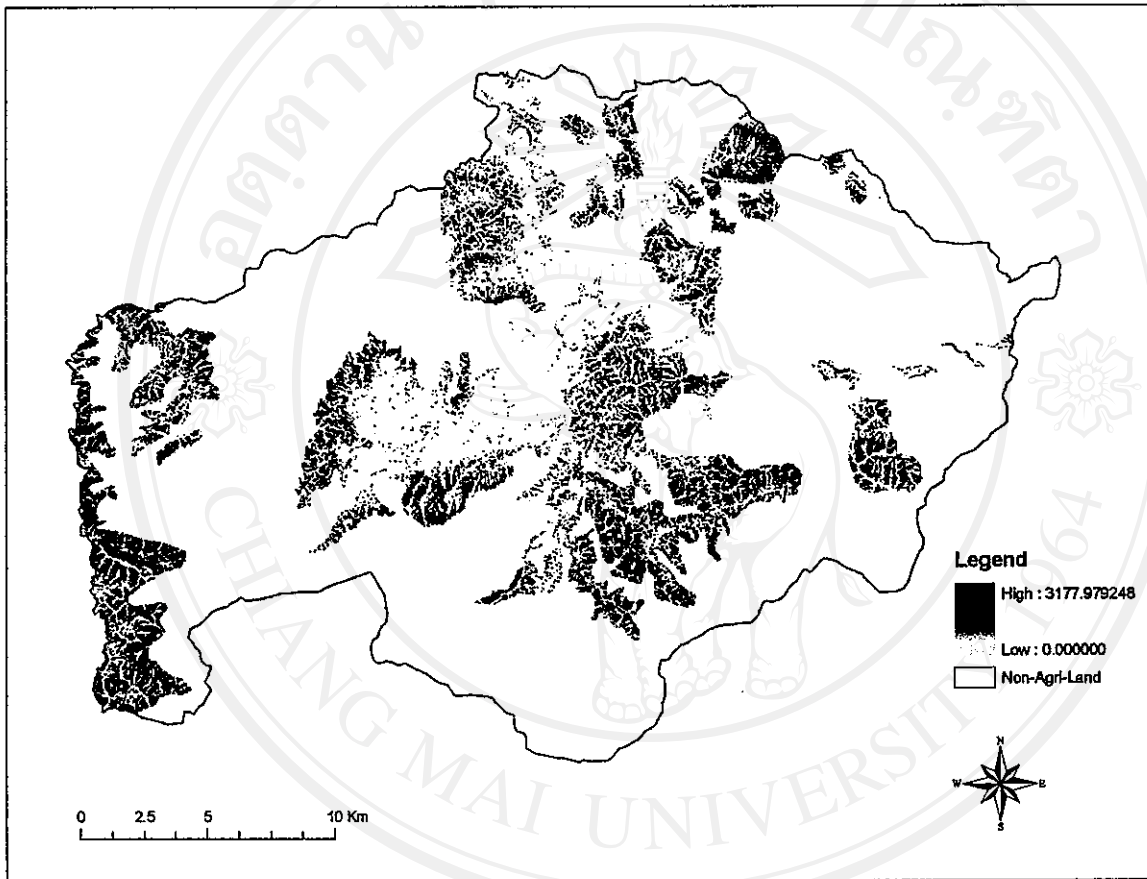
Appendix D-7 The annual soil loss in Nam Dong district covered by sugarcane

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Appendix D-8 The annual soil loss in Nam Dong district covered by sweet potatoes

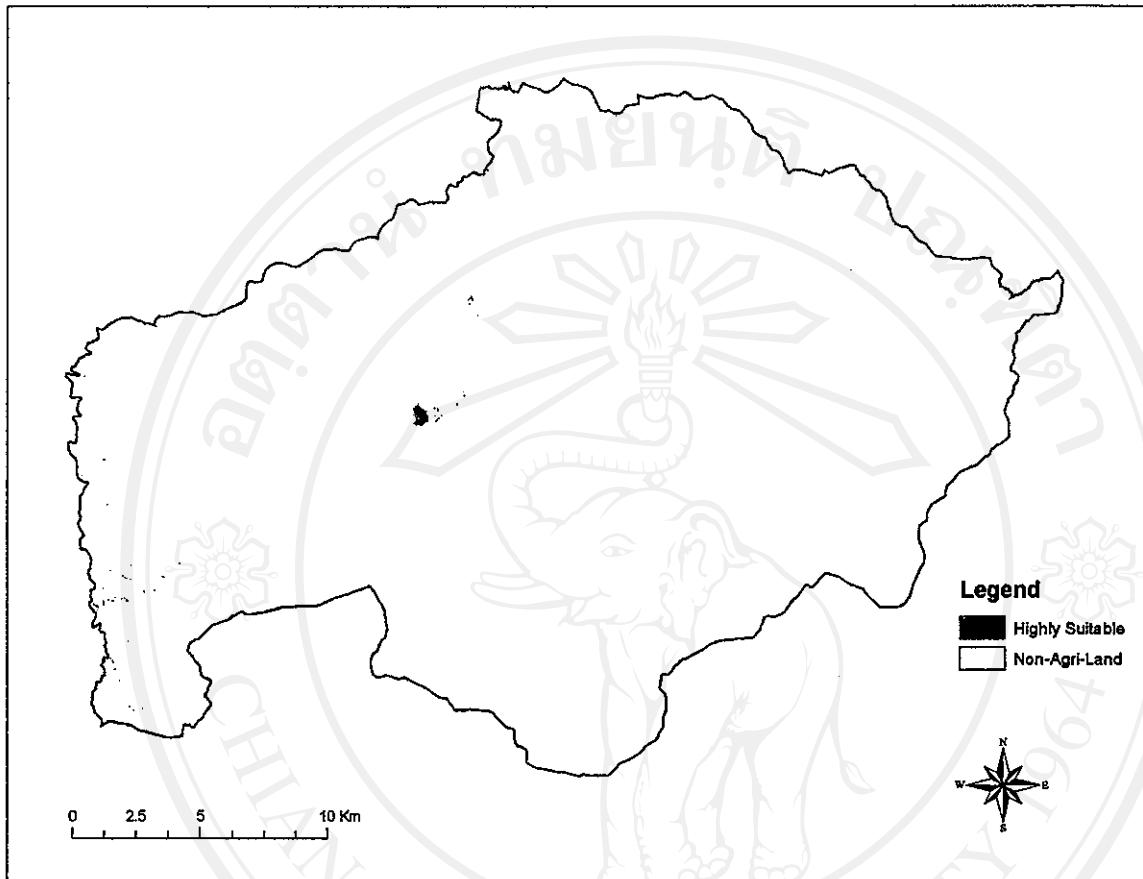
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Appendix D-9 The annual soil loss in Nam Dong district covered by rainfed upland-rice

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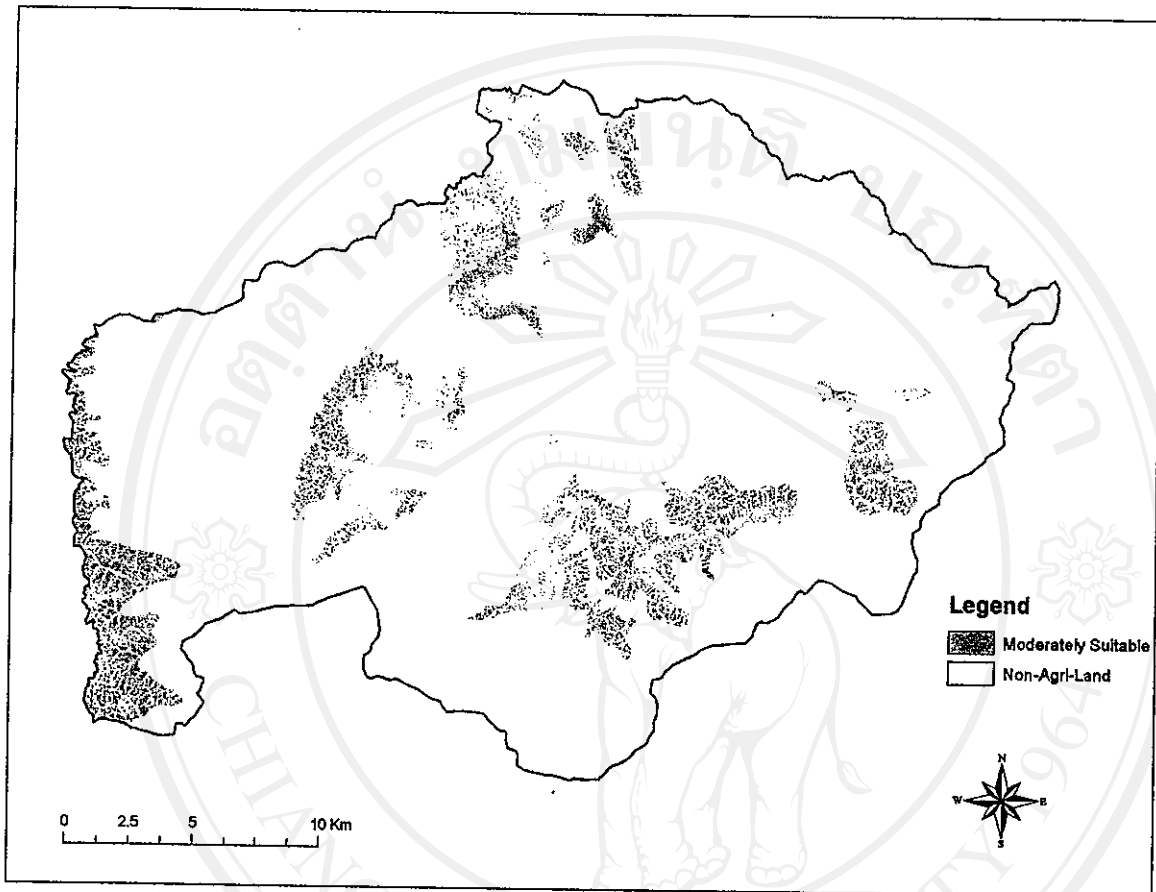
Appendix E The relative physical suitability of eleven crop maps in the study area



Appendix E-1 The relative physical suitability of banana in Nam Dong district

Appendix E-2 The relative physical suitability area of banana and its proportion in Nam Dong district

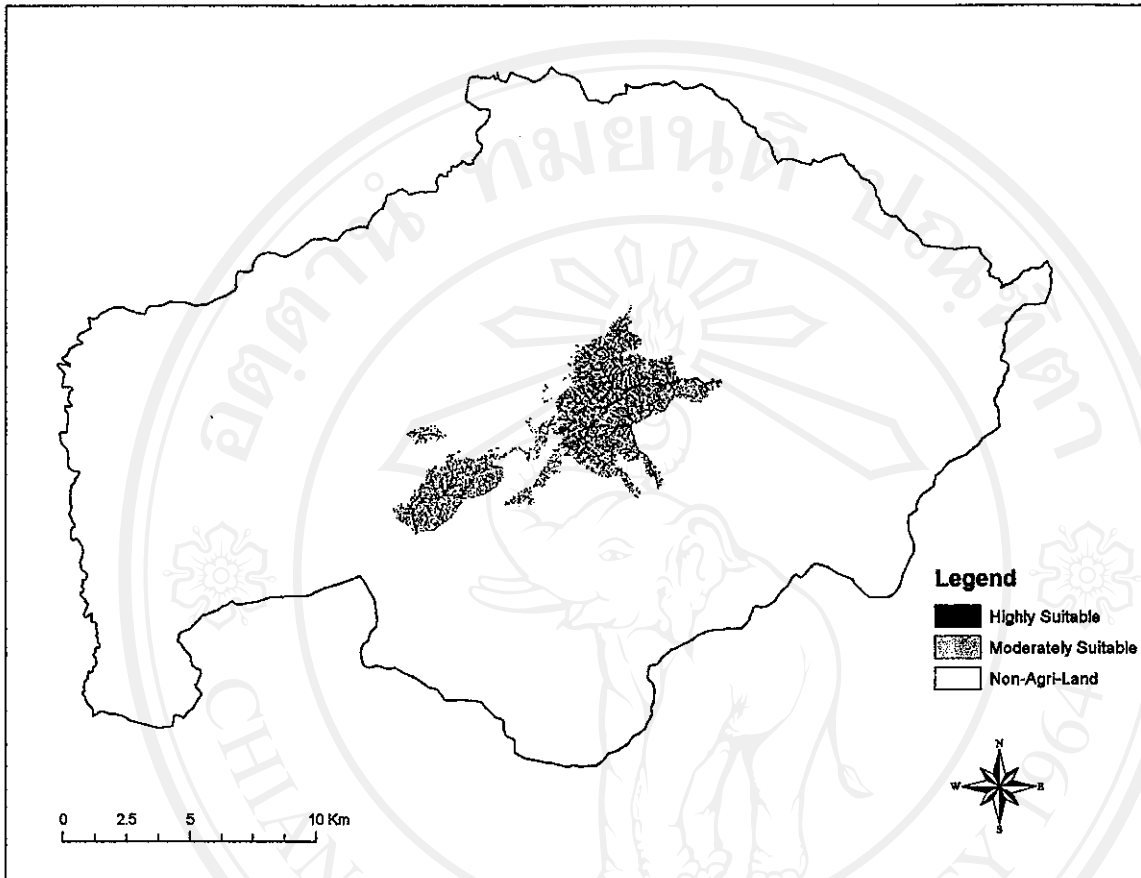
| Suitability class | Area (ha) | Proportion (%) |
|---------------------|---------------|----------------|
| Highly suitable | 59.310 | 0.286 |
| Moderately suitable | 0.000 | 0.000 |
| Marginally suitable | 0.000 | 0.000 |
| Non Suitable | 0.000 | 0.000 |
| Sum | 59.310 | 0.286 |



Appendix E-3 The relative physical suitability of bean in Nam Dong district

Appendix E-4 The relative physical suitability area of bean and its proportion in Nam Dong district

