CHAPTER VI

CROP REGIONS - BASED ON YIELD OF CROPS

Agricultural attributes in Iran are not the same everywhere due to vast areal differences in topography, climate, soil, irrigation and accessibility to modern inputs. Cumulative effect of all these factors give rise to Iranian agriculture a high rate of fluctuation in area, production and yield. On the basis of natural water supply and irrigation facilities governing the spread and yield level, it is possible to regionalize and identify yield regions and the spread of the crops in the country like high yield high spread; high yield medium spread; high yield low spread; medium yield high spread; medium yield medium spread; medium yield low spread; low yield high spread; low yield medium spread; low yield low spread. Production, spread and yield of each crop considered for the study is given below.

It will be seen from Table 6.1 that 59.16 per cent area of very low yield region contributes only 44.85 percent of the total produce of wheat and 31.19 per cent area of low yield level region contributes 35.53 per cent of the total produce. Thus the total low and very low yield level regions account for 90.35 per cent area and their contribution to the total output is 80.38 per cent. Except a
<table>
<thead>
<tr>
<th>Yield Level Category</th>
<th>Area (000 hectares)</th>
<th>Production (000 tonnes)</th>
<th>No. of states</th>
</tr>
</thead>
<tbody>
<tr>
<td>I &lt;1000</td>
<td>3665</td>
<td>2974</td>
<td>10</td>
</tr>
<tr>
<td>II 1000 - 1500</td>
<td>1932</td>
<td>2356</td>
<td>8</td>
</tr>
<tr>
<td>III 1500 - 2000</td>
<td>305</td>
<td>603</td>
<td>1</td>
</tr>
<tr>
<td>IV 2000 - 2500</td>
<td>141</td>
<td>291</td>
<td>3</td>
</tr>
<tr>
<td>V &gt;2500</td>
<td>152</td>
<td>407</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>6195</strong></td>
<td><strong>6631</strong></td>
<td><strong>23</strong></td>
</tr>
</tbody>
</table>


II. Central, West - Azerbayejan, Bakhtaran, Fars, Hormozgan, Lorestan, Kohgilueh and Boyer Ahmad, Chahar Mahal and Bakhtiyari.

III. Mazandaran.

IV. Kerman, Semnon, Yazd.

V. Esfahan

diagonal strip of six states from south of Caspian Sea to Oman Sea, whole of Iran experiences either low or very low yield of wheat. Medium category region accounts for 4.92 per cent area and 9.09 per cent production. High and very high category states cover a small area but their contribution of total production is very high. Only the state of Esfahan singularly covers 2.45 per cent area of wheat but
FIG. 6.1

WHEAT
PRODUCTIVITY REGIONS
(BASED ON YIELD Kg/ha.)
1984-85

INDEX

< 1000 VERY LOW
1000—1500 LOW
1500—2000 MEDIUM
2000—2500 HIGH
> 2500 VERY HIGH

100 0 200 Km
50 100
its total produce is very high i.e. 6.14 per cent. All these high yield giving states are located in the dry zone where irrigation facilities and modern inputs are available in good proportion (Fig. 6.1).

It is evident from Table 6.2 and Fig 6.2 that like wheat a large area of barley is also occupied by low and very low yield level states. 87.62 per cent area is covered by low and very low level categories Total produce obtained by these categories is simply 76.67 per cent. Total area

Table - 6.2
Productivity Regions of Barley (Based on Yield) 1984-85

<table>
<thead>
<tr>
<th>Yield level category</th>
<th>Area (000)</th>
<th>Production (000)</th>
<th>No. of States</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hectares</td>
<td>Tonnes</td>
<td></td>
</tr>
<tr>
<td>I &lt; 1000</td>
<td>1000</td>
<td>800</td>
<td>12</td>
</tr>
<tr>
<td>II 1000 - 1500</td>
<td>826</td>
<td>961</td>
<td>6</td>
</tr>
<tr>
<td>III 1500 - 2000</td>
<td>175</td>
<td>335</td>
<td>2</td>
</tr>
<tr>
<td>IV 2000 - 2500</td>
<td>25</td>
<td>51</td>
<td>1</td>
</tr>
<tr>
<td>V &gt; 2500</td>
<td>58</td>
<td>150</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>2084</td>
<td>2297</td>
<td>23</td>
</tr>
</tbody>
</table>


