Appendix 1 VBA Program of RAS Method

```
'RAS Macro
'Sheets("Sheet1").Select
1 Define the arrays and variables referred to in the RAS method.
'==============Define arrays and variables ==============
Static rn As Integer 'Row
Static cn As Integer 'Column
rn = 2
cn = 3
ReDim G(rn, cn)
ReDim A(rn, cn)
ReDim Row(rn)
ReDim Col(cn)
Dim ba As Double
ba = 1
'2 Import the initial matrix A0, row sum vector ROW, column sum vector
   COL, 'and intermediate matrix A00 from the corresponding region of
'Excel workbook "Sheet1".
'====Import the row sum, initial matrix and intermediate matrix====
For i = 1 To rn
      Row(i) = Sheets("Sheet1").Cells(i + 1, cn + 3).Value
          'cn+3 is the given column sum
      For j = 1 To cn
            G(i, j) = Cells(i + 1, j + 1).Value
            A(i, j) = G(i, j)
      Next j
Next i
'================Import the column sum==============
For j = 1 To cn
      Col(j) = Sheets("Sheet1").Cells(rn + 3, j + 1)'rn+3 is the given row sum
Next j
'3 Check whether the summation of elements in the given vector COL or ROW
     is 'equal with each other. If not, vector COL should be adjusted in proportion.
'========= Check whether the summation of elements in the given========
```

```
'=========vector COL or ROW is equal with each other==============
rsum = 0
csum = 0
For i = 1 To rn
    rsum = rsum + Row(i)
Next i
For j = 1 To cn
    csum = csum + Col(j)
Next j
'======= If vector COL or ROW is not equal with each other,=======
'========= adjust vector COL in proportion===============
If csum <> rsum Then
    ba = rsum / csum
    For j = 1 To cn
        Col(j) = Col(j) * ba
    Next j
End If
'4 Calculate the RAS iterative process.
'======================RAS iterates==================
    iter = 0
Top:
    iter = iter + 1
    rdismax = 0
    cdismax = 0
'5 Use the multiplicator of column to multiply the intermediate matrix A00
   in the 'right, and calculate the column sum gap between the obtained
   matrix and the 'given 'matrix COL.
'Use the multiplicator of column to multiply the intermediate matrix in the
  right
For j = 1 To cn
    csum = 0
    For i = 1 To rn
        csum = csum + A(i, j)
    Next i
    If (Abs(csum) > 0) Then
        csum = Col(j) / csum
    Else
        csum = 0
    End If
    For i = 1 To rn
        A(i, j) = A(i, j) * csum
    Next i
'====Calculate column sum gap between the obtained matrix=======
'====and the given matrix==========================
```

```
        dis = Abs(csum - 1)
        If (dis > cdismax) Then
            cdismax = dis:
            cis = csum - 1:
            jmax = j
        End If
Next j
'6 Use the multiplicator of row to multiply the intermediate matrix A00 in
   the left, and calculate the row sum gap between the obtained matrix and
   the given matrix 'ROW.
'==Use the multiplicator of row to multiply the intermediate matrix in the
      left==
For i = 1 To rn
        rsum = 0
        For j = 1 To cn
            rsum = rsum + A(i, j)
        Next j
        If (Abs(rsum) > 0) Then
            rsum = Row(i) / rsum
            Else: rsum = 0
        End If
        For j = 1 To cn
            A(i, j) = A(i, j) * rsum
'==Calculate row sum gap between the obtained matrix and the given
        matrix==
        dis = Abs(rsum - 1)
        If (dis > rdismax) Then
            rdismax = dis:
            rdis = rsum - 1:
            imax = i
        End If
Continue: Next i
'7 Determine whether the iterations can be converged, and set the termination
   conditions of iteration, which include two aspects,
'First, the iterations cannot be infinite, here we set it as no more than 50,000;
'Second, the row sum gap or column sum gap between the result matrix and
'given matrix is small enough, here we set the error accuracy as 0.000001.
'==========Determine whether the iterations converge=========
If (cdismax > rdismax) Then
    dismax = cdismax
    Else: dismax = rdismax
End If
'===========Set the termination conditions of iteration========
If (iter < 50000 And dismax > 0.000001) Then
```

```
        GoTo Top
        End If
        If (dismax > 0.000001) Then
            Beep
        End If
        Cells(rn + 5, 1) = ba
        '8 Record the final result matrix obtained from the iterations, and export
          the 'structure to workbook "Sheet1" in the corresponding region.
        '============Record the final result matrix============
        For i = 1 To rn
            For j = 1 To cn
                If Row(i) = 0 Then
                    Cells(i + rn + 5, j + 1).Value = 0
                    Else: Cells(i + rn + 5, j + 1).Value = A(i, j) * ba
                End If
            Next j
        Next i
        Beep
Worksheets ("Sheet1").Activate
```