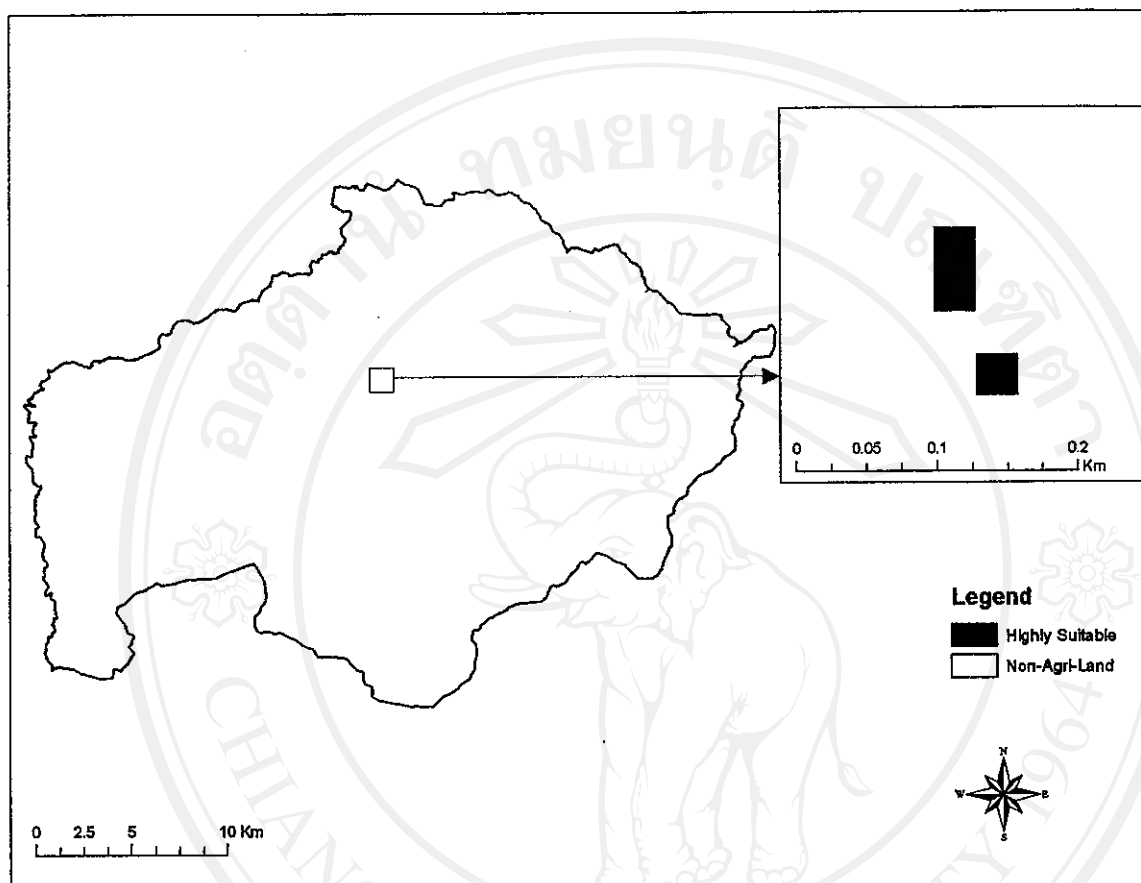
| Suitability class | Area (ha) | Proportion (%) |
|---------------------|-----------------|----------------|
| Highly suitable | 0.000 | 0.000 |
| Moderately suitable | 4689.720 | 22.606 |
| Marginally suitable | 0.000 | 0.000 |
| Non Suitable | 0.000 | 0.000 |
| Sum | 4689.720 | 22.606 |



Appendix E-5 The relative physical suitability of cassava in Nam Dong district

Appendix E-6 The relative physical suitability area of Cassava and its proportion in Nam Dong district

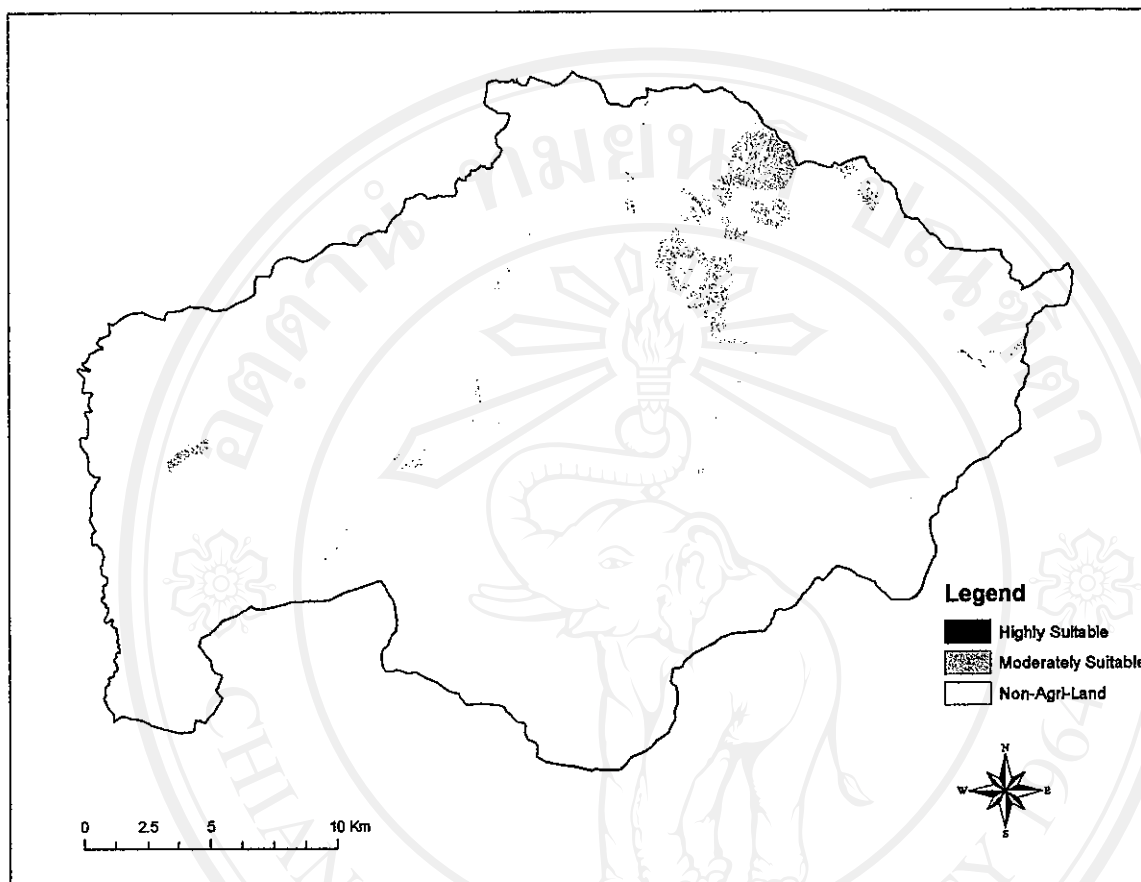
| Suitability class | Area (ha) | Proportion (%) |
|---------------------|-----------------|----------------|
| Highly suitable | 1025.730 | 4.944 |
| Moderately suitable | 1063.800 | 5.128 |
| Marginally suitable | 0.000 | 0.000 |
| Non Suitable | 0.000 | 0.000 |
| Sum | 2089.530 | 10.072 |



Appendix E-7 The relative physical suitability of irrigated-rice in Nam Dong district

Appendix E-8 The relative physical suitability area of irrigated-rice and its proportion in Nam Dong district

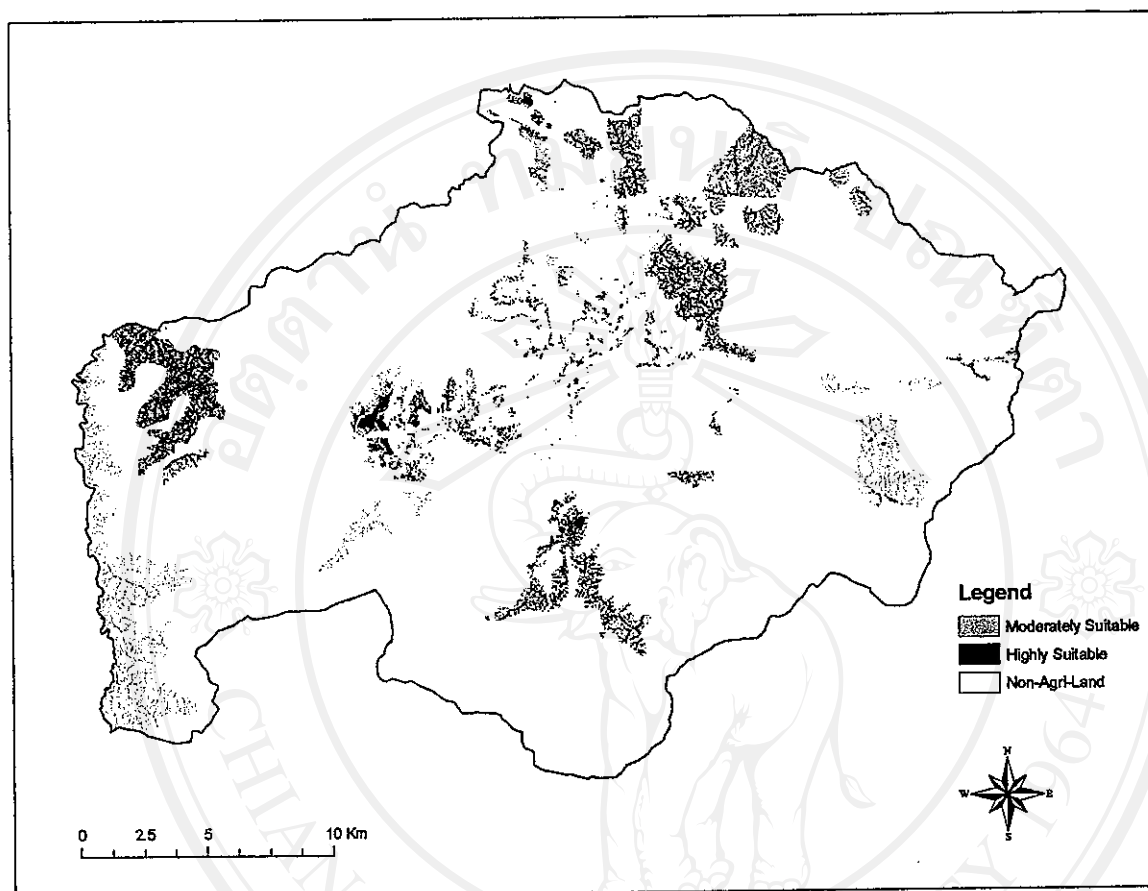
| Suitability class | Area (ha) | Proportion (%) |
|---------------------|--------------|----------------|
| Highly suitable | 0.360 | 0.002 |
| Moderately suitable | 0.000 | 0.000 |
| Marginally suitable | 0.000 | 0.000 |
| Non Suitable | 0.000 | 0.000 |
| Sum | 0.360 | 0.002 |



Appendix E-9 The relative physical suitability of maize in Nam Dong district

Appendix E-10 The relative physical suitability area of maize and its proportion in Nam Dong district

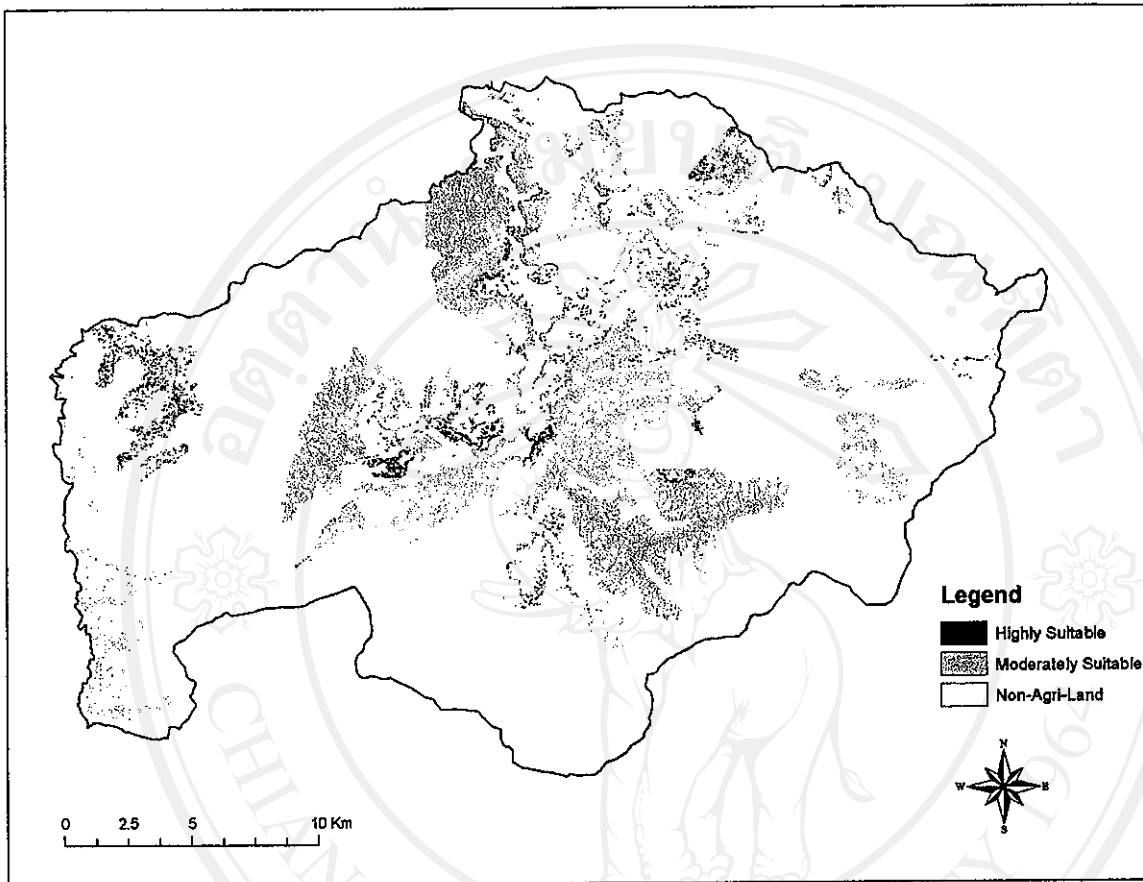
| Suitability class | Area (ha) | Proportion (%) |
|---------------------|----------------|----------------|
| Highly suitable | 1.260 | 0.006 |
| Moderately suitable | 938.340 | 4.523 |
| Marginally suitable | 0.000 | 0.000 |
| Non Suitable | 0.000 | 0.000 |
| Sum | 939.600 | 4.529 |



Appendix E-11 The relative physical suitability of pineapple in Nam Dong district

Appendix E-12 The relative physical suitability area of pineapple and its proportion in Nam Dong district