II. West-Azerbaijan, Bakhtaran, Fars, Khorasan, Lorestan, Chahar Mahal and Bakhtiyari.

III. Central, Semnon

IV. Kerman

V. Esfahan, Yazd
BARLEY
PRODUCTIVITY REGIONS
(BASED ON YIELD Kg/ha)
1984-85

INDEX

< 1000 VERY LOW
1000 - 1500 LOW
1500 - 2000 MEDIUM
2000 - 2500 HIGH
> 2500 VERY HIGH

FIG. 6.2
acquired by medium category yield level is 8.40 per cent and production 14.58 per cent. High to very high yielding area is 3.98 per cent and total production of these two categories is more than double of the area i.e. 8.75 per cent. It is observed that highest yield of this crop is experienced by those states where irrigation facilities are available with high amount of modern inputs.

<table>
<thead>
<tr>
<th>Yield level Category kg/hectare</th>
<th>Area (000)</th>
<th>Production (000)</th>
<th>No. of States</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hectares</td>
<td>Tonnes</td>
<td></td>
</tr>
<tr>
<td>I 1000 - 2000</td>
<td>9</td>
<td>23</td>
<td>5</td>
</tr>
<tr>
<td>II 2000 - 3000</td>
<td>27</td>
<td>59</td>
<td>6</td>
</tr>
<tr>
<td>III 3000 - 4000</td>
<td>216</td>
<td>664</td>
<td>3</td>
</tr>
<tr>
<td>IV &gt;4000</td>
<td>223</td>
<td>1024</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>475</td>
<td>1772</td>
<td>16</td>
</tr>
</tbody>
</table>

I. West-Azerbayejan, East-Azerbayejan, Khorasan, Sistan and Baluchistan, Kordestan.

II Khuzestan, Kerman, Lorestan, Ilam, Kohgilueh and Boyer Ahmad, Chahar Mahal and Bakhtiyari.

III Gilan, Fars, Zanjan.

IV Mazandaran, Esfahan.
Unlike wheat and barley major portion of acreage under rice is located in the very high yield level region (Table 6.3). Very high and high yield level regions together account for 92.43 per cent area and their contribution to total production of rice is 95.37 per cent. Out of which very high yield level region contributes 57.90 per cent alone. Among cereals rice exhibits the highest yield per hectare. Rice is largely grown in the states of Gilan and Mazandaran where intensity of rainfall is higher and also artificial supply of water through irrigation is available. The spatial variation in rice cultivation is mainly controlled by the variability and intensity of rainfall as well as the number of long and short dry spells. It has been observed that wherever irrigation facilities are increased area under rice cultivation also increased. In 1976-77 about 12.00 per cent area was occupied by yield category of 1000-2000 kg per hectare; 52.73 per cent area was occupied by yield category between 2000-3000 kg per hectare and 35.64 per cent area was governed by yield level between 3000-4000 kg per hectare. In 1984-85 only 1.81 per cent area remained in the yield category between 1000-2000 kg per hectare; 5.59 per cent in the yield category of 2000-3000 kg per hectare and very large area i.e. 45.59 per cent fell in the yield category of 3000-4000 kg per hectare and the largest area of 47.01 per cent passed into the yield
RICE PRODUCTIVITY REGIONS
BASED ON YIELD Kg/ha
1984-85

INDEX

1000 - 2000 LOW
2000 - 3000 MEDIUM
3000 - 4000 HIGH
> 4000 VERY HIGH

FIG. 6.3
level more than 4000 kg per hectare. With the increase of irrigation not only yield has increased but area has also increased from 308 thousand hectares in 1976-77 to 475 thousand hectares in 1984-85, i.e. an increase of 54.22 per cent. Only two states - Gilan and Mazandaran on the coast of Caspian Sea where rainfall is very high and irrigation facility is also available - account for 86.49 per cent area and 89.64 per cent production of rice. Demarcation of different yield level regions is shown in Fig.6.3.