Appendix 2 SAM of Jiangxi Province in 2007

Table 1. Outputs of production activities

-	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
47	1135800.3	8525.3	0.0	891.5	183.1	1651957.3	137439.0	5470.4	110968.6	2441.2	0.0	115572.1	33.5	17.6	265.6	2431.0	37.5	160.1	0.0	73.0	84754.3	0.0	4.0
48	14984.8	24678.0	0.0	1145.3	3131.4	7102.1	1888.2	65.1	2245.3	2066.9	22867.0	41585.0	73456.0	82362.5	443.6	1207.4	1736.9	241.7	44.5	36.4	2195.7	0.0	207136.1
49	0.0	139.4	0.0	90.1	0.0	245.7	0.0	29.8	0.0	217.6	251120.0	37862.5	254.4	13.9	0.0	135.0	3.6	735.0	0.0	0.0	0.0	0.0	172.4
50	0.0	4713.4	0.0	56217.5	365.4	0.0	1.6	0.0	0.0	0.0	2803.7	45446.1	4604.6	486582.9	2070.1	1283.1	3703.8	5261.7	37.1	0.0	0.0	0.0	0.0
51	2540.8	572.2	0.0	455.3	68722.8	2865.8	7.9	19.5	29.9	4200.2	8.9	10030.5	47589.7	5104.5	409.8	292.4	89.6	20.2	5.4	220.9	11.4	0.0	77.7
52	493187.3	0.0	0.0	7.3	0.0	408552.9	532.3	141.6	58.3	429.5	13.5	10787.8	15.1	283.3	830.6	259.8	2.2	1436.6	16.9	7.6	0.0	0.0	0.0
53	844.7	4484.4	0.0	287.7	165.7	505.6	256110.5	119396.2	3044.8	323.3	67.5	9244.7	296.0	230.5	275.0	245.5	291.3	233.0	71.0	102.8	23.5	0.0	145.1
54	1244.3	1887.1	0.0	1687.3	471.0	1675.1	25457.4	71194.5	309.1	2032.4	144.8	2107.3	4296.2	1485.8	815.2	1194.5	1460.3	572.9	531.2	372.2	61.3	0.0	1848.4
55	13743.7	1000.8	0.0	594.7	184.8	1494.3	868.6	187.4	115167.0	928.2	80.0	2556.8	4026.3	671.7	449.3	1486.9	800.3	432.3	406.1	10354.5	4249.1	0.0	497.7
56	9312.5	1350.5	0.0	616.7	447.4	50699.6	2247.0	1097.3	5592.0	387201.7	224.6	39107.0	13916.7	1174.1	1224.4	3748.1	2348.8	2445.2	6806.4	14460.9	8664.4	0.0	2614.2
57	58422.1	3110.3	0.0	9666.2	5213.3	3484.3	1486.3	135.4	1426.4	2485.4	31866.5	19426.1	44561.5	48367.2	1692.8	5047.3	4014.4	3891.8	327.5	268.8	12762.5	0.0	6091.8
58	506259.2	6231.3	0.0	26428.8	20676.5	74922.6	48833.6	6435.1	47293.6	52463.3	10776.4	843767.2	63588.6	27952.3	8322.1	51904.5	35935.0	21964.0	11813.4	30953.1	22428.7	0.0	5974.7
59	11389.8	8236.4	0.0	3048.7	29564.1	16694.9	1220.0	267.8	504.7	709.4	389.4	19886.1	357952.1	25886.9	4806.7	8068.3	7013.4	26375.9	563.8	3311.6	1695.0	0.0	1387.5
60	1755.8	6864.2	0.0	36900.9	1368.1	2441.2	454.2	76.6	277.2	78705.9	15173.1	43258.2	78542.1	588513.7	99817.7	108641.4	69352.9	162120.4	4861.9	13782.9	2317.8	0.0	2815.0
61	25581.7	5157.8	0.0	3465.0	1952.1	9258.5	1347.9	248.2	8524.6	9458.8	1024.6	8582.9	26043.8	4691.5	119680.2	65758.2	27787.6	10402.6	1201.7	12753.4	26483.3	0.0	5481.1
62	42653.8	9736.1	0.0	23234.8	4453.0	10375.0	3640.9	389.8	14192.9	8964.6	3241.0	14143.5	18777.3	50439.1	14988.7	196041.4	123373.0	64485.2	1032.2	3518.5	608.1	0.0	40843.0
63	11376.3	1469.5	0.0	8593.5	942.2	1995.9	801.4	98.2	1467.3	223.5	706.3	1248.1	2876.5	3515.6	573.6	7155.2	433613.4	7829.9	75.7	1969.9	139.4	0.0	5469.5
64	1107.0	2678.2	0.0	3361.2	1765.3	3483.8	1392.6	199.4	892.5	982.4	1246.1	5730.8	8433.5	5089.7	2245.7	14952.5	17227.4	39925.5	3693.1	1415.8	280.5	0.0	46700.5
65	3704.6	631.2	0.0	813.4	302.0	1249.5	335.6	117.7	328.2	370.8	555.8	2234.9	1278.2	700.4	173.6	2875.8	24124.2	7557.9	115628.2	11356.2	41847.9	0.0	4163.6
66	947.6	985.4	0.0	1216.6	577.6	1948.3	571.0	157.5	376.3	3158.9	479.7	4467.2	2665.2	2008.2	974.6	9817.4	1325.9	613.9	198.6	18348.5	177.2	0.0	4676.6
67	4913.8	1572.6	0.0	644.8	1024.0	54221.5	369.4	1366.2	457.6	18746.3	4022.2	31756.4	30863.6	2764.1	948.5	23475.6	10358.9	13557.7	1340.2	13136.0	39537.7	0.0	674.3
68	628.6	0.0	0.0	269.6	146.0	840.6	3.6	0.7	0.0	5468.0	0.0	4061.0	16292.7	74988.3	0.0	25830.2	177.2	866.1	0.0	5873.1	0.0	0.0	1541.5
69	55527.1	30338.1	0.0	68199.8	9164.8	42140.3	14652.4	2414.0	15909.7	11241.8	7672.0	90767.2	124875.6	109306.2	13035.7	21336.3	30566.5	11571.9	2335.4	4052.3	3279.6	0.0	104382.6
70	0.0	0.0	0.0	78.6	0.0	348.3	116.7	4.5	166.3	237.0	463.2	1207.8	4070.4	2203.2	741.3	9.3	46.7	546.8	92.0	1.4	0.0	0.0	0.0
71	2069.7	1469.3	0.0	3595.1	211.6	10092.6	1783.6	656.9	1570.3	1792.1	243.5	8116.9	8012.8	6273.9	738.0	3495.3	2100.9	1426.5	481.2	1006.8	247.0	0.0	78411.9