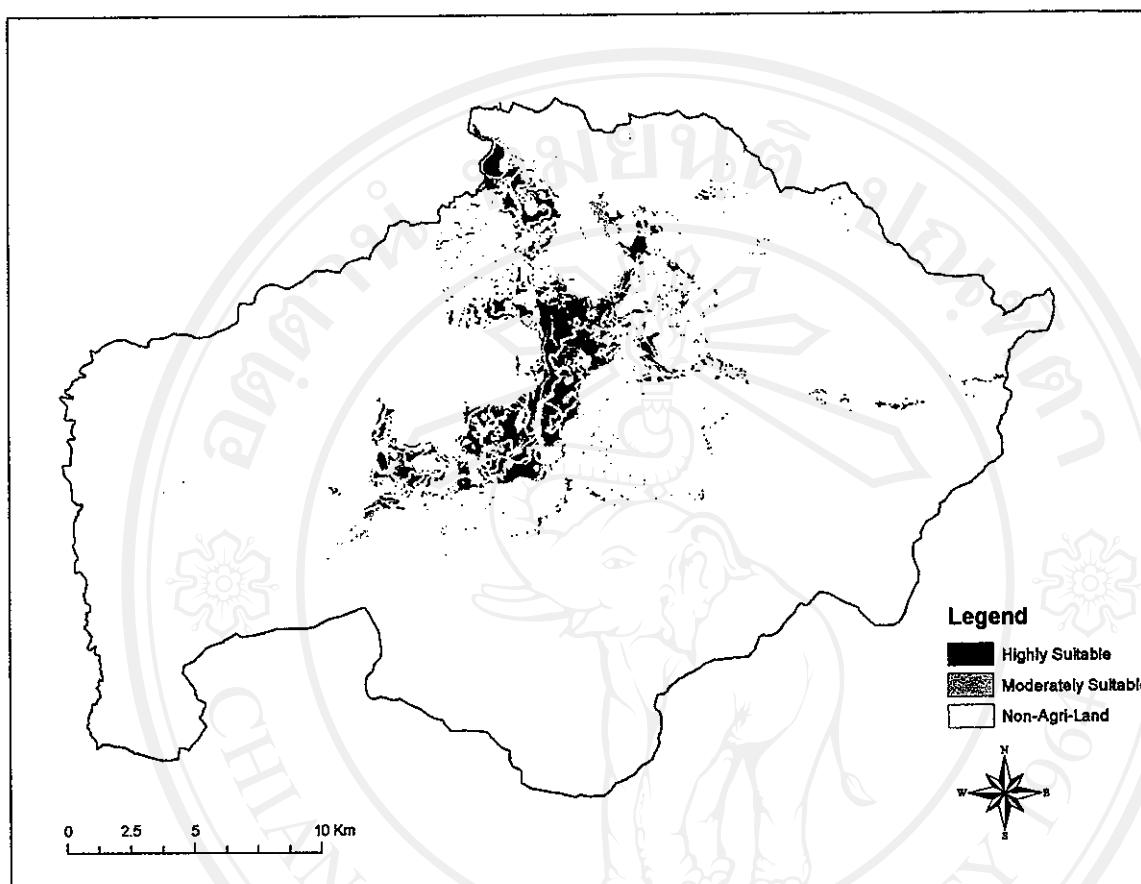
| Suitability class | Area (ha) | Proportion (%) |
|---------------------|-----------------|----------------|
| Highly suitable | 2232.630 | 10.762 |
| Moderately suitable | 1907.100 | 9.193 |
| Marginally suitable | 0.000 | 0.000 |
| Non Suitable | 0.000 | 0.000 |
| Sum | 4139.730 | 19.955 |



Appendix E-13 The relative physical suitability of rubber in Nam Dong district

Appendix E-14 The relative physical suitability area of rubber and its proportion in Nam Dong district

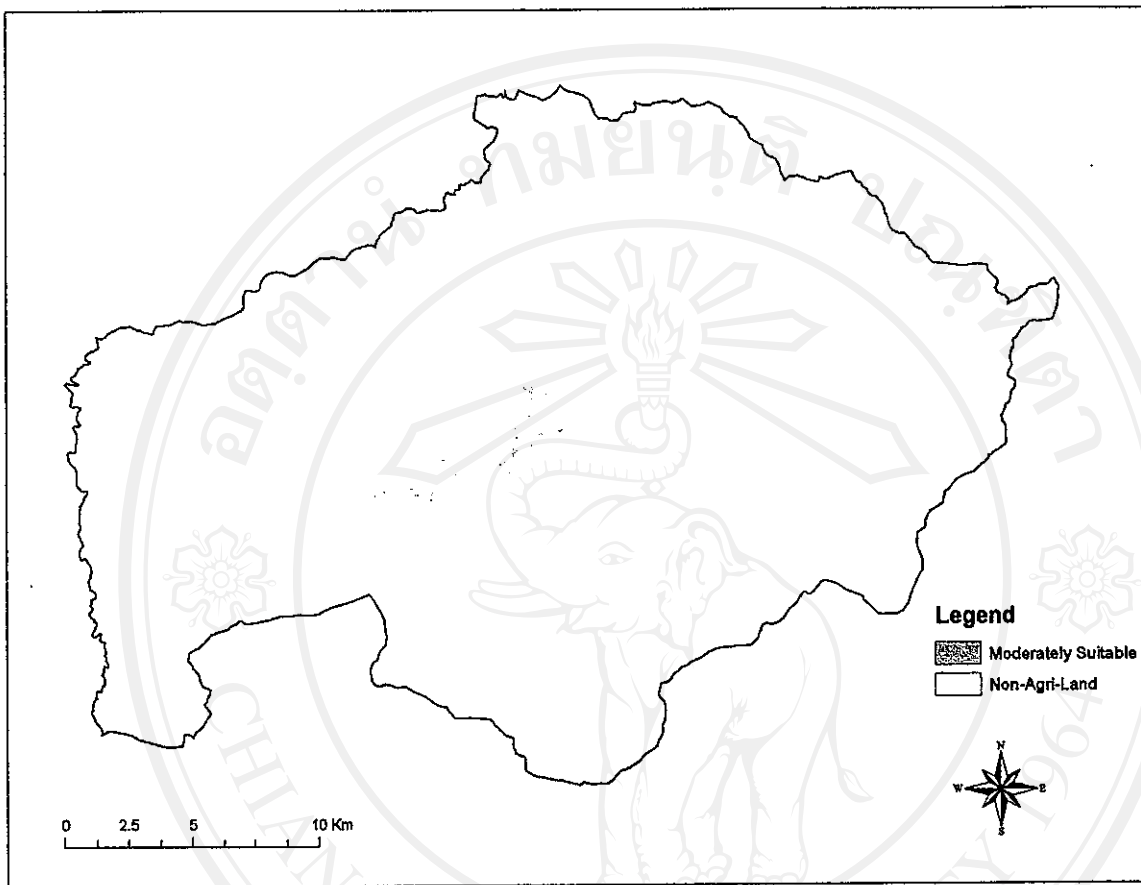
| Suitability class | Area (ha) | Proportion (%) |
|---------------------|-----------------|----------------|
| Highly suitable | 782.730 | 3.773 |
| Moderately suitable | 5630.130 | 27.139 |
| Marginally suitable | 0.000 | 0.000 |
| Non Suitable | 0.000 | 0.000 |
| Sum | 6412.860 | 30.912 |



Appendix E-15 The relative physical suitability of sugarcane in Nam Dong district

Appendix E-16 The relative physical suitability area of sugarcane and its proportion in Nam Dong district

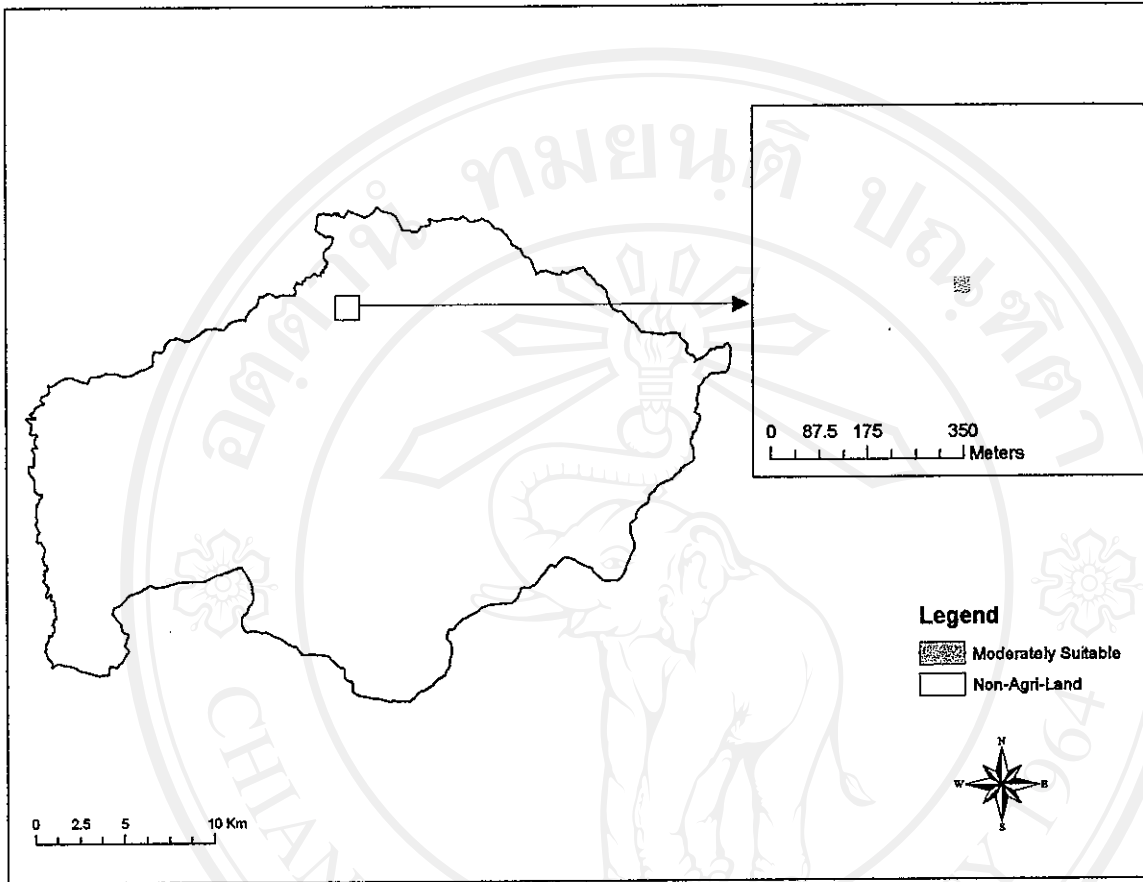
| Suitability class | Area (ha) | Proportion (%) |
|---------------------|-----------------|----------------|
| Highly suitable | 2263.23 | 10.909 |
| Moderately suitable | 114.390 | 0.551 |
| Marginally suitable | 0.000 | 0.000 |
| Non Suitable | 0.000 | 0.000 |
| Sum | 2377.620 | 11.461 |



Appendix E-17 The relative physical suitability of sweet-potato in Nam Dong district

Appendix E-18 The relative physical suitability area of sweet-potato and its proportion in Nam Dong district

| Suitability class | Area (ha) | Proportion (%) |
|---------------------|---------------|----------------|
| Highly suitable | 0.000 | 0.000 |
| Moderately suitable | 36.810 | 0.177 |
| Marginally suitable | 0.000 | 0.000 |
| Non Suitable | 0.000 | 0.000 |
| Sum | 36.810 | 0.177 |



Appendix E-19 The relative physical suitability of upland-rice in Nam Dong district

Appendix E-20 The relative physical suitability area of upland-rice and its proportion in Nam Dong district

| Suitability class | Area (ha) | Proportion (%) |
|---------------------|--------------|----------------|
| Highly suitable | 0.000 | 0.000 |
| Moderately suitable | 0.180 | 0.001 |
| Marginally suitable | 0.000 | 0.000 |
| Non Suitable | 0.000 | 0.000 |
| Sum | 0.180 | 0.001 |

Appendix F The weight calculation of eleven crops in the study area

Weight calculation of Rubber

Consistent matrix

| | Tem | Rainfall | Depth | Drainage | CEC | pH | OM | Slope |
|----------|------|----------|-------|----------|------|-------|------|-------|
| Tem | 1.00 | 2.00 | 0.33 | 4.00 | 2.00 | 4.00 | 1.00 | 4.00 |
| Rainfall | 0.50 | 1.00 | 0.20 | 2.00 | 1.00 | 2.00 | 0.50 | 2.00 |
| Depth | 3.00 | 5.00 | 1.00 | 7.00 | 5.00 | 7.00 | 3.00 | 7.00 |
| Drainage | 0.25 | 0.50 | 0.14 | 1.00 | 0.50 | 1.00 | 0.25 | 1.00 |
| CEC | 0.50 | 1.00 | 0.20 | 2.00 | 1.00 | 2.00 | 0.50 | 2.00 |
| pH | 0.25 | 0.50 | 0.14 | 1.00 | 0.50 | 1.00 | 0.25 | 1.00 |
| OM | 1.00 | 2.00 | 0.33 | 4.00 | 2.00 | 4.00 | 1.00 | 4.00 |
| Slope | 0.25 | 0.50 | 0.14 | 1.00 | 0.50 | 1.00 | 0.25 | 1.00 |
| Sum | 6.75 | 12.5 | 2.49 | 22.00 | 12.5 | 22.00 | 6.75 | 22.00 |

Calculate priorities using approximation method

| | Tem | Rainfall | Depth | Drainage | CEC | pH | OM | Slope | W |
|----------|-------|----------|-------|----------|------|-------|-------|-------|--------------|
| Tem | 0.148 | 0.16 | 0.134 | 0.182 | 0.16 | 0.182 | 0.148 | 0.182 | 0.162 |
| Rainfall | 0.074 | 0.08 | 0.08 | 0.091 | 0.08 | 0.091 | 0.074 | 0.091 | 0.083 |
| Depth | 0.444 | 0.40 | 0.401 | 0.318 | 0.40 | 0.318 | 0.444 | 0.318 | 0.381 |
| Drainage | 0.037 | 0.04 | 0.057 | 0.045 | 0.04 | 0.045 | 0.037 | 0.045 | 0.043 |
| CEC | 0.074 | 0.08 | 0.08 | 0.091 | 0.08 | 0.091 | 0.074 | 0.091 | 0.083 |
| pH | 0.037 | 0.04 | 0.057 | 0.045 | 0.04 | 0.045 | 0.037 | 0.045 | 0.043 |
| OM | 0.148 | 0.16 | 0.134 | 0.182 | 0.16 | 0.182 | 0.148 | 0.182 | 0.162 |
| Slope | 0.037 | 0.04 | 0.057 | 0.045 | 0.04 | 0.045 | 0.037 | 0.045 | 0.043 |
| Sum | | | | | | | | | 1.000 |