Table - 6.4
Productivity Regions of Pulses (Based on Yield) 1984-85

<table>
<thead>
<tr>
<th>Yield level category</th>
<th>Area (000) hectares</th>
<th>%</th>
<th>Production (000) tonnes</th>
<th>%</th>
<th>No. of States</th>
</tr>
</thead>
<tbody>
<tr>
<td>I &lt;500</td>
<td>171.70</td>
<td>36.70</td>
<td>75.60</td>
<td>22.18</td>
<td>3</td>
</tr>
<tr>
<td>II 500 - 1000</td>
<td>144.00</td>
<td>30.78</td>
<td>103.97</td>
<td>30.50</td>
<td>8</td>
</tr>
<tr>
<td>III 1000 - 1500</td>
<td>147.60</td>
<td>31.56</td>
<td>154.57</td>
<td>45.34</td>
<td>10</td>
</tr>
<tr>
<td>IV 1500 - 2000</td>
<td>4.50</td>
<td>0.96</td>
<td>6.77</td>
<td>1.98</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>467.80</td>
<td>100</td>
<td>340.91</td>
<td>100</td>
<td>22</td>
</tr>
</tbody>
</table>

I. West-Azerbayejan, Bakhtaran (Kermanshah), Ilam.

II. Central (Markazi), Gilan, Mazandaran, Khorasan, Kordestan, Hamadan, Zanjan, Yazd.

III. East-Azerbayejan, Khuzestan, Fars, Kerman, Sistan and Baluchistan, Hormozgan, Lorestan, Semnon, Kohgilueh and Boyer Ahmad, Chahar Mahal and Bakhtiyari.

IV. Esfahan.
PULSES
PRODUCTIVITY REGIONS
(BASED ON YIELD Kg/ha.)
1984-85

INDEX

< 500 VERY LOW
500 - 1000 LOW
1000 - 1500 MEDIUM
> 1500 HIGH

FIG. 6.4
Pulses do not hold a good position in Iran. The spatial variation in the spread of pulses seems interesting. Low to very low yield levels possess about 67.00 per cent area but output of these two categories is only slightly above 52.00 per cent. Medium category devotes 31.56 per cent area and turn out of this category is a bit satisfactory i.e. 45.34 per cent. High yield category possesses only 0.96 per cent area but turn over is high i.e. 1.98 per cent (Table 6.4). States falling in the medium and high categories are mostly situated in the high irrigation belt (Fig. 6.4).

Table - 6.5
Productivity Regions of Oil-seeds
(Based on Yield)
1984-85

<table>
<thead>
<tr>
<th>Yield Level Category kg./hectare</th>
<th>Area (000) hectares</th>
<th>Production (000) tonnes</th>
<th>%</th>
<th>No. of States</th>
</tr>
</thead>
<tbody>
<tr>
<td>I &lt;500</td>
<td>4.61</td>
<td>1.20</td>
<td>4.90</td>
<td>4.90</td>
</tr>
<tr>
<td>II 500 - 1000</td>
<td>10.92</td>
<td>8.31</td>
<td>11.60</td>
<td>11.60</td>
</tr>
<tr>
<td>III 1000 - 1500</td>
<td>26.49</td>
<td>32.80</td>
<td>28.15</td>
<td>28.15</td>
</tr>
<tr>
<td>IV 1500 - 2000</td>
<td>49.11</td>
<td>80.80</td>
<td>52.18</td>
<td>52.18</td>
</tr>
<tr>
<td>V &gt; 2000</td>
<td>2.98</td>
<td>13.80</td>
<td>3.17</td>
<td>3.17</td>
</tr>
<tr>
<td>Total</td>
<td>94.11</td>
<td>136.91</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