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–	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
72	12846.7	724.1	0.0	172.8	47.0	556.9	172.5	111.2	101.3	125.7	21.4	1666.0	2083.9	1967.8	93.8	190.0	1564.4	153.8	146.7	141.9	247.4	0.0	62076.6
73	180226.4	21031.1	0.0	21231.8	82003.0	122000.3	16770.5	8567.5	69618.5	43149.2	43611.5	130702.7	208748.0	148733.0	19590.6	44045.5	45437.6	19794.9	5469.4	11507.8	11711.6	0.0	79240.6
74	3071.5	85.9	0.0	65.8	160.3	745.9	114.1	103.4	428.7	532.7	55.2	1347.7	1762.6	298.8	52.1	516.9	254.5	151.0	168.3	589.4	31.8	0.0	693.8
75	19103.8	925.6	0.0	543.4	619.7	9855.3	688.0	725.3	3156.3	1553.3	367.4	3185.0	4544.1	990.0	1468.1	2466.4	1584.6	950.6	760.6	1208.4	147.3	0.0	3955.8
76	172451.4	10059.2	0.0	12168.2	16686.6	137386.0	39339.1	28946.0	54422.1	76411.2	43379.6	130407.4	61939.6	93704.9	23897.7	46200.6	44860.2	38187.4	14737.1	13200.5	18048.3	0.0	28487.5
77	19202.4	5432.6	0.0	1704.8	2953.3	23636.2	1925.3	3731.2	5797.8	6480.4	990.6	22035.6	21892.7	3360.3	2648.8	11273.3	6254.9	3785.0	2293.8	3013.6	1119.1	0.0	9697.5
78	66476.7	12225.8	0.0	20873.7	6026.5	50681.6	16368.7	7034.0	14072.9	21887.1	24148.5	70655.3	70008.9	49965.9	5902.1	24932.2	36485.5	14267.1	7128.8	8118.7	6680.4	0.0	76377.7
79	485.2	4.1	0.0	428.0	85.1	4692.3	621.6	248.4	2500.5	1491.9	17.6	1026.3	2374.1	887.2	1129.9	518.2	1176.6	380.8	280.5	33.4	349.5	0.0	0.0
80	8520.4	1028.0	0.0	5743.2	8115.9	53143.7	1423.2	2812.6	2928.8	8507.2	641.3	44560.3	11545.0	3064.9	3246.1	5924.6	29451.4	2779.3	1967.5	1456.5	321.2	0.0	1121.9
81	1.4	27.9	0.0	5.8	0.8	71.4	1.4	0.0	0.7	0.3	12.9	118.0	7.5	5.4	0.7	9.4	10.3	30.9	11.4	1.0	0.8	0.0	12.2
82	1108.5	104.1	0.0	401.3	2.1	3933.5	66.8	46.5	450.4	308.3	3082.8	3885.9	4100.5	3299.8	38.7	929.9	16688.2	1090.3	4266.6	817.9	1234.7	0.0	161.9
83	3637.9	53.8	0.0	337.0	50.6	1836.0	25.6	1.4	666.5	515.1	272.5	567.9	1078.0	1427.3	498.6	280.4	119.1	291.1	104.8	1753.3	5.5	0.0	679.0
84	16655.8	1428.7	0.0	972.6	129.5	7653.1	312.2	445.4	941.2	1394.2	218.3	7221.0	5712.3	1255.7	115.7	2291.6	3692.6	833.1	191.4	183.1	109.2	0.0	9410.0
85	829.0	257.4	0.0	238.2	15.1	339.0	12.7	19.9	31.5	112.5	66.1	286.5	417.8	211.7	68.3	200.9	377.7	81.4	54.1	83.6	39.0	0.0	427.9
86	8350.8	836.7	0.0	263.6	60.2	163.1	15.6	20.0	166.5	390.0	1855.7	2938.8	1047.7	1264.0	65.1	186.7	4667.1	52.7	10.6	107.6	0.0	0.0	347.7
87	3317.2	2562.7	0.0	541.1	959.7	9449.0	635.8	1629.9	2128.3	3088.2	319.6	9154.3	8678.2	1091.6	1142.4	2825.7	2163.0	1298.2	917.6	844.5	448.4	0.0	3882.9
88	45174.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
89	24221.3	229.0	0.0	46.3	16.1	34298.3	2844.6	134.8	2332.5	109.3	59.0	2627.1	214.2	87.2	25.1	118.3	282.1	40.3	56.3	40.0	1766.2	0.0	151.4
90	9528.0	81.0	0.0	12.9	4.0	13671.8	1135.7	49.5	924.1	31.9	11.8	1002.0	43.0	17.5	6.1	33.7	56.6	8.7	11.3	8.3	702.7	0.0	30.3
91	2582.7	33.5	0.0	10.2	4.1	3477.3	286.6	17.9	242.2	22.7	17.7	311.6	64.1	26.1	6.4	25.5	84.5	11.4	16.9	11.7	180.3	0.0	45.4
92	174.5	16.9	0.0	31.4	26.8	111.0	44.2	25.7	37.3	75.3	46.8	170.3	132.2	183.4	33.3	69.0	96.5	46.5	18.5	18.7	20.6	0.0	78.3
93	4933506.7	215266.9	0.0	90188.4	24561.3	156692.3	75045.2	40721.2	78722.2	84682.0	16830.6	193720.8	256563.9	158229.8	46544.3	146542.5	138734.7	53148.5	30652.7	52709.7	38794.7	0.0	175470.0
94	470355.8	27290.4	0.0	38828.7	39357.1	224569.6	18203.1	7417.2	51584.6	63732.7	18001.4	138262.6	142407.5	93167.3	20647.5	60817.2	72878.3	26199.6	22269.1	20884.4	5656.0	163164.5	373100.5
95	40357.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
96	23542.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
97	3363.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
98	0.0	7098.1	0.0	10228.4	2767.9	7174.8	1066.6	347.5	1555.5	2301.4	1626.1	8826.9	9421.3	7345.4	1103.1	3428.9	4378.4	1365.6	997.2	953.6	189.5	0.0	36065.8