Determine λ_{\max}

| | Tem | Rainfall | Depth | Drainage | CEC | pH | OM | Slope |
|----------|-------|----------|-------|----------|-------|-------|-------|-------|
| | 0.162 | 0.083 | 0.381 | 0.043 | 0.083 | 0.043 | 0.162 | 0.043 |
| Tem | 1.000 | 2.000 | 0.333 | 4.000 | 2.000 | 4.000 | 1.000 | 4.000 |
| Rainfall | 0.500 | 1.000 | 0.200 | 2.000 | 1.000 | 2.000 | 0.500 | 2.000 |
| Depth | 3.000 | 5.000 | 1.000 | 7.000 | 5.000 | 7.000 | 3.000 | 7.000 |
| Drainage | 0.250 | 0.500 | 0.143 | 1.000 | 0.500 | 1.000 | 0.250 | 1.000 |
| CEC | 0.500 | 1.000 | 0.200 | 2.000 | 1.000 | 2.000 | 0.500 | 2.000 |
| pH | 0.250 | 0.500 | 0.143 | 1.000 | 0.500 | 1.000 | 0.250 | 1.000 |
| OM | 1.000 | 2.000 | 0.333 | 4.000 | 2.000 | 4.000 | 1.000 | 4.000 |
| Slope | 0.250 | 0.500 | 0.143 | 1.000 | 0.500 | 1.000 | 0.250 | 1.000 |

Calculate [A]·[W]

| | | | | | | | | | |
|----------|-------|-------|-------|--------|-------|-------|-------|-------|---------|
| | Tem | Rain. | Depth | Drain. | CEC | pH | OM | Slope | [A]·[W] |
| Tem | 0.162 | 0.165 | 0.127 | 0.174 | 0.165 | 0.174 | 0.162 | 0.174 | 1.303 |
| Rainfall | 0.081 | 0.083 | 0.076 | 0.087 | 0.083 | 0.087 | 0.081 | 0.087 | 0.664 |
| Depth | 0.486 | 0.413 | 0.381 | 0.304 | 0.413 | 0.304 | 0.486 | 0.304 | 3.091 |
| Drainage | 0.04 | 0.041 | 0.054 | 0.043 | 0.041 | 0.043 | 0.04 | 0.043 | 0.348 |
| CEC | 0.081 | 0.083 | 0.076 | 0.087 | 0.083 | 0.087 | 0.081 | 0.087 | 0.664 |
| pH | 0.04 | 0.041 | 0.054 | 0.043 | 0.041 | 0.043 | 0.04 | 0.043 | 0.348 |
| OM | 0.162 | 0.165 | 0.127 | 0.174 | 0.165 | 0.174 | 0.162 | 0.174 | 1.303 |
| Slope | 0.04 | 0.041 | 0.054 | 0.043 | 0.041 | 0.043 | 0.04 | 0.043 | 0.348 |

Calculate λ_{\max}

| | | | | |
|-------|--------|---------|-------|-------|
| 1.303 | | 0.162 | | 8.046 |
| 0.664 | | 0.083 | | 8.037 |
| 3.091 | | 0.381 | | 8.123 |
| 0.348 | | 0.043 | | 8.015 |
| 0.664 | divide | 0.083 | equal | 8.037 |
| 0.348 | | 0.043 | | 8.015 |
| 1.303 | | 0.162 | | 8.046 |
| 0.348 | | 0.043 | | 8.015 |
| | | average | | 8.041 |

Size of matrix is 8, so that Random consistency is equal 1.41 and $CR < 0.10$

$$CI = ((\lambda_{\max} - n)/n - 1) = 0.006$$

$$CR = CI/1.41 = 0.004 < 0.10 \quad \text{Consistency}$$

Consistent matrix of crop suitability and soil loss

| | Crop suitability | Soil loss |
|------------------|------------------|-----------|
| Crop suitability | 1.00 | 1.00 |
| Soil loss | 1.00 | 1.00 |
| Sum | 2.00 | 2.00 |

Calculate priorities using approximation method

| | Crop suitability | Soil loss | W |
|------------------|------------------|-----------|-------------|
| Crop suitability | 0.50 | 0.50 | 0.50 |
| Soil loss | 0.50 | 0.50 | 0.50 |

Weight calculation of Cassava

Consistent matrix

| | | | | | | | | |
|----------|------|--------|-------|--------|-------|------|------|-------|
| | Tem | Rain.l | Depth | Drain. | CEC | pH | OM | Slope |
| Tem | 1.00 | 3.00 | 0.50 | 5.00 | 3.00 | 0.50 | 1.00 | 5.00 |
| Rainfall | 0.33 | 1.00 | 0.20 | 2.00 | 1.00 | 0.20 | 0.33 | 2.00 |
| Depth | 2.00 | 5.00 | 1.00 | 7.00 | 5.00 | 1.00 | 2.00 | 7.00 |
| Drainage | 0.20 | 0.50 | 0.14 | 1.00 | 0.50 | 0.14 | 0.20 | 1.00 |
| CEC | 0.33 | 1.00 | 0.20 | 2.00 | 1.00 | 0.20 | 0.33 | 2.00 |
| pH | 2.00 | 5.00 | 1.00 | 7.00 | 5.00 | 1.00 | 2.00 | 7.00 |
| OM | 1.00 | 3.00 | 0.50 | 5.00 | 3.00 | 0.50 | 1.00 | 5.00 |
| Slope | 0.20 | 0.50 | 0.14 | 1.00 | 0.50 | 0.14 | 0.20 | 1.00 |
| Sum | 7.07 | 19.00 | 3.69 | 30.00 | 19.00 | 3.69 | 7.07 | 30.00 |

Calculate priorities using approximation method

| | | | | | | | | | |
|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------------|
| | Tem | Rain. | Depth | Drain. | CEC | pH | OM | Slope | W |
| Tem | 0.1415 | 0.1579 | 0.1357 | 0.1667 | 0.1579 | 0.1357 | 0.1415 | 0.1667 | 0.150 |
| Rainfall | 0.0472 | 0.0526 | 0.0543 | 0.0667 | 0.0526 | 0.0543 | 0.0472 | 0.0667 | 0.055 |
| Depth | 0.283 | 0.2632 | 0.2713 | 0.2333 | 0.2632 | 0.2713 | 0.283 | 0.2333 | 0.263 |
| Drainage | 0.0283 | 0.0263 | 0.0388 | 0.0333 | 0.0263 | 0.0388 | 0.0283 | 0.0333 | 0.032 |
| CEC | 0.0472 | 0.0526 | 0.0543 | 0.0667 | 0.0526 | 0.0543 | 0.0472 | 0.0667 | 0.055 |
| pH | 0.283 | 0.2632 | 0.2713 | 0.2333 | 0.2632 | 0.2713 | 0.283 | 0.2333 | 0.263 |
| OM | 0.1415 | 0.1579 | 0.1357 | 0.1667 | 0.1579 | 0.1357 | 0.1415 | 0.1667 | 0.150 |
| Slope | 0.0283 | 0.0263 | 0.0388 | 0.0333 | 0.0263 | 0.0388 | 0.0283 | 0.0333 | 0.032 |
| Sum | | | | | | | | | 1.000 |

Determine λ_{max}

| | | | | | | | | |
|----------|-------|-------|-------|--------|-------|-------|-------|-------|
| | Tem | Rain. | Depth | Drain. | CEC | pH | OM | Slope |
| | 0.150 | 0.055 | 0.263 | 0.032 | 0.055 | 0.263 | 0.150 | 0.032 |
| Tem | 1.000 | 3.000 | 0.500 | 5.000 | 3.000 | 0.500 | 1.000 | 5.000 |
| Rainfall | 0.333 | 1.000 | 0.200 | 2.000 | 1.000 | 0.200 | 0.333 | 2.000 |
| Depth | 2.000 | 5.000 | 1.000 | 7.000 | 5.000 | 1.000 | 2.000 | 7.000 |
| Drainage | 0.200 | 0.500 | 0.143 | 1.000 | 0.500 | 0.143 | 0.200 | 1.000 |
| CEC | 0.333 | 1.000 | 0.200 | 2.000 | 1.000 | 0.200 | 0.333 | 2.000 |
| pH | 2.000 | 5.000 | 1.000 | 7.000 | 5.000 | 1.000 | 2.000 | 7.000 |
| OM | 1.000 | 3.000 | 0.500 | 5.000 | 3.000 | 0.500 | 1.000 | 5.000 |
| Slope | 0.200 | 0.500 | 0.143 | 1.000 | 0.500 | 0.143 | 0.200 | 1.000 |

Calculate [A]x[W]

| | | | | | | | | | |
|----------|-------|-------|-------|--------|-------|-------|-------|-------|---------|
| | Tem | Rain. | Depth | Drain. | CEC | pH | OM | Slope | [A]x[W] |
| Tem | 0.150 | 0.166 | 0.131 | 0.158 | 0.166 | 0.131 | 0.150 | 0.158 | 1.211 |
| Rainfall | 0.050 | 0.055 | 0.053 | 0.063 | 0.055 | 0.053 | 0.050 | 0.063 | 0.442 |
| Depth | 0.301 | 0.276 | 0.263 | 0.222 | 0.276 | 0.263 | 0.301 | 0.222 | 2.122 |
| Drainage | 0.030 | 0.028 | 0.038 | 0.032 | 0.028 | 0.038 | 0.030 | 0.032 | 0.254 |
| CEC | 0.050 | 0.055 | 0.053 | 0.063 | 0.055 | 0.053 | 0.050 | 0.063 | 0.442 |
| pH | 0.301 | 0.276 | 0.263 | 0.222 | 0.276 | 0.263 | 0.301 | 0.222 | 2.122 |
| OM | 0.150 | 0.166 | 0.131 | 0.158 | 0.166 | 0.131 | 0.150 | 0.158 | 1.211 |
| Slope | 0.030 | 0.028 | 0.038 | 0.032 | 0.028 | 0.038 | 0.030 | 0.032 | 0.254 |

Calculate λ_{max}

| | | | | |
|--------|--------|---------|-------|--------|
| 1.2114 | | 0.1504 | | 8.0531 |
| 0.4424 | | 0.0552 | | 8.0178 |
| 2.1225 | | 0.2627 | | 8.0792 |
| 0.2538 | | 0.0317 | | 8.011 |
| 0.4424 | divide | 0.0552 | equal | 8.0178 |
| 2.1225 | | 0.2627 | | 8.0792 |
| 1.2114 | | 0.1504 | | 8.0531 |
| 0.2538 | | 0.0317 | | 8.011 |
| | | average | | 8.0403 |

Size of matrix is 8, so that Random consistency is equal 1.41 and CR < 0.10

$$CI = ((\lambda_{max} - n)/n-1) = 0.0058$$

$$CR = CI/1.41 = 0.0041 < 0.10 \quad \text{Consistency}$$

Consistent matrix of crop suitability and soil loss

| | Crop suitability | Soil loss |
|------------------|------------------|-----------|
| Crop suitability | 1.0 | 2.0 |
| Soil loss | 0.5 | 1.0 |
| Sum | 1.5 | 3.0 |

Calculate priorities using approximation method

| | Crop suitability | Soil loss | W |
|------------------|------------------|-----------|-------------|
| Crop suitability | 0.67 | 0.67 | 0.67 |
| Soil loss | 0.33 | 0.33 | 0.33 |

Weight calculation of Maize

Consistent matrix

| | Tem | Rain. | Depth | Drain. | CEC | pH | OM | Slope |
|----------|------|-------|-------|--------|------|------|-----|-------|
| Tem | 1.0 | 1.0 | 1.0 | 0.3 | 2.0 | 2.0 | 0.3 | 2.0 |
| Rainfall | 1.0 | 1.0 | 1.0 | 0.3 | 2.0 | 2.0 | 0.3 | 2.0 |
| Depth | 1.0 | 1.0 | 1.0 | 0.3 | 2.0 | 2.0 | 0.3 | 2.0 |
| Drainage | 3.0 | 3.0 | 3.0 | 1.0 | 5.0 | 5.0 | 1.0 | 5.0 |
| CEC | 0.5 | 0.5 | 0.5 | 0.2 | 1.0 | 1.0 | 0.2 | 1.0 |
| pH | 0.5 | 0.5 | 0.5 | 0.2 | 1.0 | 1.0 | 0.2 | 1.0 |
| OM | 3.0 | 3.0 | 3.0 | 1.0 | 5.0 | 5.0 | 1.0 | 5.0 |
| Slope | 0.5 | 0.5 | 0.5 | 0.2 | 1.0 | 1.0 | 0.2 | 1.0 |
| Sum | 10.5 | 10.5 | 10.5 | 3.6 | 19.0 | 19.0 | 3.6 | 19.0 |

Calculate priorities using approximation method

| | Tem | Rain. | Depth | Drain. | CEC | pH | OM | Slope | W |
|----------|------|-------|-------|--------|------|------|------|-------|--------------|
| Tem | 0.10 | 0.10 | 0.10 | 0.09 | 0.11 | 0.11 | 0.09 | 0.11 | 0.098 |
| Rainfall | 0.10 | 0.10 | 0.10 | 0.09 | 0.11 | 0.11 | 0.09 | 0.11 | 0.098 |
| Depth | 0.10 | 0.10 | 0.10 | 0.09 | 0.11 | 0.11 | 0.09 | 0.11 | 0.098 |
| Drainage | 0.29 | 0.29 | 0.29 | 0.28 | 0.26 | 0.26 | 0.28 | 0.26 | 0.275 |
| CEC | 0.05 | 0.05 | 0.05 | 0.06 | 0.05 | 0.05 | 0.06 | 0.05 | 0.051 |
| pH | 0.05 | 0.05 | 0.05 | 0.06 | 0.05 | 0.05 | 0.06 | 0.05 | 0.051 |
| OM | 0.29 | 0.29 | 0.29 | 0.28 | 0.26 | 0.26 | 0.28 | 0.26 | 0.275 |
| Slope | 0.05 | 0.05 | 0.05 | 0.06 | 0.05 | 0.05 | 0.06 | 0.05 | 0.051 |
| Sum | | | | | | | | | 1.000 |