I West-Azerbayejan, Semnon.
II Kerman, Khorasan, Kordestan, Hormozgan, Ilam.
III Central, East-Azerbayejan, Bakhtaran, Khuzestan, Fars, Lorestan, Zanjan, Yazd.
IV Mazandaran, Esfahan, Sistan and Baluchistan.
V Gilan, Chahar Mahal-va-Bakhtiyari.
It is obvious from Table 6.5 that category IV occupies highest area of 52.18 per cent and oil-seed production of this very category is 59.02 per cent which is also highest among all categories. Very high category governs simply 3.17 per cent area and in terms of area contributes a big amount of 10.07 per cent of the total production. Other categories altogether account for 44.65 per cent area and a mere 30.91 per cent of the produce. A Contiguous Low and very low yield level region comprises the states of west Azerbayejan and Kordestan and is situated vertically in the extreme north-west and another small area of low yield level is situated in the extreme west i.e. in the state of Ilam. A third region covering a large area as compared to other two regions comprises the states of Hormozgan, Kerman and Khorasan and is situated vertically from strait of Hormuz to extreme northern border of Iran. Two small blocks of high and very high yield categories are also separated by the medium and low category levels. Of these two blocks one is located in the south of Caspian Sea coast and another one in central Iran. A separate patch of high yield level region is also found on the south-eastern corner of Iran (Fig. 6.5).

A glance at the Table 6.6 makes it evident that very high disparity exists in the yield levels of potato. Category IV and V show excellent yields as high as, harvest of a little over 58.00 per cent area belonging to these
OIL-SEEDS PRODUCTIVITY REGIONS
(BASED ON YIELD Kg/ha.)
1984-85

INDEX

- < 500 VERY LOW
- 500 - 1000 LOW
- 1000 - 1500 MEDIUM
- 1500 - 2000 HIGH
- > 2000 VERY HIGH

FIG. 6.5
### Table - 6.6
Productivity Regions of Potato
(Based on Yield)
1984-85

<table>
<thead>
<tr>
<th>Yield Level Category Kg/hectare</th>
<th>Area (000) hectares</th>
<th>Area %</th>
<th>Production (000) tonnes</th>
<th>Production %</th>
<th>No. of States</th>
</tr>
</thead>
<tbody>
<tr>
<td>I &lt; 5000</td>
<td>5.00</td>
<td>0.49</td>
<td>2.21</td>
<td>0.13</td>
<td>1</td>
</tr>
<tr>
<td>II 5000 - 10000</td>
<td>89.86</td>
<td>8.86</td>
<td>79.73</td>
<td>4.62</td>
<td>7</td>
</tr>
<tr>
<td>III 10000 - 15000</td>
<td>323.00</td>
<td>31.86</td>
<td>392.28</td>
<td>22.73</td>
<td>8</td>
</tr>
<tr>
<td>IV 15000 - 20000</td>
<td>508.02</td>
<td>50.11</td>
<td>895.98</td>
<td>51.93</td>
<td>5</td>
</tr>
<tr>
<td>V &gt;20000</td>
<td>88.00</td>
<td>8.68</td>
<td>355.24</td>
<td>20.59</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>1013.88</td>
<td>100</td>
<td>1725.45</td>
<td>100</td>
<td>22</td>
</tr>
</tbody>
</table>

I Gilan
II West- Azerbayejan, Bakhtaran, Khuzestan, Kordestan, Lorestan, Ilam, Yazd.
III Mazandaran, Kerman, Khorasan, Sistan and Baluchistan, Hormozgan, Zanjan, Kohgilueh and Boyer Ahmad, Chahar Mahal and Bakhtiyari.
IV Central, East-Azerbayejan, Fars, Hamadan, Semnon.
V Esfahan