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-	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
101	212837.8	262132.6	0.0	43017.4	22903.4	221344.3	42615.2	26128.7	83257.7	56709.4	43611.4	271450.2	383399.4	212774.7	44991.7	102984.1	192937.7	64883.2	22620.7	52196.7	27742.0	0.0	417322.0
104	8679924.8	694767.8	0.0	499565.4	358588.2	3446078.2	721296.0	339454.8	706870.6	968461.3	554455.7	2459084.7	2135509.0	2313986.8	448838.9	1013503.7	1401727.7	614506.1	266714.9	317260.8	367310.7	163164.5	1799945.6
-	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46
47	0.0	0.0	164351.3	7516.5	0.0	0.0	634.3	197044.7	0.0	1945.3	0.0	0.0	0.0	619.7	591.8	0.0	0.0	0.0	0.0	2649.0	1589.4	1059.6	1324.5
48	26468.8	19.1	20554.6	484.0	12.1	0.0	0.0	2470.7	0.0	6404.5	0.0	0.0	0.0	0.0	2458.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
49	12588.9	0.0	0.0	5451.3	0.0	0.0	0.0	6637.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	207.4	124.5	83.0	103.7
50	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	468.8	281.3	187.5	234.4
51	8.4	4.2	134417.2	20772.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	53.5	13.2	47.6	486.9	130.3	20.0	278.1	0.0	0.0	0.0	0.0
52	0.0	120.4	0.0	2251.5	0.0	0.3	718.3	251689.2	0.0	225.9	258.1	0.0	0.0	16.5	0.0	0.0	0.0	214.4	0.0	563.2	337.9	225.3	281.6
53	6.8	190.4	94.8	1416.8	477.5	0.0	4423.8	11287.7	268.8	789.5	27.0	11.1	0.0	0.0	45.8	0.0	0.0	394.1	0.0	340.3	204.2	136.1	170.2
54	595.4	352.6	24420.9	8766.5	1618.1	2598.0	3629.1	1799.8	988.8	1809.7	492.6	115.0	140.0	316.5	154.8	553.2	241.1	61.1	161.0	827.3	496.4	330.9	413.7
55	60.5	794.0	249815.4	5847.5	860.8	635.9	6410.8	740.3	5645.9	1672.0	5529.7	1.0	1335.1	330.4	1493.3	12146.4	3250.3	626.5	6938.8	607.3	364.4	242.9	303.6
56	619.8	635.3	34729.0	26974.3	4048.0	3048.5	14433.8	13051.6	53263.5	6939.8	19642.8	135.0	4166.0	2569.6	24307.0	40728.8	4361.6	51711.4	37612.6	187.8	112.7	75.1	93.9
57	921.5	333.5	195362.6	333266.8	3481.4	1707.3	48921.1	19378.1	12987.2	2814.3	2062.6	560.0	3025.8	2179.1	9481.0	8171.6	3746.9	4322.7	27659.5	0.0	0.0	0.0	0.0
58	645.7	4604.0	209825.3	44734.5	1507.7	275.7	5272.0	16550.0	6900.3	2080.1	14940.5	67.5	1598.2	413.8	2564.8	13152.0	185839.0	2370.2	7184.4	769.2	461.5	307.7	384.6
59	69.7	805.1	857035.0	16467.3	1220.5	0.0	1173.1	3751.6	0.0	13935.5	9563.4	0.0	1013.0	380.5	1075.1	9215.9	2466.2	378.5	5264.7	310.8	186.5	124.3	155.4
60	247.8	1606.9	714862.1	4751.4	0.0	0.0	29.6	78.7	0.0	1755.3	1879.2	0.0	91.4	2577.7	81.2	831.1	222.4	34.1	474.8	224.2	134.5	89.7	112.1
61	3021.1	677.6	287821.8	1899.0	169.0	504.4	1858.7	2105.3	1525.6	2983.4	6.0	1.1	471.4	116.7	454.9	4289.0	1147.7	176.2	2450.2	383.5	230.1	153.4	191.7
62	1221.6	5062.4	127963.6	5058.8	1987.0	1496.8	5479.2	1626.8	5072.7	5305.5	3948.1	0.0	2458.8	1005.5	14631.6	3438.8	255072.8	81.5	2641.6	7215.3	4329.2	2886.1	3607.6
63	254.5	1352.2	38267.1	202029.0	663.2	1432.0	33115.6	124.9	5662.2	2145.5	3990.7	0.0	180.8	47.6	6056.9	1644.7	440.1	4241.1	939.6	5447.6	3268.6	2179.0	2723.8
64	477.0	1525.8	259841.4	3308.9	363.5	12669.3	381.0	1543.4	2856.9	9321.3	204.0	4.9	1114.3	331.7	29055.5	10138.0	2712.9	14654.4	5791.5	1262.2	757.3	504.9	631.1
65	170.4	561.0	7819.4	8553.2	70.2	17774.3	2050.5	1287.7	2177.1	3499.4	1203.4	2.7	231.2	1082.0	7047.4	2172.3	539.5	96.2	1562.1	4249.4	2549.6	1699.8	2124.7
66	330.9	1115.4	24258.0	624.4	696.6	16403.0	1343.9	212.8	2849.5	2325.8	10841.2	61.1	1797.0	1286.0	1793.4	4246.7	429.1	719.0	3674.0	349.0	209.4	139.6	174.5
67	9.6	2052.2	14243.2	8716.3	0.0	200.3	0.6	999.9	948.4	0.0	742.5	0.0	0.0	0.0	1874.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
68	0.0	0.0	0.0	913.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	48.6	29.2	19.5	24.3
69	13514.6	70344.0	113163.7	23086.6	3775.5	39381.1	159929.0	52220.5	29855.0	4503.2	45063.7	2781.0	5310.5	2175.6	19755.9	63989.5	19933.1	16608.3	26624.7	0.8	0.5	0.3	0.4
70	731.6	0.0	0.0	49.3	3.3	0.0	0.0	5538.6	0.0	215.9	0.0	1.9	0.0	0.0	3.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Continued

-	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46
71	1370.8	8618.0	13791.8	3091.3	361.7	2690.1	19853.8	14501.3	7488.6	886.7	3433.0	310.6	1485.7	608.9	2463.6	31866.0	10688.1	4987.3	6869.9	0.8	0.5	0.3	0.4
72	17.6	125.7	219176.7	23217.2	3557.3	21103.3	60058.8	23901.7	23380.0	91008.9	26315.3	552.7	2418.5	722.6	56283.2	22003.4	5888.1	8387.1	92668.4	70229.1	42137.4	28091.6	35114.5
73	9617.8	4998.2	381529.4	532677.5	4386.9	6250.4	160203.6	21093.7	44674.1	6744.4	19745.9	1784.0	5728.5	4768.7	7637.9	30256.5	12902.2	11008.6	32993.0	553.0	331.8	221.2	276.5
74	404.8	68.0	3121.2	1554.0	213.5	724.8	5408.5	156.1	13172.8	349.9	3066.0	48.2	384.8	185.9	473.1	2827.9	435.3	1012.1	2662.4	0.0	0.0	0.0	0.0
75	362.1	647.7	15871.5	26941.4	2185.4	28027.1	82480.2	4479.0	40864.6	3583.5	11821.6	748.7	4554.8	1969.9	3383.7	32616.2	4291.4	8519.4	43245.8	0.0	0.0	0.0	0.0
76	3493.5	1721.7	336134.1	74578.9	20910.1	22669.2	349547.7	54058.5	14761.7	11953.9	13110.3	265.2	2137.3	8923.8	13249.2	11525.7	53613.2	9142.6	13592.4	1883.2	1129.9	753.3	941.6
77	2154.0	1506.8	148501.9	43737.1	1258.6	8076.9	68070.6	7161.7	48143.6	10889.6	12507.8	2530.2	6876.1	4775.8	9146.3	31683.9	6104.8	11372.5	61428.7	0.0	0.0	0.0	0.0
78	4373.3	7189.1	97991.3	181088.7	2799.0	46080.0	43821.4	39039.0	14713.2	67683.5	6465.0	8838.1	4757.6	1955.1	38022.6	23593.2	1787.1	16372.5	18525.9	4.3	2.6	1.7	2.1
79	93.6	0.0	587.9	1865.8	507.7	4438.3	40084.2	24444.4	43988.8	6241.1	259.9	17.1	0.0	0.0	52.1	0.0	0.0	0.0	0.0	602.5	361.5	241.0	301.2
80	686.7	210.5	50310.3	45319.2	3634.6	24005.0	57483.7	31120.8	53589.5	0.0	247734.4	442.2	2042.8	1279.6	6197.5	60101.3	1696.8	7073.4	19342.6	0.0	0.0	0.0	0.0
81	0.0	0.0	0.0	213.0	0.0	0.0	0.0	28.7	0.0	280.9	30.9	41039.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
82	19.4	475.0	21295.0	4097.4	0.4	85.9	38.5	0.0	267.0	58.8	0.0	0.0	38850.4	1364.2	12810.8	42465.0	10680.7	18118.3	64956.1	41.3	24.8	16.5	20.6
83	16.2	36.1	14737.8	8773.5	4.3	0.0	6174.6	11.3	0.0	574.1	0.0	0.0	66.1	1303.7	3.2	8586.4	13.5	7.6	0.0	676.2	405.7	270.5	338.1
84	1187.3	4123.0	12825.0	113862.4	306.1	2335.5	52714.5	3187.8	8669.3	16090.7	34610.6	294.2	758.4	442.9	2370.3	7149.5	1850.2	540.2	3929.0	49.3	29.6	19.7	24.6
85	116.5	142.5	3591.5	1595.0	0.0	383.3	2431.8	121.4	1586.3	267.6	175.0	29.8	709.9	122.9	522.8	3357.0	510.0	79.7	4503.8	0.0	0.0	0.0	0.0
86	7114.9	11.8	0.0	4528.1	0.0	8.2	380.0	344.2	2205.4	87.2	63.8	2282.5	5446.3	7606.1	13043.2	35890.7	19618.2	6573.4	30212.5	0.0	0.0	0.0	0.0
87	1047.5	689.0	22315.4	1317.3	0.0	1767.8	31156.5	2064.5	10514.0	0.0	521.0	1.7	3305.9	1070.6	3614.5	51144.4	34653.7	37248.3	23553.4	0.0	0.0	0.0	0.0
88	0.0	0.0	0.0	1658.2	291.2	0.0	0.0	0.0	1048.3	0.0	574.4	51.1	154.5	0.0	7.5	0.0	20.6	73.2	213.4	0.0	0.0	0.0	0.0
89	96.5	55.6	4147.7	1534.0	6.1	46.5	956.2	4120.9	246.6	213.5	364.9	27.0	500.4	133.7	340.9	1508.6	683.7	635.9	1293.1	0.0	0.0	0.0	0.0
90	19.3	11.1	1507.3	337.8	1.2	9.3	193.9	1636.7	49.3	50.7	73.0	5.4	100.1	29.3	70.6	301.7	136.7	127.2	258.6	0.0	0.0	0.0	0.0
91	28.9	16.7	566.6	429.2	1.8	14.0	284.2	423.7	74.0	56.0	109.5	8.1	150.1	37.6	99.8	452.6	205.1	190.8	387.9	0.0	0.0	0.0	0.0
92	8.5	11.7	458.2	166.0	6.1	26.2	117.6	61.3	43.6	26.8	46.5	6.0	5.3	4.0	25.9	42.2	57.8	17.5	42.1	0.0	0.0	0.0	0.0
93	48240.6	95484.9	1928084.6	693880.3	48063.2	99282.5	854170.6	137918.2	467933.6	172053.2	157872.1	18218.6	180017.1	114710.9	284991.7	992879.7	427905.6	210594.1	581062.1	21977.2	8193.5	2795.1	667.4
94	(28569.4)	59066.4	343257.6	324426.5	10371.8	287811.3	485193.7	256154.1	169713.1	472394.5	58629.8	11733.5	14199.2	8393.0	73240.2	916559.5	132549.6	(11976.3)	48439.2	5510.2	2054.3	700.8	167.3
95	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	577.4	91.9	22.0
96	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1548.9	0.0	197.0	47.0
97	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1290.7	481.2	164.2	39.2