Determine λ max

| | Tem | Rain. | Depth | Drain. | CEC | pH | OM | Slope |
|----------|------|-------|-------|--------|------|------|------|-------|
| | 0.10 | 0.10 | 0.10 | 0.28 | 0.05 | 0.05 | 0.28 | 0.05 |
| Tem | 1.00 | 1.00 | 1.00 | 0.33 | 2.00 | 2.00 | 0.33 | 2.00 |
| Rainfall | 1.00 | 1.00 | 1.00 | 0.33 | 2.00 | 2.00 | 0.33 | 2.00 |
| Depth | 1.00 | 1.00 | 1.00 | 0.33 | 2.00 | 2.00 | 0.33 | 2.00 |
| Drainage | 3.00 | 3.00 | 3.00 | 1.00 | 5.00 | 5.00 | 1.00 | 5.00 |
| CEC | 0.50 | 0.50 | 0.50 | 0.20 | 1.00 | 1.00 | 0.20 | 1.00 |
| pH | 0.50 | 0.50 | 0.50 | 0.20 | 1.00 | 1.00 | 0.20 | 1.00 |
| OM | 3.00 | 3.00 | 3.00 | 1.00 | 5.00 | 5.00 | 1.00 | 5.00 |
| Slope | 0.50 | 0.50 | 0.50 | 0.20 | 1.00 | 1.00 | 0.20 | 1.00 |

Calculate [A]·[W]

| | Tem | Rain. | Depth | Drain. | CEC | pH | OM | Slope | [A]·[W] |
|----------|------|-------|-------|--------|------|------|------|-------|---------|
| Tem | 0.10 | 0.10 | 0.10 | 0.09 | 0.10 | 0.10 | 0.09 | 0.10 | 0.79 |
| Rainfall | 0.10 | 0.10 | 0.10 | 0.09 | 0.10 | 0.10 | 0.09 | 0.10 | 0.79 |
| Depth | 0.10 | 0.10 | 0.10 | 0.09 | 0.10 | 0.10 | 0.09 | 0.10 | 0.79 |
| Drainage | 0.30 | 0.30 | 0.30 | 0.28 | 0.26 | 0.26 | 0.28 | 0.26 | 2.21 |
| CEC | 0.05 | 0.05 | 0.05 | 0.06 | 0.05 | 0.05 | 0.06 | 0.05 | 0.41 |
| pH | 0.05 | 0.05 | 0.05 | 0.06 | 0.05 | 0.05 | 0.06 | 0.05 | 0.41 |
| OM | 0.3 | 0.30 | 0.30 | 0.28 | 0.26 | 0.26 | 0.28 | 0.26 | 2.21 |
| Slope | 0.05 | 0.05 | 0.05 | 0.06 | 0.05 | 0.05 | 0.06 | 0.05 | 0.41 |

Calculate λ_{max}

| | | | | |
|------|--------|---------|-------|------|
| 0.79 | | 0.10 | | 8.01 |
| 0.79 | | 0.10 | | 8.01 |
| 0.79 | | 0.10 | | 8.01 |
| 2.21 | | 0.28 | | 8.02 |
| 0.41 | divide | 0.05 | equal | 8.00 |
| 0.41 | | 0.05 | | 8.00 |
| 2.21 | | 0.28 | | 8.02 |
| 0.41 | | 0.05 | | 8.00 |
| | | average | | 8.01 |

Size of matrix is 8, so that Random consistency is equal 1.41 and $CR < 0.10$

$$CI = ((\lambda_{max} - n) / (n - 1)) = 0.00134$$

$$CR = CI / 1.41 = 0.00095 < 0.10 \quad \text{Consistency}$$

Consistent matrix of crop suitability and soil loss

| | Crop suitability | Soil loss |
|------------------|------------------|-----------|
| Crop suitability | 1.00 | 3.00 |
| Soil loss | 0.33 | 1.00 |
| Sum | 1.33 | 4.00 |

Calculate priorities using approximation method

| | Crop suitability | Soil loss | W |
|------------------|------------------|-----------|-------------|
| Crop suitability | 0.75 | 0.75 | 0.75 |
| Soil loss | 0.25 | 0.25 | 0.25 |

Weight calculation of Bean

Consistent matrix

| | Tem | Rain. | Depth | Drain. | CEC | pH | OM | Slope |
|----------|-------|-------|-------|--------|------|-------|-------|-------|
| Tem | 1.00 | 0.20 | 1.00 | 0.14 | 0.20 | 1.00 | 0.33 | 2.00 |
| Rainfall | 5.00 | 1.00 | 5.00 | 0.50 | 1.00 | 5.00 | 2.00 | 7.00 |
| Depth | 1.00 | 0.20 | 1.00 | 0.14 | 0.20 | 1.00 | 0.33 | 2.00 |
| Drainage | 7.00 | 2.00 | 7.00 | 1.00 | 2.00 | 7.00 | 4.00 | 9.00 |
| CEC | 5.00 | 1.00 | 5.00 | 0.50 | 1.00 | 5.00 | 2.00 | 7.00 |
| pH | 1.00 | 0.20 | 1.00 | 0.14 | 0.20 | 1.00 | 0.33 | 2.00 |
| OM | 3.00 | 0.50 | 3.00 | 0.25 | 0.50 | 3.00 | 1.00 | 5.00 |
| Slope | 0.50 | 0.14 | 0.50 | 0.11 | 0.14 | 0.50 | 0.20 | 1.00 |
| Sum | 23.50 | 5.24 | 23.50 | 2.79 | 5.24 | 23.50 | 10.20 | 35.00 |

Calculate priorities using approximation method

| | Tem | Rain. | Depth | Drain. | CEC | pH | OM | Slope | W |
|----------|-------|-------|-------|--------|-------|-------|-------|-------|--------------|
| Tem | 0.043 | 0.038 | 0.043 | 0.051 | 0.038 | 0.043 | 0.033 | 0.057 | 0.043 |
| Rainfall | 0.213 | 0.191 | 0.213 | 0.179 | 0.191 | 0.213 | 0.196 | 0.200 | 0.199 |
| Depth | 0.043 | 0.038 | 0.043 | 0.051 | 0.038 | 0.043 | 0.033 | 0.057 | 0.043 |
| Drainage | 0.298 | 0.381 | 0.298 | 0.358 | 0.381 | 0.298 | 0.392 | 0.257 | 0.333 |
| CEC | 0.213 | 0.191 | 0.213 | 0.179 | 0.191 | 0.213 | 0.196 | 0.200 | 0.199 |
| pH | 0.043 | 0.038 | 0.043 | 0.051 | 0.038 | 0.043 | 0.033 | 0.057 | 0.043 |
| OM | 0.128 | 0.095 | 0.128 | 0.090 | 0.095 | 0.128 | 0.098 | 0.143 | 0.113 |
| Slope | 0.021 | 0.027 | 0.021 | 0.040 | 0.027 | 0.021 | 0.020 | 0.029 | 0.026 |
| Sum | | | | | | | | | 1.000 |

Determine λ_{\max}

| | Tem | Rain. | Depth | Drain. | CEC | pH | OM | Slope |
|----------|-------|-------|-------|--------|-------|-------|-------|-------|
| | 0.043 | 0.199 | 0.043 | 0.333 | 0.199 | 0.043 | 0.113 | 0.026 |
| Tem | 1.000 | 0.200 | 1.000 | 0.143 | 0.200 | 1.000 | 0.333 | 2.000 |
| Rainfall | 5.000 | 1.000 | 5.000 | 0.500 | 1.000 | 5.000 | 2.000 | 7.000 |
| Depth | 1.000 | 0.200 | 1.000 | 0.143 | 0.200 | 1.000 | 0.333 | 2.000 |
| Drainage | 7.000 | 2.000 | 7.000 | 1.000 | 2.000 | 7.000 | 4.000 | 9.000 |
| CEC | 5.000 | 1.000 | 5.000 | 0.500 | 1.000 | 5.000 | 2.000 | 7.000 |
| pH | 1.000 | 0.200 | 1.000 | 0.143 | 0.200 | 1.000 | 0.333 | 2.000 |
| OM | 3.000 | 0.500 | 3.000 | 0.250 | 0.500 | 3.000 | 1.000 | 5.000 |
| Slope | 0.500 | 0.143 | 0.500 | 0.111 | 0.143 | 0.500 | 0.200 | 1.000 |

Calculate $[A] \cdot [W]$

| | | | | | | | | | |
|----------|-------|-------|-------|--------|-------|-------|-------|-------|-----------------|
| | Tem | Rain. | Depth | Drain. | CEC | pH | OM | Slope | $[A] \cdot [W]$ |
| Tem | 0.043 | 0.04 | 0.043 | 0.048 | 0.04 | 0.043 | 0.038 | 0.052 | 0.346 |
| Rainfall | 0.216 | 0.199 | 0.216 | 0.167 | 0.199 | 0.216 | 0.226 | 0.181 | 1.619 |
| Depth | 0.043 | 0.04 | 0.043 | 0.048 | 0.04 | 0.043 | 0.038 | 0.052 | 0.346 |
| Drainage | 0.302 | 0.399 | 0.302 | 0.333 | 0.399 | 0.302 | 0.452 | 0.232 | 2.72 |
| CEC | 0.216 | 0.199 | 0.216 | 0.167 | 0.199 | 0.216 | 0.226 | 0.181 | 1.619 |
| pH | 0.043 | 0.04 | 0.043 | 0.048 | 0.04 | 0.043 | 0.038 | 0.052 | 0.346 |
| OM | 0.129 | 0.1 | 0.129 | 0.083 | 0.1 | 0.129 | 0.113 | 0.129 | 0.913 |
| Slope | 0.022 | 0.028 | 0.022 | 0.037 | 0.028 | 0.022 | 0.023 | 0.026 | 0.207 |

Calculate λ_{max}

| | | | | |
|---------|--------|---------|-------|---------|
| 0.34596 | | 0.04312 | | 8.02261 |
| 1.61874 | | 0.19938 | | 8.11865 |
| 0.34596 | | 0.04312 | | 8.02261 |
| 2.72041 | | 0.33304 | | 8.16840 |
| 1.61874 | divide | 0.19938 | equal | 8.11865 |
| 0.34596 | | 0.04312 | | 8.02261 |
| 0.91274 | | 0.11303 | | 8.07533 |
| 0.20705 | | 0.02579 | | 8.02790 |
| | | average | | 8.07209 |

Size of matrix is 8, so that Random consistency is equal 1.41 and $CR < 0.10$

$$CI = ((\lambda_{max} - n) / (n - 1)) = 0.0103$$

$$CR = CI / 1.41 = 0.0073 < 0.10 \quad \text{Consistency}$$

Consistent matrix of crop suitability and soil loss

| | | |
|------------------|------------------|-----------|
| | Crop suitability | Soil loss |
| Crop suitability | 1.00 | 3.00 |
| Soil loss | 0.33 | 1.00 |
| Sum | 1.33 | 4.00 |

Calculate priorities using approximation method

| | | | |
|------------------|------------------|-----------|-------------|
| | Crop suitability | Soil loss | W |
| Crop suitability | 0.75 | 0.75 | 0.75 |
| Soil loss | 0.25 | 0.25 | 0.25 |

Weight calculation of Sweet potato

Consistent matrix

| | Tem | Rain. | Depth | Drain. | CEC | pH | OM | Slope |
|----------|-------|-------|-------|--------|-------|-------|-------|-------|
| Tem | 1.000 | 0.500 | 1.000 | 0.500 | 5.000 | 5.000 | 3.000 | 7.000 |
| Rainfall | 2.000 | 1.000 | 2.000 | 1.000 | 7.000 | 7.000 | 5.000 | 9.000 |
| Depth | 1.000 | 0.500 | 1.000 | 0.500 | 5.000 | 5.000 | 3.000 | 7.000 |
| Drainage | 2.000 | 1.000 | 2.000 | 1.000 | 7.000 | 7.000 | 5.000 | 9.000 |
| CEC | 0.200 | 0.143 | 0.200 | 0.143 | 1.000 | 1.000 | 0.500 | 2.000 |
| pH | 0.200 | 0.143 | 0.200 | 0.143 | 1.000 | 1.000 | 0.500 | 2.000 |
| OM | 0.333 | 0.200 | 0.333 | 0.200 | 2.000 | 2.000 | 1.000 | 5.000 |
| Slope | 0.143 | 0.111 | 0.143 | 0.111 | 0.500 | 0.500 | 0.200 | 1.000 |
| Sum | 6.876 | 3.597 | 6.876 | 3.597 | 28.50 | 28.50 | 18.20 | 42.00 |

Calculate priorities using approximation method

| | Tem | Rain. | Depth | Drain. | CEC | pH | OM | Slope | W |
|----------|-------|-------|-------|--------|-------|-------|-------|-------|--------------|
| Tem | 0.145 | 0.139 | 0.145 | 0.139 | 0.175 | 0.175 | 0.165 | 0.167 | 0.156 |
| Rainfall | 0.291 | 0.278 | 0.291 | 0.278 | 0.246 | 0.246 | 0.275 | 0.214 | 0.265 |
| Depth | 0.145 | 0.139 | 0.145 | 0.139 | 0.175 | 0.175 | 0.165 | 0.167 | 0.156 |
| Drainage | 0.291 | 0.278 | 0.291 | 0.278 | 0.246 | 0.246 | 0.275 | 0.214 | 0.265 |
| CEC | 0.029 | 0.040 | 0.029 | 0.040 | 0.035 | 0.035 | 0.027 | 0.048 | 0.035 |
| pH | 0.029 | 0.040 | 0.029 | 0.040 | 0.035 | 0.035 | 0.027 | 0.048 | 0.035 |
| OM | 0.048 | 0.056 | 0.048 | 0.056 | 0.070 | 0.070 | 0.055 | 0.119 | 0.065 |
| Slope | 0.021 | 0.031 | 0.021 | 0.031 | 0.018 | 0.018 | 0.011 | 0.024 | 0.022 |
| Sum | | | | | | | | | 1.000 |

Determine λ_{\max}

| | Tem | Rain. | Depth | Drain. | CEC | pH | OM | Slope |
|----------|-------|-------|-------|--------|-------|-------|-------|-------|
| | 0.156 | 0.265 | 0.156 | 0.265 | 0.035 | 0.035 | 0.065 | 0.022 |
| Tem | 1.000 | 0.500 | 1.000 | 0.500 | 5.000 | 5.000 | 3.000 | 7.000 |
| Rainfall | 2.000 | 1.000 | 2.000 | 1.000 | 7.000 | 7.000 | 5.000 | 9.000 |
| Depth | 1.000 | 0.500 | 1.000 | 0.500 | 5.000 | 5.000 | 3.000 | 7.000 |
| Drainage | 2.000 | 1.000 | 2.000 | 1.000 | 7.000 | 7.000 | 5.000 | 9.000 |
| CEC | 0.200 | 0.143 | 0.200 | 0.143 | 1.000 | 1.000 | 0.500 | 2.000 |
| pH | 0.200 | 0.143 | 0.200 | 0.143 | 1.000 | 1.000 | 0.500 | 2.000 |
| OM | 0.333 | 0.200 | 0.333 | 0.200 | 2.000 | 2.000 | 1.000 | 5.000 |
| Slope | 0.143 | 0.111 | 0.143 | 0.111 | 0.500 | 0.500 | 0.200 | 1.000 |