Categories exceeded over 72.00 per cent of the total produce. Other categories retain about 41.00 per cent area and total ingathering of the crop is merely 27.48 per cent. As potato crop needs frequent and periodic watering high yield level region is situated in the central part virtually from north to south where per cent irrigated area is high.
POTATO
PRODUCTIVITY REGIONS
(BASED ON YIELD Kg/ha.)
1984-85

INDEX

< 5000 VERY LOW
5000 - 10000 LOW
15000 - 15000 MEDIUM
15000 - 20000 HIGH
> 20000 VERY HIGH

FIG. 6.6
This region separates the medium level zone in the east from the low and very low level zone in the west and north-west where few patches of medium level yield are also witnessed. (Fig. 6.6).

Table - 6.7

Productivity Regions of Sugar-beet
(Based on Yield)
1984-85

<table>
<thead>
<tr>
<th>Yield Level Category</th>
<th>Area (000) hectares</th>
<th>Production (000) tonnes</th>
<th>Production %</th>
<th>No. of States</th>
</tr>
</thead>
<tbody>
<tr>
<td>I &lt; 20000</td>
<td>3.75</td>
<td>61.90</td>
<td>1.58</td>
<td>2</td>
</tr>
<tr>
<td>II 20000 - 25000</td>
<td>42.23</td>
<td>978.03</td>
<td>24.93</td>
<td>5</td>
</tr>
<tr>
<td>III 25000 - 30000</td>
<td>94.71</td>
<td>2708.44</td>
<td>69.03</td>
<td>6</td>
</tr>
<tr>
<td>IV &gt;30000</td>
<td>4.05</td>
<td>175.36</td>
<td>4.46</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>144.74</td>
<td>3923.73</td>
<td>100</td>
<td>14</td>
</tr>
</tbody>
</table>

I East-Azerbayejan, Chahar Mahal and Bakhtiyari
II Central, Fars, Hamadan, Zanjan, Semnon.
III West-Azerbayejan, Bakhtaran, Kerman, Khorasan, Esfahan, Lorestan.
IV Khuzestan

Perusal of Table 6.7 shows that yield level between 25000 and 30000 kg per hectare acquires 65.43 per cent area which harvests 69.03 per cent sugar-beet of its total output.
SUGAR-BEET
PRODUCTIVITY REGIONS
(BASED ON YIELD Kg/ha.)
1984-85

FIG. 6.7
This region (Medium-Yield Level) is mostly situated on the western and eastern part of Iran including the state of Esfahan, located in the centre of Iran. A big region of low and very low yield level comprises the states of Semnan, Central, Hamadan, Zanjan and East-Azerbayejan and another small region comprises only two states viz. Fars and Chahar Mahal-va-Bakhtiyari. Both these regions are separated by medium yield level regions. Very high yield level region with above 30000 kg per hectare is situated in the southwest at the tip of the Persian Gulf. (Fig. 6.7).

Table - 6.8
Productivity Regions of Onion
(Based on Yield)
1984-85

<table>
<thead>
<tr>
<th>Yield Level Category kg/hectare</th>
<th>Area (000) hectares</th>
<th>Area %</th>
<th>Production (000) tonnes</th>
<th>Production %</th>
<th>No. of States</th>
</tr>
</thead>
<tbody>
<tr>
<td>I &lt; 10000</td>
<td>63.00</td>
<td>16.03</td>
<td>48.00</td>
<td>6.68</td>
<td>7</td>
</tr>
<tr>
<td>II 10000 - 15000</td>
<td>84.00</td>
<td>21.37</td>
<td>97.00</td>
<td>13.49</td>
<td>6</td>
</tr>
<tr>
<td>III 15000 - 20000</td>
<td>98.00</td>
<td>24.94</td>
<td>174.00</td>
<td>24.20</td>
<td>4</td>
</tr>
<tr>
<td>IV 20000 - 25000</td>
<td>90.00</td>
<td>22.90</td>
<td>209.00</td>
<td>29.07</td>
<td>3</td>
</tr>
<tr>
<td>V &gt; 25000</td>
<td>58.00</td>
<td>14.76</td>
<td>191.00</td>
<td>26.56</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>393.00</td>
<td>100</td>
<td>791.00</td>
<td>100</td>
<td>23</td>
</tr>
</tbody>
</table>