Continued

–	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	
98	2778.5	4509.0	138759.7	238081.1	3339.5	13325.5	15427.6	28688.9	13572.1	377311.0	2783.2	6062.4	105.4	244.7	1961.1	663.7	1905.0	1131.4	834.2	722.8	269.5	0.0	0.0	0.0
101	16421.7	42265.4	169822.4	143767.4	6252.3	3074.3	387772.0	117786.7	14406.3	62951.3	59405.8	3045.5	9605.4	7665.5	15698.3	506.7	5065.0	59574.4	116.1	5952.7	2219.3	757.1	180.8	
104	133065.0	324139.8	407231.2	3205678.1	129413.2	670362.8	3013828.2	362644.1	126107.7	1372429.6	780155.0	102084.5	307347.6	183781.5	668685.1	658286.9	213795.4	497520.9	180408.0	137153.7	73885.9	44766.5	51199.3	

* Negative in parentheses

Table 2. Outputs of Commodities

–	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69
1	8679924.8																						
2		694767.8																					
3			0.0																				
4				499565.4																			
5					358588.2																		
6						3446078.2																	
7							721296.0																
8								339454.8															
9									706870.6														
10										968461.3													
11											554455.7												
12												2459084.7											
13													2135509.0										
14														2313986.8									
15															448838.9								
16																1013503.7							
17																	1401727.7						
18																		614506.1					
19																			266714.9				
20																				317260.8			
21																					367310.7		
22																						163164.5	
23																							1799945.6
24																							
25																							
26																							
27																							

Continued

–	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69
28																							
29																							
30																							
31																							
32																							
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45																							
46																							
101	94298.1	12004.9	154706.8	47212.7	74243.4	138902.6	20140.3	9644.6	34390.6	70252.4	34747.5	94770.7	331501.2	13515.3	67097.8	47044.8	70992.2	33225.7	11520.7	27834.0	28511.1	11282.8	175474.6
103	418783.7	183725.6	742798.8	338552.0	97622.9	72525.1	17301.9	413873.5	792.9	444132.2	366314.4	392283.8	100537.9	110255.7	275240.4	945064.6	382214.7	8972458.5	60490721.6	3561.2	5336.9	38.8	281931.4
104	9193006.6	890498.3	897505.6	885330.1	530454.5	3657505.9	758738.2	762973.0	742054.0	1482845.8	955517.6	2946139.1	2567348.1	2437757.7	791177.1	2005613.1	1854934.6	9620190.4	66768957.2	348656.0	401158.7	174486.1	2257351.6
–	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92
1																							
2																							
3																							
4																							

Continued

–	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92
5																							
6																							
7																							
8																							
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17																							
18																							
19																							
20																							
21																							
22																							
23																							
24	133065.0																						
25		324139.8																					

Continued

–	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92
26			7407231.2																				
27				3205678.1																			
28					129413.2																		
29						670362.8																	
30							30138828.2																
31								1362644.1															
32									1126107.7														
33										1372429.6													
34											780155.0												
35												102084.5											
36													307347.6										
37														183781.5									
38															668685.1								
39																1658286.9							
40																	1213795.4						
41																		497520.9					
42																			1180408.0				
43																				137153.7			
44																					73885.9		
45																						44766.5	
46																							51199.3

Continued

–	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92
101	9556.4	0.0	0.0	34458.9	621.8	17014.5	58017.5	75813.4	7710.1	2697.9	38617.2	975.6	0.0	0.0	17237.5	145.0	2933.2	19035.7	0.0	0.0	0.0	0.0	0.0
103	6350.3	0.0	0.0	295540.8	117496.2	36289.0	490454.4	170057.4	216911.8	92690.7	8945.0	27386.6	0.0	0.0	16761.7	209385.4	36415.0	65622.0	0.0	0.0	0.0	0.0	0.0
104	148971.8	324139.8	7407231.2	3535677.7	247531.3	723666.3	3562300.1	1608514.9	1350729.6	1467818.1	827717.2	130446.8	307347.6	183781.5	702684.3	1867817.3	1253143.6	582178.6	1180408.0	137153.7	73885.9	44766.5	511199.3