Calculate [A]·[W]

| | | | | | | | | | |
|----------|-------|-------|-------|--------|-------|-------|-------|-------|---------|
| | Tem | Rain. | Depth | Drain. | CEC | pH | OM | Slope | [A]·[W] |
| Tem | 0.156 | 0.132 | 0.156 | 0.132 | 0.177 | 0.177 | 0.196 | 0.152 | 1.279 |
| Rainfall | 0.313 | 0.265 | 0.313 | 0.265 | 0.248 | 0.248 | 0.327 | 0.195 | 2.172 |
| Depth | 0.156 | 0.132 | 0.156 | 0.132 | 0.177 | 0.177 | 0.196 | 0.152 | 1.279 |
| Drainage | 0.313 | 0.265 | 0.313 | 0.265 | 0.248 | 0.248 | 0.327 | 0.195 | 2.172 |
| CEC | 0.031 | 0.038 | 0.031 | 0.038 | 0.035 | 0.035 | 0.033 | 0.043 | 0.285 |
| pH | 0.031 | 0.038 | 0.031 | 0.038 | 0.035 | 0.035 | 0.033 | 0.043 | 0.285 |
| OM | 0.052 | 0.053 | 0.052 | 0.053 | 0.071 | 0.071 | 0.065 | 0.108 | 0.525 |
| Slope | 0.022 | 0.029 | 0.022 | 0.029 | 0.018 | 0.018 | 0.013 | 0.022 | 0.174 |

Calculate λ_{max}

| | | | | |
|---------|--------|---------|---------|---------|
| 1.27867 | | 0.15641 | | 8.17521 |
| 2.17160 | | 0.26475 | | 8.20244 |
| 1.27867 | | 0.15641 | | 8.17521 |
| 2.17160 | | 0.26475 | | 8.20244 |
| 0.28489 | divide | 0.03536 | equal | 8.05691 |
| 0.28489 | | 0.03536 | | 8.05691 |
| 0.52518 | | 0.06531 | | 8.04102 |
| 0.17360 | | 0.02165 | | 8.01733 |
| | | | average | 8.11594 |

Size of matrix is 8, so that Random consistency is equal 1.41 and CR < 0.10

$$CI = ((\lambda_{max}-n)/n-1) = 0.01656$$

$$CR = CI/1.41 = 0.01175 < 0.10 \quad \text{Consistency}$$

Consistent matrix of crop suitability and soil loss

| | | |
|------------------|------------------|-----------|
| | Crop suitability | Soil loss |
| Crop suitability | 1.00 | 2.00 |
| Soil loss | 0.50 | 1.00 |
| Sum | 1.50 | 3.00 |

Calculate priorities using approximation method

| | | | |
|------------------|------------------|-----------|-------------|
| | Crop suitability | Soil loss | W |
| Crop suitability | 0.667 | 0.667 | 0.67 |
| Soil loss | 0.333 | 0.333 | 0.33 |

Weight calculation of Irrigated rice

Consistent matrix

| | Tem. | Depth | Drainage | CEC | pH | OM | Slope |
|----------|--------|--------|----------|-------|--------|-------|-------|
| Tem | 1.000 | 0.200 | 0.200 | 0.143 | 0.500 | 0.111 | 0.143 |
| Depth | 5.000 | 1.000 | 1.000 | 0.500 | 3.000 | 0.250 | 0.500 |
| Drainage | 5.000 | 1.000 | 1.000 | 0.500 | 3.000 | 0.250 | 0.500 |
| CEC | 7.000 | 2.000 | 2.000 | 1.000 | 5.000 | 0.500 | 1.000 |
| pH | 2.000 | 0.333 | 0.333 | 0.200 | 1.000 | 0.143 | 0.200 |
| OM | 9.000 | 4.000 | 4.000 | 2.000 | 7.000 | 1.000 | 2.000 |
| Slope | 7.000 | 2.000 | 2.000 | 1.000 | 5.000 | 0.500 | 1.000 |
| Sum | 36.000 | 10.533 | 10.533 | 5.343 | 24.500 | 2.754 | 5.343 |

Calculate priorities using approximation method

| | Tem. | Depth | Drainage | CEC | pH | OM | Slope | W |
|----------|-------|-------|----------|-------|-------|-------|-------|--------------|
| Tem | 0.028 | 0.019 | 0.019 | 0.027 | 0.020 | 0.040 | 0.027 | 0.026 |
| Depth | 0.139 | 0.095 | 0.095 | 0.094 | 0.122 | 0.091 | 0.094 | 0.104 |
| Drainage | 0.139 | 0.095 | 0.095 | 0.094 | 0.122 | 0.091 | 0.094 | 0.104 |
| CEC | 0.194 | 0.190 | 0.190 | 0.187 | 0.204 | 0.182 | 0.187 | 0.191 |
| pH | 0.056 | 0.032 | 0.032 | 0.037 | 0.041 | 0.052 | 0.037 | 0.041 |
| OM | 0.250 | 0.380 | 0.380 | 0.374 | 0.286 | 0.363 | 0.374 | 0.344 |
| Slope | 0.194 | 0.190 | 0.190 | 0.187 | 0.204 | 0.182 | 0.187 | 0.191 |
| Sum | | | | | | | | 1.000 |

Determine λ_{\max}

| | Tem. | Depth | Drainage | CEC | pH | OM | Slope |
|----------|-------|-------|----------|-------|-------|-------|-------|
| | 0.026 | 0.104 | 0.104 | 0.191 | 0.041 | 0.344 | 0.191 |
| Tem | 1.000 | 0.200 | 0.200 | 0.143 | 0.500 | 0.111 | 0.143 |
| Depth | 5.000 | 1.000 | 1.000 | 0.500 | 3.000 | 0.250 | 0.500 |
| Drainage | 5.000 | 1.000 | 1.000 | 0.500 | 3.000 | 0.250 | 0.500 |
| CEC | 7.000 | 2.000 | 2.000 | 1.000 | 5.000 | 0.500 | 1.000 |
| pH | 2.000 | 0.333 | 0.333 | 0.200 | 1.000 | 0.143 | 0.200 |
| OM | 9.000 | 4.000 | 4.000 | 2.000 | 7.000 | 1.000 | 2.000 |
| Slope | 7.000 | 2.000 | 2.000 | 1.000 | 5.000 | 0.500 | 1.000 |

Calculate [A]·[W]

| | Tem. | Depth | Drainage | CEC | pH | OM | Slope | [A]·[W] |
|----------|-------|-------|----------|-------|-------|-------|-------|---------|
| Tem | 0.026 | 0.021 | 0.021 | 0.027 | 0.020 | 0.038 | 0.027 | 0.180 |
| Depth | 0.129 | 0.104 | 0.104 | 0.095 | 0.123 | 0.086 | 0.095 | 0.736 |
| Drainage | 0.129 | 0.104 | 0.104 | 0.095 | 0.123 | 0.086 | 0.095 | 0.736 |
| CEC | 0.180 | 0.208 | 0.208 | 0.191 | 0.205 | 0.172 | 0.191 | 1.354 |
| pH | 0.051 | 0.035 | 0.035 | 0.038 | 0.041 | 0.049 | 0.038 | 0.287 |
| OM | 0.231 | 0.417 | 0.417 | 0.381 | 0.286 | 0.344 | 0.381 | 2.457 |
| Slope | 0.180 | 0.208 | 0.208 | 0.191 | 0.205 | 0.172 | 0.191 | 1.354 |

Calculate λ_{\max}

| | | | | |
|-------|--------|-------|---------|-------|
| 0.180 | | 0.026 | | 7.020 |
| 0.736 | | 0.104 | | 7.068 |
| 0.736 | | 0.104 | | 7.068 |
| 1.354 | divide | 0.191 | equal | 7.106 |
| 0.287 | | 0.041 | | 7.018 |
| 2.457 | | 0.344 | | 7.147 |
| 1.354 | | 0.191 | | 7.106 |
| | | | average | 7.076 |

Size of matrix is 7, so that Random consistency is equal 1.32 and CR < 0.10

$$CI = ((\lambda_{\max} - n) / (n - 1)) = 0.01265$$

$$CR = CI / 1.32 = 0.0096 < 0.10 \quad \text{Consistency}$$

Consistent matrix of crop suitability and soil loss

| | Crop suitability | Soil loss |
|------------------|------------------|-----------|
| Crop suitability | 1.00 | 3.00 |
| Soil loss | 0.33 | 1.00 |
| Sum | 1.33 | 4.00 |

Calculate priorities using approximation method

| | Crop suitability | Soil loss | W |
|------------------|------------------|-----------|-------------|
| Crop suitability | 0.75 | 0.75 | 0.75 |
| Soil loss | 0.25 | 0.25 | 0.25 |

Weight calculation of Citrus

Consistent matrix

| | Tem. | Rainfall | Depth | Drainage | CEC | pH | OM | Slope |
|----------|--------|----------|-------|----------|--------|--------|-------|--------|
| Tem. | 1.000 | 0.500 | 0.200 | 0.200 | 3.000 | 1.000 | 0.500 | 3.000 |
| Rainfall | 2.000 | 1.000 | 0.333 | 0.333 | 5.000 | 2.000 | 1.000 | 5.000 |
| Depth | 5.000 | 3.000 | 1.000 | 1.000 | 8.000 | 5.000 | 3.000 | 8.000 |
| Drainage | 5.000 | 3.000 | 1.000 | 1.000 | 8.000 | 5.000 | 3.000 | 8.000 |
| CEC | 0.333 | 0.200 | 0.125 | 0.125 | 1.000 | 0.333 | 0.200 | 1.000 |
| pH | 1.000 | 0.500 | 0.200 | 0.200 | 3.000 | 1.000 | 0.500 | 3.000 |
| OM | 2.000 | 1.000 | 0.333 | 0.333 | 5.000 | 2.000 | 1.000 | 5.000 |
| Slope | 0.333 | 0.200 | 0.125 | 0.125 | 1.000 | 0.333 | 0.200 | 1.000 |
| Sum | 16.667 | 9.400 | 3.317 | 3.317 | 34.000 | 16.667 | 9.400 | 34.000 |

Calculate priorities using approximation method

| | Tem. | Rain. | Depth | Drain. | CEC | pH | OM | Slope | W |
|----------|-------|-------|-------|--------|-------|-------|-------|-------|--------------|
| Tem. | 0.060 | 0.053 | 0.060 | 0.060 | 0.088 | 0.060 | 0.053 | 0.088 | 0.065 |
| Rainfall | 0.120 | 0.106 | 0.101 | 0.101 | 0.147 | 0.120 | 0.106 | 0.147 | 0.118 |
| Depth | 0.300 | 0.319 | 0.302 | 0.302 | 0.235 | 0.300 | 0.319 | 0.235 | 0.289 |
| Drainage | 0.300 | 0.319 | 0.302 | 0.302 | 0.235 | 0.300 | 0.319 | 0.235 | 0.289 |
| CEC | 0.020 | 0.021 | 0.038 | 0.038 | 0.029 | 0.020 | 0.021 | 0.029 | 0.027 |
| pH | 0.060 | 0.053 | 0.060 | 0.060 | 0.088 | 0.060 | 0.053 | 0.088 | 0.065 |
| OM | 0.120 | 0.106 | 0.101 | 0.101 | 0.147 | 0.120 | 0.106 | 0.147 | 0.118 |
| Slope | 0.020 | 0.021 | 0.038 | 0.038 | 0.029 | 0.020 | 0.021 | 0.029 | 0.027 |
| Sum | | | | | | | | | 1.000 |

Determine λ_{max}

| | Tem | Rain. | Depth | Drain. | CEC | pH | OM | Slope |
|----------|-------|-------|-------|--------|-------|-------|-------|-------|
| | 0.065 | 0.118 | 0.289 | 0.289 | 0.027 | 0.065 | 0.118 | 0.027 |
| Tem | 1.000 | 0.500 | 0.200 | 0.200 | 3.000 | 1.000 | 0.500 | 3.000 |
| Rainfall | 2.000 | 1.000 | 0.333 | 0.333 | 5.000 | 2.000 | 1.000 | 5.000 |
| Depth | 5.000 | 3.000 | 1.000 | 1.000 | 8.000 | 5.000 | 3.000 | 8.000 |
| Drainage | 5.000 | 3.000 | 1.000 | 1.000 | 8.000 | 5.000 | 3.000 | 8.000 |
| CEC | 0.333 | 0.200 | 0.125 | 0.125 | 1.000 | 0.333 | 0.200 | 1.000 |
| pH | 1.000 | 0.500 | 0.200 | 0.200 | 3.000 | 1.000 | 0.500 | 3.000 |
| OM | 2.000 | 1.000 | 0.333 | 0.333 | 5.000 | 2.000 | 1.000 | 5.000 |
| Slope | 0.333 | 0.200 | 0.125 | 0.125 | 1.000 | 0.333 | 0.200 | 1.000 |

Calculate [A]·[W]

| | Tem | Rain. | Depth | Drain. | CEC | pH | OM | Slope | [A]·[W] |
|----------|-------|-------|-------|--------|-------|-------|-------|-------|---------|
| Tem | 0.065 | 0.059 | 0.058 | 0.058 | 0.081 | 0.065 | 0.059 | 0.081 | 0.528 |
| Rainfall | 0.131 | 0.118 | 0.096 | 0.096 | 0.135 | 0.131 | 0.118 | 0.135 | 0.962 |
| Depth | 0.327 | 0.355 | 0.289 | 0.289 | 0.217 | 0.327 | 0.355 | 0.217 | 2.377 |
| Drainage | 0.327 | 0.355 | 0.289 | 0.289 | 0.217 | 0.327 | 0.355 | 0.217 | 2.377 |
| CEC | 0.022 | 0.024 | 0.036 | 0.036 | 0.027 | 0.022 | 0.024 | 0.027 | 0.217 |
| pH | 0.065 | 0.059 | 0.058 | 0.058 | 0.081 | 0.065 | 0.059 | 0.081 | 0.528 |
| OM | 0.131 | 0.118 | 0.096 | 0.096 | 0.135 | 0.131 | 0.118 | 0.135 | 0.962 |
| Slope | 0.022 | 0.024 | 0.036 | 0.036 | 0.027 | 0.022 | 0.024 | 0.027 | 0.217 |

Calculate λ_{max}

| | | | | |
|---------|--------|---------|-------|---------|
| 0.52751 | | 0.06543 | | 8.06196 |
| 0.9623 | | 0.11849 | | 8.12164 |
| 2.37672 | | 0.28899 | | 8.2243 |
| 2.37672 | | 0.28899 | | 8.2243 |
| 0.21745 | divide | 0.02709 | equal | 8.02574 |
| 0.52751 | | 0.06543 | | 8.06196 |
| 0.9623 | | 0.11849 | | 8.12164 |
| 0.21745 | | 0.02709 | | 8.02574 |
| | | average | | 8.10841 |