I Gilan, Mazandaran, Sistan and Baluchistan, Kordestan, Lorestan, Ilam, Kohgilueh and Boyer Ahmad.
II Bakhtaran, Kerman, Khorasan, Hormozgan, Hamadan, Yazd.
III Central, West-Azerbayejan, Khuzestan, Zanjan.
IV. East-Azerbayejan, Semnan, Bushehr.
V. Fars, Esfahan, Chahar Mahal and Bakhtiyari.
Examination of Table 6.8 reveals that low to very low and high to very high yield level regions possess nearly about the same acreage under onion i.e. 37.50 per cent each. But there is big difference in the output. Total output of the I and II category is only 20.17 per cent and that of IV and V is as high as 55.63 per cent. Medium yield level category possesses nearly one fourth area and almost one fourth produce also of the total output. Very high yield level region is mainly witnessed in central and south-western part of Iran, along the coast of Persian Gulf and low yield level regions are found along the coast of Caspian Sea and in the western, eastern and south-eastern part of Iran (Fig. 6.8).

Cotton is cultivated only in eleven states of Iran. Table 6.9 indicates that high yield state is East Azerbayejan but it possesses very little area of the total cultivated area. In the regional pattern four medium level regions having yield level between 1500 and 2000 kg per hectare are found. One lies along the south and south-eastern coast of Caspian Sea extending towards south-west. Another small patch is found on the western border. The third lies along the coastal state of Bushehr at the Persian Gulf. Fourth region is situated on the extreme north-eastern corner along the borders of Turkmenistan and Afghanistan (Fig. 6.9). Spatial spread of medium yield level regions is 90.86 per
ONION
PRODUCTIVITY REGIONS
(BASED ON YIELD Kg/ha.)
1984-85

FIG. 6.8
Table - 6.9
Productivity Regions of Cotton
(Based on Yield)
1984-85

<table>
<thead>
<tr>
<th>Yield Level Category kg./hectare</th>
<th>Area (000) hectares</th>
<th>Production (000) tonnes</th>
<th>No. of States</th>
</tr>
</thead>
<tbody>
<tr>
<td>I I&lt;1500</td>
<td>11.00</td>
<td>12.00</td>
<td>5</td>
</tr>
<tr>
<td>II 1500 - 2000</td>
<td>169.00</td>
<td>296.00</td>
<td>5</td>
</tr>
<tr>
<td>III &gt; 2000</td>
<td>6.00</td>
<td>15.00</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>186</td>
<td>323.00</td>
<td>11</td>
</tr>
</tbody>
</table>

I. Kerman, Esfahan, Zanjan, Semnon, Yazd.
II. Central, Mazandaran, Bakhtaran, Fars, Khorasan.
III. East-Azerbayejan.

cent which contributes 91.64 per cent of the total harvest. A very high yield level region is situated on the north-western corner. Low yield level regions spread over five states viz Kerman, Yazd, Esfahan, Semnon and Zanjan (Fig. 6.9). Low yield level regions i.e. below 1500 kg per hectare, which was once high yield giving regions have only 5.91 per cent area under cultivation and contribute only 3.72 per cent of the total output.

I is observed that yield of cereals are generally very high or high in the central region tapering towards
COTTON
PRODUCTIVITY REGIONS
(BASED ON YIELD Kg/ha.)
1984-85

INDEX

< 1500 LOW
1500 — 2000 MEDIUM
> 2000 HIGH

FIG. 6.9
south-east around which medium and low yield regions are located. Regions located in the east and south-west are generally poor for the yield of cereals. Oil seeds, pulses and cash crops show greater diversities and do not form a cohesive pattern. However, for most crops, central portion especially Esfahan show high level of yield.