Table 3. Outputs of other accounts

–	93	94	95	96	97	98	99	100	101	102	103	104	–	93	94	95	96	97	98	99	100	101	102	103	104
1												8679924.8	53							142237.5		0.0	33179.5	166647.9	758738.2
2												694767.8	54							507253.1		0.0	80664.1	3325.0	762973.0
3												0.0	55							138667.2		0.0	59207.2	78346.6	742054.0
4												499565.4	56							208414.1		0.0	18307.8	357376.7	1482845.8
5												358588.2	57							14936.9		0.0	(4625.1)	1074.7	955517.6
6												3446078.2	58							395477.4		0.0	75000.2	28288.8	2946139.1
7												721296.0	59							64648.0		0.0	30305.9	1019029.5	2567548.1
8												339454.8	60							4078.1		0.0	21863.9	363690.2	2437757.7
9												706870.6	61							29570.4		0.0	37390.1	36693.3	791177.1
10												968461.3	62							8289.4		0.0	703487.0	183113.7	2005613.1
11												554455.7	63							94404.4		0.0	531143.1	421039.7	1854934.6
12												2459084.7	64							125120.6		0.0	123064.2	8849750.7	9620190.4
13												2135509.0	65							167548.7		0.0	414316.5	59898219.0	60768957.2
14												2313986.8	66							46672.9		0.0	34027.0	136383.6	348656.0
15												448838.9	67							32374.7		0.0	(5797.6)	89042.3	401158.7
16												1013503.7	68							0.0		0.0	4741.9	31722.2	174486.1
17												1401727.7	69							170256.8		0.0	82.1	602225.8	2257351.6
18												614506.1	70							129503.4		0.0	(38.4)	2628.9	148971.8
19												266714.9	71							64669.8		0.0	(9695.2)	0.0	324139.8
20												317260.8	72							0.0		0.0	6465640.2	0.0	7407231.2
21												367310.7	73							379156.2		3529.7	53913.5	465503.1	3535677.7
22												163164.5	74							9614.6		0.0	0.0	190417.2	247531.3
23												1799945.6	75							321648.1		0.0	0.0	26625.3	723666.3
24												133065.0	76							954528.2		0.0	183607.8	299146.7	3562300.1
25												324139.8	77							648651.0		0.0	0.0	314707.8	1608514.9
26												7407231.2	78							0.0		0.0	415.9	114889.7	1350729.6
27												3205678.1	79							1114213.6		0.0	58741.7	152044.6	1467818.1

Continued

-	93	94	95	96	97	98	99	100	101	102	103	104	-	93	94	95	96	97	98	99	100	101	102	103	104
28												129413.2	80							1826.9		0.0	0.0	15276.4	827717.2
29												670362.8	81							42957.8		0.0	0.0	45565.8	130446.8
30												3013828.2	82							0.0		41193.2	4450.1	0.0	307347.6
31												1362644.1	83							0.0		63256.3	64324.8	0.0	183781.5
32												1126107.7	84							191381.7		125884.1	4801.9	52080.2	702684.3
33												1372429.6	85							841660.0		904971.2	0.0	96769.0	1867817.3
34												780155.0	86							196340.9		876347.2	0.0	22228.5	1253143.6
35												102084.5	87							89462.0		82659.4	0.0	126993.3	582178.6
36												307347.6	88							0.0		1131141.3	0.0	0.0	1180408.0
37												183781.5	89							0.0		50542.3	0.0	0.0	137153.7
38												668685.1	90							0.0		41595.7	0.0	0.0	73885.9
39												1658286.9	91							0.0		33751.1	0.0	0.0	44766.5
40												1213795.4	92							0.0		48569.1	0.0	0.0	51199.3
41												497520.9	93												14554325.1
42												1180408.0	94												4913914.6
43												137153.7	95												41049.1
44												73885.9	96												25334.9
45												44766.5	97												5338.4
46												51199.3	98												960718.2
47							1999382.1		175514.3	258274.0	3123484.8	9193006.6	99	14554325.1	4913914.6										2013063.7
48							46591.6		0.0	(6566.5)	300981.0	890498.3	100												0.0

Continued

–	93	94	95	96	97	98	99	100	101	102	103	104	–	93	94	95	96	97	98	99	100	101	102	103	104
49							13187.7		0.0	20225.6	547877.1	897505.6	101			41049.1	25334.9	5338.4	960718.2	416269.0					7279031.9
50							0.0		0.0	45706.4	225360.7	885330.1	102							8767277.5		3033353.0			11800630.5
51							2238.8		0.0	(5261.0)	233969.0	530454.5	103										2450820.9		79297195.7
52							1754452.9		0.0	54910.9	674677.0	3657505.9	104	14554325.1	4913914.6	41049.1	25334.9	5338.4	960718.2	20134963.7	0.0	7279031.9	11800630.5	79297195.7	

* Negative in parentheses

Table 4. Code number of production activities, commodities, factors, institutions, capital accounts, account of other regions and the total

Code	Production activities
1	Agriculture, forestry, animal husbandry and fishing
2	Coal mining and dressing
3	Petroleum and natural gas mining
4	Metallic mining
5	Non-metallic mining
6	Food manufacturing and tobacco processing
7	Manufacture of textile
8	Garment leather, eider down and related products production
9	Wood processing and furniture manufacturing
10	Paper printing and stationery
11	Petroleum processing, coking and nuclear fuel processing
12	The chemical industry
13	Non-metallic mineral products industry
14	Metal smelting and rolling processing
15	Metal products industry
16	General and special equipment manufacturing
17	Transportation equipment manufacturing
18	Electrical, machinery and equipment manufacturing
19	Communications equipment, computers and other electronic equipment manufacturing
20	Manufacture of measuring instruments and machinery for cultural activity and office work
21	Other manufacturing industries
22	Waste scrap
23	Electricity, heat production and supply
24	Gas production and supply
25	Water production and supply
26	Construction industry
27	Transportation and warehousing
28	Postal and telecommunication services
29	Information transmission, computer services and software industry
30	Wholesale and retail trade
31	Accommodation and catering
32	Finance and insurance
33	Real estate
34	Leasing and business services
35	Tourism
36	Scientific research business
37	Comprehensive technical services
38	Other social services
39	Education
40	Health, social security and social welfare sector
41	Culture, sports and entertainment
42	Public administration and social organizations
43	Land conversion industry
44	Economic forestry conversion
45	Grassland conversion
46	Other types of land use conversion
	Commodities
47	Agriculture, forestry, animal husbandry and fishing