Size of matrix is 8, so that Random consistency is equal 1.41 and $CR < 0.10$

$$CI = ((\lambda_{max} - n) / (n - 1)) = 0.01549$$

$$CR = CI / 1.41 = 0.01098 < 0.10 \quad \text{Consistency}$$

Consistent matrix of crop suitability and soil loss

| | Crop suitability | Soil loss |
|------------------|------------------|-----------|
| Crop suitability | 1.00 | 2.00 |
| Soil loss | 0.50 | 1.00 |
| Sum | 1.50 | 3.00 |

Calculate priorities using approximation method

| | Crop suitability | Soil loss | W |
|------------------|------------------|-----------|-------------|
| Crop suitability | 0.67 | 0.67 | 0.67 |
| Soil loss | 0.33 | 0.33 | 0.33 |

Weight calculation of Banana

Consistent matrix

| | Tem | Rainfall | Depth | Drainage | CEC | pH | OM | Slope |
|----------|-------|----------|-------|----------|--------|--------|--------|--------|
| Tem | 1.000 | 0.500 | 1.000 | 0.500 | 5.000 | 7.000 | 2.000 | 2.000 |
| Rainfall | 2.000 | 1.000 | 2.000 | 1.000 | 7.000 | 9.000 | 4.000 | 4.000 |
| Depth | 1.000 | 0.500 | 1.000 | 0.500 | 5.000 | 7.000 | 2.000 | 2.000 |
| Drainage | 2.000 | 1.000 | 2.000 | 1.000 | 7.000 | 9.000 | 4.000 | 4.000 |
| CEC | 0.200 | 0.143 | 0.200 | 0.143 | 1.000 | 3.000 | 0.333 | 0.333 |
| pH | 0.143 | 0.111 | 0.143 | 0.111 | 0.333 | 1.000 | 0.200 | 0.200 |
| OM | 0.500 | 0.250 | 0.500 | 0.250 | 3.000 | 5.000 | 1.000 | 1.000 |
| Slope | 0.500 | 0.250 | 0.500 | 0.250 | 3.000 | 5.000 | 1.000 | 1.000 |
| Sum | 7.343 | 3.754 | 7.343 | 3.754 | 31.333 | 46.000 | 14.533 | 14.533 |

Calculate priorities using approximation method

| | Tem. | Rain. | Depth | Drain. | CEC | pH | OM | Slope | W |
|----------|-------|-------|-------|--------|-------|-------|-------|-------|--------------|
| Tem. | 0.136 | 0.133 | 0.136 | 0.133 | 0.160 | 0.152 | 0.138 | 0.138 | 0.141 |
| Rainfall | 0.272 | 0.266 | 0.272 | 0.266 | 0.223 | 0.196 | 0.275 | 0.275 | 0.256 |
| Depth | 0.136 | 0.133 | 0.136 | 0.133 | 0.160 | 0.152 | 0.138 | 0.138 | 0.141 |
| Drainage | 0.272 | 0.266 | 0.272 | 0.266 | 0.223 | 0.196 | 0.275 | 0.275 | 0.256 |
| CEC | 0.027 | 0.038 | 0.027 | 0.038 | 0.032 | 0.065 | 0.023 | 0.023 | 0.034 |
| pH | 0.019 | 0.030 | 0.019 | 0.030 | 0.011 | 0.022 | 0.014 | 0.014 | 0.020 |
| OM | 0.068 | 0.067 | 0.068 | 0.067 | 0.096 | 0.109 | 0.069 | 0.069 | 0.076 |
| Slope | 0.068 | 0.067 | 0.068 | 0.067 | 0.096 | 0.109 | 0.069 | 0.069 | 0.076 |
| Sum | | | | | | | | | 1.000 |

Determine λ_{\max}

| | Tem | Rainfall | Depth | Drainage | CEC | pH | OM | Slope |
|----------|-------|----------|-------|----------|-------|-------|-------|-------|
| | 0.141 | 0.256 | 0.141 | 0.256 | 0.034 | 0.020 | 0.076 | 0.076 |
| Tem | 1.000 | 0.500 | 1.000 | 0.500 | 5.000 | 7.000 | 2.000 | 2.000 |
| Rainfall | 2.000 | 1.000 | 2.000 | 1.000 | 7.000 | 9.000 | 4.000 | 4.000 |
| Depth | 1.000 | 0.500 | 1.000 | 0.500 | 5.000 | 7.000 | 2.000 | 2.000 |
| Drainage | 2.000 | 1.000 | 2.000 | 1.000 | 7.000 | 9.000 | 4.000 | 4.000 |
| CEC | 0.200 | 0.143 | 0.200 | 0.143 | 1.000 | 3.000 | 0.333 | 0.333 |
| pH | 0.143 | 0.111 | 0.143 | 0.111 | 0.333 | 1.000 | 0.200 | 0.200 |
| OM | 0.500 | 0.250 | 0.500 | 0.250 | 3.000 | 5.000 | 1.000 | 1.000 |
| Slope | 0.500 | 0.250 | 0.500 | 0.250 | 3.000 | 5.000 | 1.000 | 1.000 |

Calculate [A]·[W]

| | | | | | | | | | |
|----------|-------|-------|-------|--------|-------|-------|-------|-------|---------|
| | Tem | Rain. | Depth | Drain. | CEC | pH | OM | Slope | [A]·[W] |
| Tem | 0.141 | 0.128 | 0.141 | 0.128 | 0.171 | 0.138 | 0.153 | 0.153 | 1.152 |
| Rainfall | 0.281 | 0.256 | 0.281 | 0.256 | 0.239 | 0.178 | 0.306 | 0.306 | 2.103 |
| Depth | 0.141 | 0.128 | 0.141 | 0.128 | 0.171 | 0.138 | 0.153 | 0.153 | 1.152 |
| Drainage | 0.281 | 0.256 | 0.281 | 0.256 | 0.239 | 0.178 | 0.306 | 0.306 | 2.103 |
| CEC | 0.028 | 0.037 | 0.028 | 0.037 | 0.034 | 0.059 | 0.025 | 0.025 | 0.274 |
| pH | 0.020 | 0.028 | 0.020 | 0.028 | 0.011 | 0.020 | 0.015 | 0.015 | 0.159 |
| OM | 0.070 | 0.064 | 0.070 | 0.064 | 0.103 | 0.099 | 0.076 | 0.076 | 0.623 |
| Slope | 0.070 | 0.064 | 0.070 | 0.064 | 0.103 | 0.099 | 0.076 | 0.076 | 0.623 |

Calculate λ_{\max}

| | | | | |
|---------|--------|---------|---------|---------|
| 1.15228 | | 0.14072 | | 8.18863 |
| 2.10321 | | 0.25588 | | 8.21954 |
| 1.15228 | | 0.14072 | | 8.18863 |
| 2.10321 | | 0.25588 | | 8.21954 |
| 0.2738 | divide | 0.0342 | equal | 8.00616 |
| 0.15879 | | 0.01975 | | 8.03957 |
| 0.62287 | | 0.07643 | | 8.14957 |
| 0.62287 | | 0.07643 | | 8.14957 |
| | | | average | 8.14515 |

Size of matrix is 8, so that Random consistency is equal 1.41 and $CR < 0.10$

$$CI = ((\lambda_{\max} - n) / (n - 1)) = 0.02074$$

$$CR = CI / 1.41 = 0.01471 < 0.10 \quad \text{Consistency}$$

Consistent matrix of crop suitability and soil loss

| | | |
|------------------|------------------|-----------|
| | Crop suitability | Soil loss |
| Crop suitability | 1.0 | 2.0 |
| Soil loss | 0.5 | 1.0 |
| Sum | 1.5 | 3.0 |

Calculate priorities using approximation method

| | | | |
|------------------|------------------|-----------|-------------|
| | Crop suitability | Soil loss | W |
| Crop suitability | 0.667 | 0.667 | 0.67 |
| Soil loss | 0.333 | 0.333 | 0.33 |

Weight calculation of Sugarcane

Consistent matrix

| | Tem | Sunshine | Depth | Drainage | CEC | pH | OM | Slope |
|----------|-------|----------|-------|----------|--------|--------|--------|--------|
| Tem | 1.000 | 3.000 | 1.000 | 3.000 | 7.000 | 7.000 | 5.000 | 7.000 |
| Sunshine | 0.333 | 1.000 | 0.333 | 1.000 | 4.000 | 4.000 | 2.000 | 4.000 |
| Depth | 1.000 | 3.000 | 1.000 | 3.000 | 7.000 | 7.000 | 5.000 | 7.000 |
| Drainage | 0.333 | 1.000 | 0.333 | 1.000 | 4.000 | 4.000 | 2.000 | 4.000 |
| CEC | 0.143 | 0.250 | 0.143 | 0.250 | 1.000 | 1.000 | 0.500 | 1.000 |
| pH | 0.143 | 0.250 | 0.143 | 0.250 | 1.000 | 1.000 | 0.500 | 1.000 |
| OM | 0.200 | 0.500 | 0.200 | 0.500 | 2.000 | 2.000 | 1.000 | 2.000 |
| Slope | 0.143 | 0.250 | 0.143 | 0.250 | 1.000 | 1.000 | 0.500 | 1.000 |
| Sum | 3.152 | 9.250 | 3.295 | 9.250 | 27.000 | 27.000 | 16.500 | 27.000 |

Calculate priorities using approximation method

| | Tem | Suns. | Depth | Drain. | CEC | pH | OM | Slope | W |
|----------|-------|-------|-------|--------|-------|-------|-------|-------|--------------|
| Tem | 0.317 | 0.324 | 0.303 | 0.324 | 0.259 | 0.259 | 0.303 | 0.259 | 0.294 |
| Sunshine | 0.106 | 0.108 | 0.101 | 0.108 | 0.148 | 0.148 | 0.121 | 0.148 | 0.124 |
| Depth | 0.317 | 0.324 | 0.303 | 0.324 | 0.259 | 0.259 | 0.303 | 0.259 | 0.294 |
| Drainage | 0.106 | 0.108 | 0.101 | 0.108 | 0.148 | 0.148 | 0.121 | 0.148 | 0.124 |
| CEC | 0.045 | 0.027 | 0.043 | 0.027 | 0.037 | 0.037 | 0.030 | 0.037 | 0.036 |
| pH | 0.045 | 0.027 | 0.043 | 0.027 | 0.037 | 0.037 | 0.030 | 0.037 | 0.036 |
| OM | 0.063 | 0.054 | 0.061 | 0.054 | 0.074 | 0.074 | 0.061 | 0.074 | 0.064 |
| Slope | 0.063 | 0.027 | 0.043 | 0.027 | 0.037 | 0.037 | 0.030 | 0.037 | 0.038 |
| Sum | | | | | | | | | 1.000 |

Determine λ_{\max}

| | Tem | Sunshine | Depth | Drainage | CEC | pH | OM | Slope |
|----------|-------|----------|-------|----------|-------|-------|-------|-------|
| | 0.294 | 0.124 | 0.294 | 0.124 | 0.036 | 0.036 | 0.064 | 0.038 |
| Tem | 1.000 | 3.000 | 1.000 | 3.000 | 7.000 | 7.000 | 5.000 | 7.000 |
| Sunshine | 0.333 | 1.000 | 0.333 | 1.000 | 4.000 | 4.000 | 2.000 | 4.000 |
| Depth | 1.000 | 3.000 | 1.000 | 3.000 | 7.000 | 7.000 | 5.000 | 7.000 |
| Drainage | 0.333 | 1.000 | 0.333 | 1.000 | 4.000 | 4.000 | 2.000 | 4.000 |
| CEC | 0.143 | 0.250 | 0.143 | 0.250 | 1.000 | 1.000 | 0.500 | 1.000 |
| pH | 0.143 | 0.250 | 0.143 | 0.250 | 1.000 | 1.000 | 0.500 | 1.000 |
| OM | 0.200 | 0.500 | 0.200 | 0.500 | 2.000 | 2.000 | 1.000 | 2.000 |
| Slope | 0.143 | 0.250 | 0.143 | 0.250 | 1.000 | 1.000 | 0.500 | 1.000 |

Calculate [A]·[W]

| | | | | | | | | | |
|----------|-------|-------|-------|-------|-------|-------|-------|-------|---------|
| | Tem | Suns. | Depth | Drain | CEC | pH | OM | Slope | [A]·[W] |
| Tem | 0.294 | 0.371 | 0.294 | 0.371 | 0.249 | 0.249 | 0.322 | 0.264 | 2.413 |
| Sunshine | 0.098 | 0.124 | 0.098 | 0.124 | 0.142 | 0.142 | 0.129 | 0.151 | 1.007 |
| Depth | 0.294 | 0.371 | 0.294 | 0.371 | 0.249 | 0.249 | 0.322 | 0.264 | 2.413 |
| Drainage | 0.098 | 0.124 | 0.098 | 0.124 | 0.142 | 0.142 | 0.129 | 0.151 | 1.007 |
| CEC | 0.042 | 0.031 | 0.042 | 0.031 | 0.036 | 0.036 | 0.032 | 0.038 | 0.287 |
| pH | 0.042 | 0.031 | 0.042 | 0.031 | 0.036 | 0.036 | 0.032 | 0.038 | 0.287 |
| OM | 0.059 | 0.062 | 0.059 | 0.062 | 0.071 | 0.071 | 0.064 | 0.076 | 0.523 |
| Slope | 0.042 | 0.031 | 0.042 | 0.031 | 0.036 | 0.036 | 0.032 | 0.038 | 0.287 |

Calculate λ_{max}

| | | | | |
|---------|--------|---------|-------|-----------------|
| 2.41276 | divide | 0.29377 | equal | 8.21314 |
| 1.00708 | | 0.1236 | | 8.14813 |
| 2.41276 | | 0.29377 | | 8.21314 |
| 1.00708 | | 0.1236 | | 8.14813 |
| 0.28674 | | 0.03552 | | 8.0733 |
| 0.28674 | | 0.03552 | | 8.0733 |
| 0.52312 | | 0.06438 | | 8.12501 |
| 0.28674 | | 0.03778 | | 7.58915 |
| | | | | average 8.07291 |

Size of matrix is 8, so that Random consistency is equal 1.41 and CR < 0.10

$$CI = ((\lambda_{max} - n) / (n - 1)) = 0.01042$$

$$CR = CI / 1.41 = 0.00739 < 0.10 \quad \text{Consistency}$$

Consistent matrix of crop suitability and soil loss

| | | |
|------------------|------------------|-----------|
| | Crop suitability | Soil loss |
| Crop suitability | 1.00 | 2.00 |
| Soil loss | 0.50 | 1.00 |
| Sum | 1.50 | 3.00 |

Calculate priorities using approximation method

| | | | |
|------------------|------------------|-----------|-------------|
| | Crop suitability | Soil loss | W |
| Crop suitability | 0.67 | 0.67 | 0.67 |
| Soil loss | 0.33 | 0.33 | 0.33 |

Weight calculation of Pineapple

Consistent matrix

| | Tem | Rainfall | Depth | Drainage | CEC | pH | OM | Slope |
|----------|-------|----------|-------|----------|--------|--------|-------|--------|
| Tem | 1.000 | 2.000 | 2.000 | 1.000 | 5.000 | 5.000 | 1.000 | 5.000 |
| Rainfall | 0.500 | 1.000 | 1.000 | 0.500 | 3.000 | 3.000 | 0.500 | 3.000 |
| Depth | 0.500 | 1.000 | 1.000 | 0.500 | 3.000 | 3.000 | 0.500 | 3.000 |
| Drainage | 1.000 | 2.000 | 2.000 | 1.000 | 5.000 | 5.000 | 1.000 | 5.000 |
| CEC | 0.200 | 0.333 | 0.333 | 0.200 | 1.000 | 1.000 | 0.200 | 1.000 |
| pH | 0.200 | 0.333 | 0.333 | 0.200 | 1.000 | 1.000 | 0.200 | 1.000 |
| OM | 1.000 | 2.000 | 2.000 | 1.000 | 5.000 | 5.000 | 1.000 | 5.000 |
| Slope | 0.200 | 0.333 | 0.333 | 0.200 | 1.000 | 1.000 | 0.200 | 1.000 |
| Sum | 4.600 | 9.000 | 9.000 | 4.600 | 24.000 | 24.000 | 4.600 | 24.000 |

Calculate priorities using approximation method

| | Tem | Rain. | Depth | Drain. | CEC | pH | OM | Slope | W |
|----------|-------|-------|-------|--------|-------|-------|-------|-------|--------------|
| Tem | 0.217 | 0.222 | 0.222 | 0.217 | 0.208 | 0.208 | 0.217 | 0.208 | 0.215 |
| Rainfall | 0.109 | 0.111 | 0.111 | 0.109 | 0.125 | 0.125 | 0.109 | 0.125 | 0.115 |
| Depth | 0.109 | 0.111 | 0.111 | 0.109 | 0.125 | 0.125 | 0.109 | 0.125 | 0.115 |
| Drainage | 0.217 | 0.222 | 0.222 | 0.217 | 0.208 | 0.208 | 0.217 | 0.208 | 0.215 |
| CEC | 0.043 | 0.037 | 0.037 | 0.043 | 0.042 | 0.042 | 0.043 | 0.042 | 0.041 |
| pH | 0.043 | 0.037 | 0.037 | 0.043 | 0.042 | 0.042 | 0.043 | 0.042 | 0.041 |
| OM | 0.217 | 0.222 | 0.222 | 0.217 | 0.208 | 0.208 | 0.217 | 0.208 | 0.215 |
| Slope | 0.043 | 0.037 | 0.037 | 0.043 | 0.042 | 0.042 | 0.043 | 0.042 | 0.041 |
| Sum | | | | | | | | | 1.000 |

Determine λ_{max}

| | Tem | Rainfall | Depth | Drainage | CEC | pH | OM | Slope |
|----------|-------|----------|-------|----------|-------|-------|-------|-------|
| | 0.215 | 0.115 | 0.115 | 0.215 | 0.041 | 0.041 | 0.215 | 0.041 |
| Tem | 1.000 | 2.000 | 2.000 | 1.000 | 5.000 | 5.000 | 1.000 | 5.000 |
| Rainfall | 0.500 | 1.000 | 1.000 | 0.500 | 3.000 | 3.000 | 0.500 | 3.000 |
| Depth | 0.500 | 1.000 | 1.000 | 0.500 | 3.000 | 3.000 | 0.500 | 3.000 |
| Drainage | 1.000 | 2.000 | 2.000 | 1.000 | 5.000 | 5.000 | 1.000 | 5.000 |
| CEC | 0.200 | 0.333 | 0.333 | 0.200 | 1.000 | 1.000 | 0.200 | 1.000 |
| pH | 0.200 | 0.333 | 0.333 | 0.200 | 1.000 | 1.000 | 0.200 | 1.000 |
| OM | 1.000 | 2.000 | 2.000 | 1.000 | 5.000 | 5.000 | 1.000 | 5.000 |
| Slope | 0.200 | 0.333 | 0.333 | 0.200 | 1.000 | 1.000 | 0.200 | 1.000 |

Calculate $[A] \cdot [W]$

| | Tem | Rain. | Depth | Drain. | CEC | pH | OM | Slope | $[A] \cdot [W]$ |
|----------|-------|-------|-------|--------|-------|-------|-------|-------|-----------------|
| Tem | 0.215 | 0.231 | 0.231 | 0.215 | 0.206 | 0.206 | 0.215 | 0.206 | 1.725 |
| Rainfall | 0.108 | 0.115 | 0.115 | 0.108 | 0.124 | 0.124 | 0.108 | 0.124 | 0.924 |
| Depth | 0.108 | 0.115 | 0.115 | 0.108 | 0.124 | 0.124 | 0.108 | 0.124 | 0.924 |
| Drainage | 0.215 | 0.231 | 0.231 | 0.215 | 0.206 | 0.206 | 0.215 | 0.206 | 1.725 |
| CEC | 0.043 | 0.038 | 0.038 | 0.043 | 0.041 | 0.041 | 0.043 | 0.041 | 0.330 |
| pH | 0.043 | 0.038 | 0.038 | 0.043 | 0.041 | 0.041 | 0.043 | 0.041 | 0.330 |
| OM | 0.215 | 0.231 | 0.231 | 0.215 | 0.206 | 0.206 | 0.215 | 0.206 | 1.725 |
| Slope | 0.043 | 0.038 | 0.038 | 0.043 | 0.041 | 0.041 | 0.043 | 0.041 | 0.330 |

Calculate λ_{\max}

| | | | | |
|---------|--------|---------|---------|---------|
| 1.72509 | | 0.2152 | | 8.01613 |
| 0.92433 | | 0.11541 | | 8.00883 |
| 0.92433 | | 0.11541 | | 8.00883 |
| 1.72509 | | 0.2152 | | 8.01613 |
| 0.32963 | divide | 0.04119 | equal | 8.00293 |
| 0.32963 | | 0.04119 | | 8.00293 |
| 1.72509 | | 0.2152 | | 8.01613 |
| 0.32963 | | 0.04119 | | 8.00293 |
| | | | average | 8.00936 |

Size of matrix is 8, so that Random consistency is equal 1.41 and $CR < 0.10$

$$CI = ((\lambda_{\max} - n)/n - 1) = 0.00134$$

$$CR = CI/1.41 = 0.00095 < 0.10 \quad \text{Consistency}$$

Consistent matrix of crop suitability and soil loss

| | Crop suitability | Soil loss |
|------------------|------------------|-----------|
| Crop suitability | 1.0 | 1.0 |
| Soil loss | 1.0 | 1.0 |
| Sum | 2.0 | 2.0 |

Calculate priorities using approximation method

| | Crop suitability | Soil loss | W |
|------------------|------------------|-----------|-------------|
| Crop suitability | 0.5 | 0.5 | 0.50 |
| Soil loss | 0.5 | 0.5 | 0.50 |

Weight calculation of Rainfed upland rice

Consistent matrix

| | Tem | Rainfall | Depth | Drainage | CEC | pH | OM | Slope |
|----------|--------|----------|-------|----------|-------|--------|-------|--------|
| Tem | 1.000 | 0.111 | 0.143 | 1.000 | 0.143 | 0.333 | 0.111 | 0.200 |
| Rainfall | 9.000 | 1.000 | 2.000 | 9.000 | 2.000 | 6.000 | 1.000 | 4.000 |
| Depth | 7.000 | 0.500 | 1.000 | 7.000 | 1.000 | 4.000 | 0.500 | 2.000 |
| Drainage | 1.000 | 0.111 | 0.143 | 1.000 | 0.143 | 0.333 | 0.111 | 0.200 |
| CEC | 7.000 | 0.500 | 1.000 | 7.000 | 1.000 | 4.000 | 0.500 | 2.000 |
| pH | 3.000 | 0.167 | 0.250 | 3.000 | 0.250 | 1.000 | 0.167 | 0.500 |
| OM | 9.000 | 1.000 | 2.000 | 9.000 | 2.000 | 6.000 | 1.000 | 4.000 |
| Slope | 5.000 | 0.250 | 0.500 | 5.000 | 0.500 | 2.000 | 0.250 | 1.000 |
| Sum | 42.000 | 3.639 | 7.036 | 42.000 | 7.036 | 23.667 | 3.639 | 13.900 |

Calculate priorities using approximation method

| | Tem | Rain. | Depth | Drain. | CEC | pH | OM | Slope | W |
|----------|-------|-------|-------|--------|-------|-------|-------|-------|--------------|
| Tem | 0.024 | 0.031 | 0.020 | 0.024 | 0.020 | 0.014 | 0.031 | 0.014 | 0.022 |
| Rainfall | 0.214 | 0.275 | 0.284 | 0.214 | 0.284 | 0.254 | 0.275 | 0.288 | 0.261 |
| Depth | 0.167 | 0.137 | 0.142 | 0.167 | 0.142 | 0.169 | 0.137 | 0.144 | 0.151 |
| Drainage | 0.024 | 0.031 | 0.020 | 0.024 | 0.020 | 0.014 | 0.031 | 0.014 | 0.022 |
| CEC | 0.167 | 0.137 | 0.142 | 0.167 | 0.142 | 0.169 | 0.137 | 0.144 | 0.151 |
| pH | 0.071 | 0.046 | 0.036 | 0.071 | 0.036 | 0.042 | 0.046 | 0.036 | 0.048 |
| OM | 0.214 | 0.275 | 0.284 | 0.214 | 0.284 | 0.254 | 0.275 | 0.288 | 0.261 |
| Slope | 0.119 | 0.069 | 0.071 | 0.119 | 0.071 | 0.085 | 0.069 | 0.072 | 0.084 |
| Sum | | | | | | | | | 1.000 |

Determine λ_{max}

| | Tem | Rainfall | Depth | Drainage | CEC | pH | OM | Slope |
|----------|-------|----------|-------|----------|-------|-------|-------|-------|
| | 0.022 | 0.261 | 0.151 | 0.022 | 0.151 | 0.048 | 0.261 | 0.084 |
| Tem | 1.000 | 0.111 | 0.143 | 1.000 | 0.143 | 0.333 | 0.111 | 0.200 |
| Rainfall | 9.000 | 1.000 | 2.000 | 9.000 | 2.000 | 6.000 | 1.000 | 4.000 |
| Depth | 7.000 | 0.500 | 1.000 | 7.000 | 1.000 | 4.000 | 0.500 | 2.000 |
| Drainage | 1.000 | 0.111 | 0.143 | 1.000 | 0.143 | 0.333 | 0.111 | 0.200 |
| CEC | 7.000 | 0.500 | 1.000 | 7.000 | 1.000 | 4.000 | 0.500 | 2.000 |
| pH | 3.000 | 0.167 | 0.250 | 3.000 | 0.250 | 1.000 | 0.167 | 0.500 |
| OM | 9.000 | 1.000 | 2.000 | 9.000 | 2.000 | 6.000 | 1.000 | 4.000 |
| Slope | 5.000 | 0.250 | 0.500 | 5.000 | 0.500 | 2.000 | 0.250 | 1.000 |

Calculate $[A] \cdot [W]$

| | | | | | | | | | |
|----------|-------|-------|-------|--------|-------|-------|-------|-------|-----------------|
| | Tem | Rain. | Depth | Drain. | CEC | pH | OM | Slope | $[A] \cdot [W]$ |
| Tem | 0.022 | 0.029 | 0.022 | 0.022 | 0.022 | 0.016 | 0.029 | 0.017 | 0.178 |
| Rainfall | 0.200 | 0.261 | 0.301 | 0.200 | 0.301 | 0.288 | 0.261 | 0.337 | 2.149 |
| Depth | 0.156 | 0.131 | 0.151 | 0.156 | 0.151 | 0.192 | 0.131 | 0.169 | 1.234 |
| Drainage | 0.022 | 0.029 | 0.022 | 0.022 | 0.022 | 0.016 | 0.029 | 0.017 | 0.178 |
| CEC | 0.156 | 0.131 | 0.151 | 0.156 | 0.151 | 0.192 | 0.131 | 0.169 | 1.234 |
| pH | 0.067 | 0.044 | 0.038 | 0.067 | 0.038 | 0.048 | 0.044 | 0.042 | 0.386 |
| OM | 0.200 | 0.261 | 0.301 | 0.200 | 0.301 | 0.288 | 0.261 | 0.337 | 2.149 |
| Slope | 0.111 | 0.065 | 0.075 | 0.111 | 0.075 | 0.096 | 0.065 | 0.084 | 0.684 |

Calculate λ_{\max}

| | | | | |
|---------|--------|---------|-------|---------|
| 0.17833 | | 0.02222 | | 8.02525 |
| 2.14949 | | 0.261 | | 8.23556 |
| 1.23382 | | 0.15066 | | 8.18926 |
| 0.17833 | | 0.02222 | | 8.02525 |
| 1.23382 | divide | 0.15066 | equal | 8.18926 |
| 0.38576 | | 0.04797 | | 8.04185 |
| 2.14949 | | 0.261 | | 8.23556 |
| 0.68357 | | 0.08426 | | 8.11266 |
| | | average | | 8.13183 |

Size of matrix is 8, so that Random consistency is equal 1.41 and $CR < 0.10$

$$CI = ((\lambda_{\max} - n)/n - 1) = 0.01883$$

$$CR = CI/1.41 = 0.01336 < 0.10 \quad \text{Consistency}$$

Consistent matrix of crop suitability and soil loss

| | | |
|------------------|------------------|-----------|
| | Crop suitability | Soil loss |
| Crop suitability | 0.3 | 1.0 |
| Soil loss | 1.0 | 3.0 |
| Sum | 1.3 | 4.0 |

Calculate priorities using approximation method

| | | | |
|------------------|------------------|-----------|-------------|
| | Crop suitability | Soil loss | W |
| Crop suitability | 0.25 | 0.25 | 0.25 |
| Soil loss | 0.75 | 0.75 | 0.75 |

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