Continued

Code	Production activities
48	Coal mining and dressing
49	Petroleum and natural gas mining
50	Metallic mining
51	Non-metallic mining
52	Food manufacturing and tobacco processing
53	Manufacture of textile
54	Garment Leather, eider down and related products production
55	Wood processing and furniture manufacturing
56	Paper printing and stationery
57	Petroleum processing, coking and nuclear fuel processing
58	The chemical industry
59	Non-metallic mineral products industry
60	Metal smelting and rolling processing
61	Metal products industry
62	General and special equipment manufacturing
63	Transportation equipment manufacturing
64	Electrical, machinery and equipment manufacturing
65	Communications equipment, computers and other electronic equipment manufacturing
66	Manufacture of measuring instruments and machinery for cultural activity and office work
67	Other manufacturing industries
68	Waste scrap
69	Electricity, heat production and supply
70	Gas production and supply
71	Water production and supply
72	Construction industry
73	Transportation and warehousing
74	Postal and telecommunication services
75	Information transmission, computer services and software industry
76	Wholesale and retail trade
77	Accommodation and catering
78	Finance and insurance
79	Real estate
80	Leasing and business services
81	Tourism
82	Scientific research business
83	Comprehensive technical services
84	Other social services
85	Education
86	Health, social security and social welfare sector
87	Culture, sports and entertainment
88	Public administration and social organizations
89	Cultivated land conversion
90	Economic forestry conversion
91	Grassland conversion
92	Other types of land use conversion
	Factors
93	Labor
94	Capital
95	Cultivated land

Continued

Code	Production activities
96	Economic forests
97	Grassland
98	Other types of land use
	Institutions
99	Residents
100	Businesses
101	Government
	Capital account
102	Investment/Savings
	Account of other regions
103	Rest of world
	Total
104	Total

Index

F

G

H

I

J

K

L

M

N

O

P

R

S

T

U

V

W

X

Y

Z

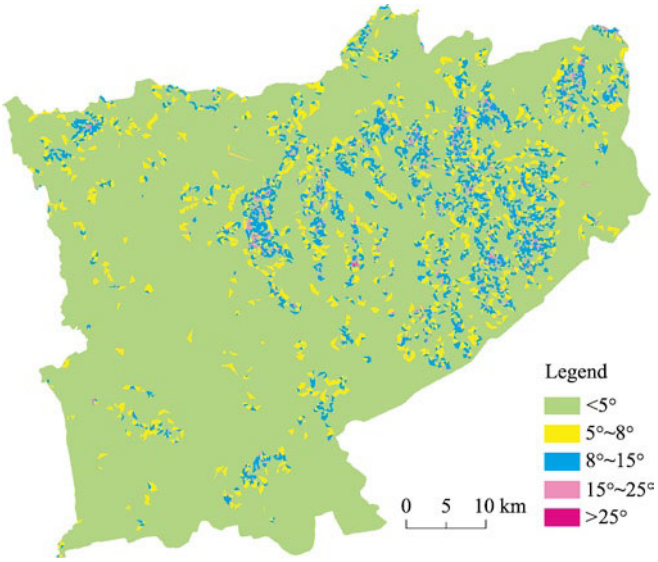

Fig. 7.8 Slope spatial heterogeneity map of the Taips League.

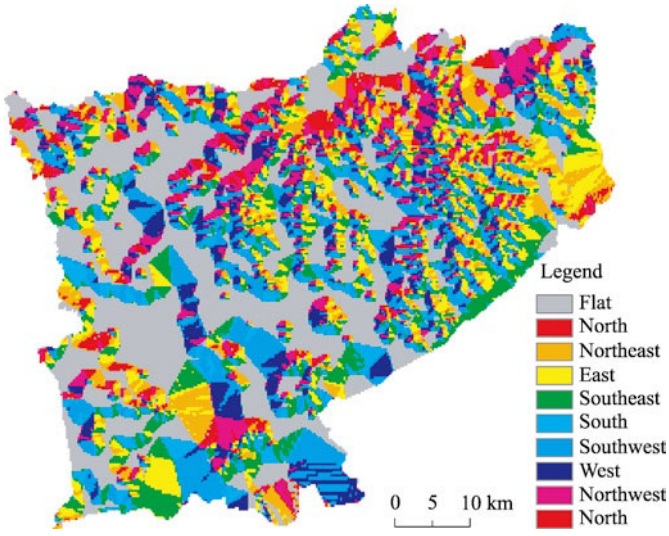

Fig. 7.9 Aspect spatial heterogeneity map of the Taips League.

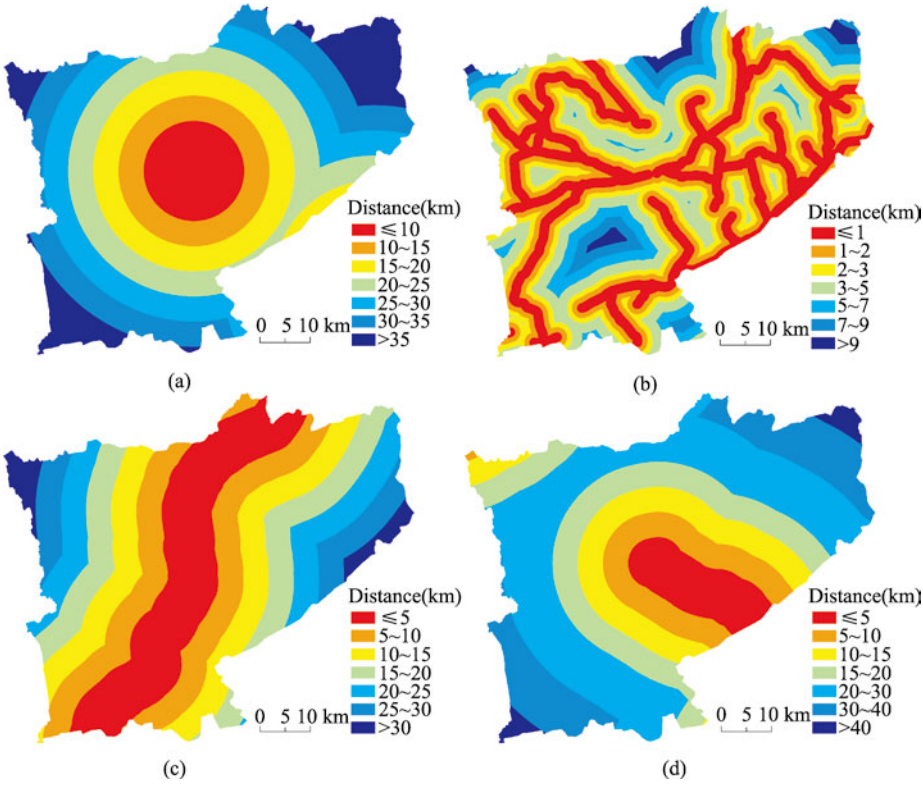

Fig. 7.10 Distance load on the 500×500 m grids of the Taips League.
(a), (b), (c), (d) are the distances to the centers of the county government office, nearest national highway, nearest provincial road and nearest county road, respectively.

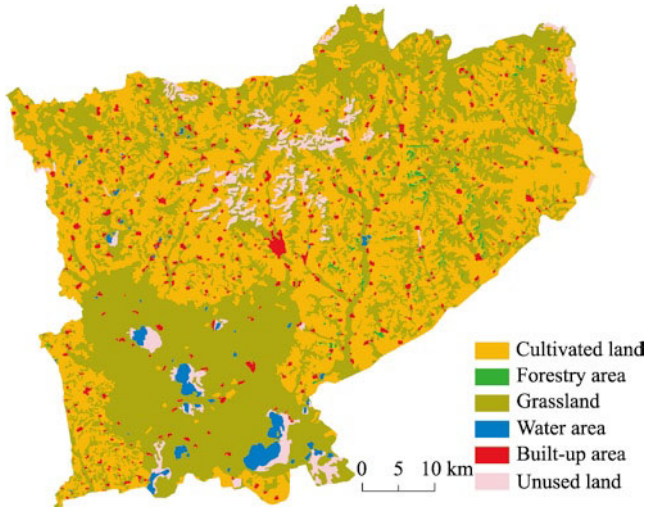

Fig. 7.11 Land use structure raster map of the Taips League in 1995.

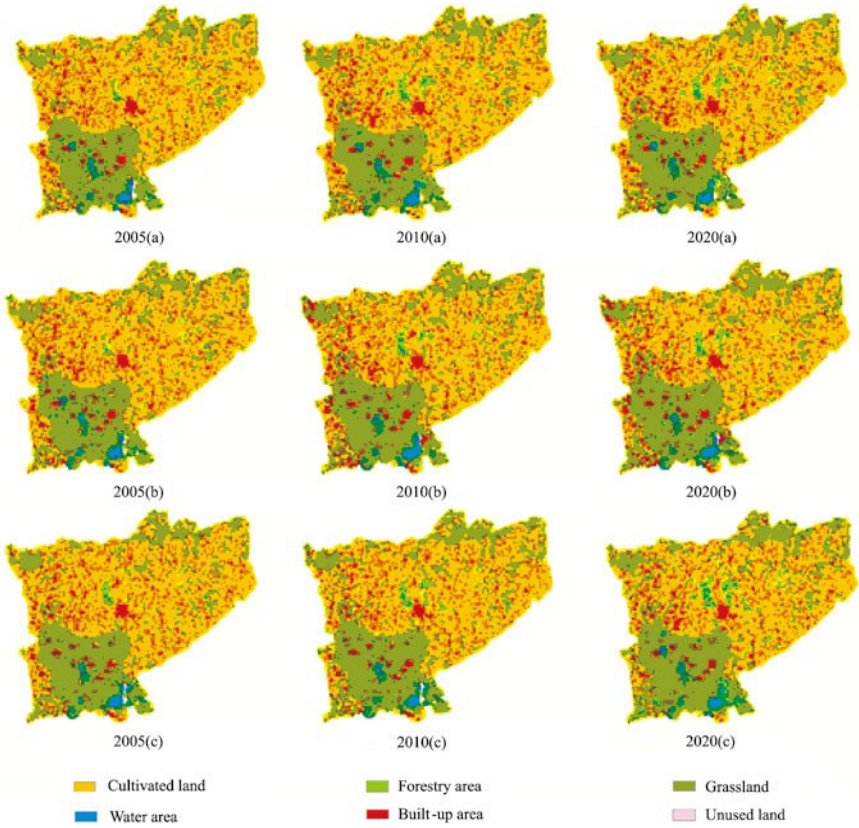

Fig. 7.16 Changing patterns of land system of the Taips League under the (a) baseline, (b) environment protection, and (c) economic priority scenarios.

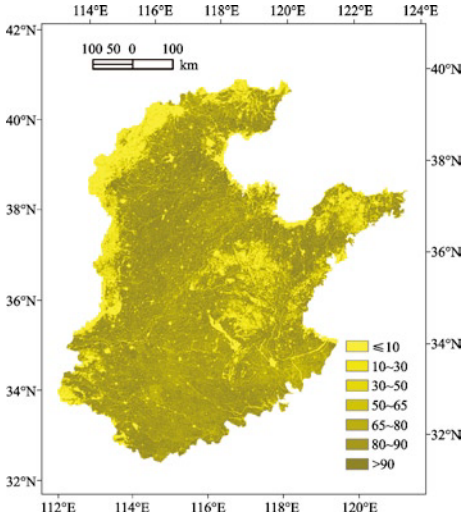

Fig. 8.2 Spatial pattern of cultivated land in 2000 identified by area percentage data.

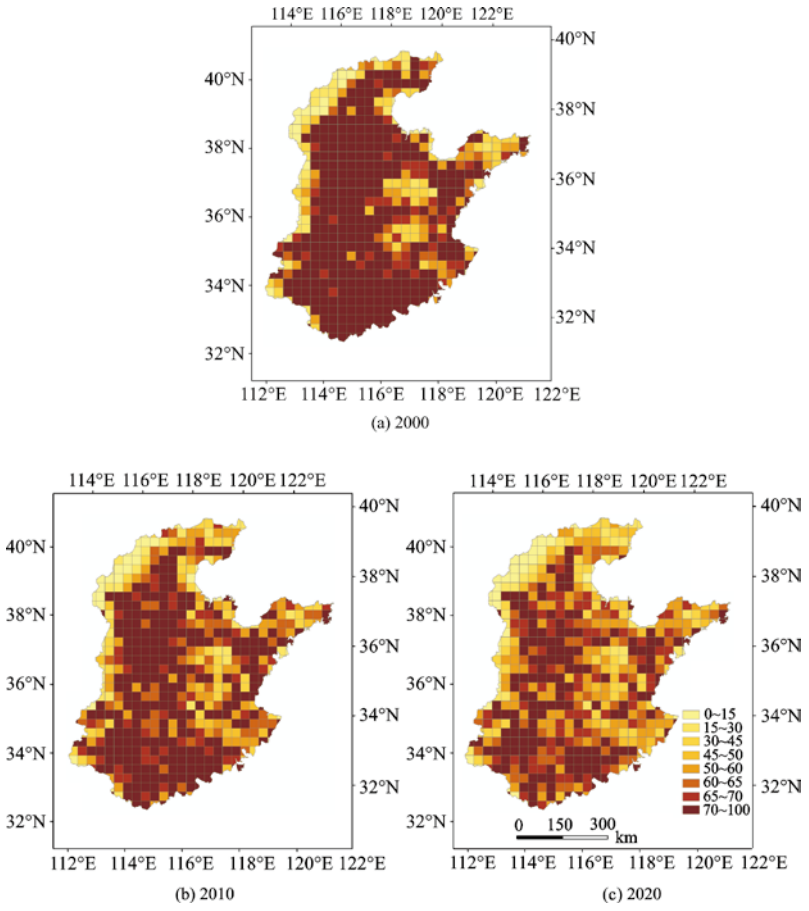

Fig. 8.12 Spatial patterns of cultivated land area which are identified by the area percentage grid data in 2000, 2010 and 2020 (5×5 km grid pixels).