Size, shape and fragmentation of farms and land tenure systems are a few of the significant elements, which besides characterising agriculture, influence the agricultural land-use in many ways. These attributes, to a large extent, guide the development and efficiency of irrigation, degree of mechanization and commercialization, methods of cultivation, intensity and patterns of cropping and economic health of the farmers. Moreover, fragmented, small and irregular shaped farms result in wastage of land, time and energy. This apart, such farms have become the root cause of many social tensions and litigation among the farmers. By contrast, consolidated and rectangular landholdings promote efficient farming. Despite the significant role which these elements play in agriculture, geographers so far paid only scanty attention to their studies. Even

1 Sometimes it is difficult to distinguish agricultural elements from agricultural controls.


Whittlesey failed to appreciate the significance of these elements in characterising agriculture, while deciding upon the criteria for dividing the earth into agricultural regions. However, in view of the importance of these elements in general and for Punjab's agriculture in particular, it is necessary to examine them in detail.

With 13.7 acres of an average size (total cultivated area of the state divided by total number of cultivating households) of a farm, as against the national average of 7.2, Punjab ranks second only to Rajasthan (17.3 acres) in the country in this regard (Table 5). The state's notable position in this respect is largely attributable to a very high proportion (81 per cent) of its cultivated area. However, an average farm is not a sure index of the operational size of


5 Data relating to farm sizes (operational landholdings) and land tenure systems are collected and published in the District Census Handbooks by the Census Organisation of Punjab. Collected on 20% sample basis, such data are available only on tahsil basis. As these data were not compiled for 1951 Census, a static picture for the year 1961 could be attempted here.
Table 5

INDIA

Average Size of Landholdings in Different States

1961

<table>
<thead>
<tr>
<th>States</th>
<th>Average Size (in acres)</th>
<th>Union Territories</th>
<th>Average Size (in acres)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rajasthan</td>
<td>17.3</td>
<td>1 Andaman and Nicobar Islands</td>
<td>9.8</td>
</tr>
<tr>
<td>Punjab</td>
<td>13.7</td>
<td>2 Delhi</td>
<td>9.7</td>
</tr>
<tr>
<td>Gujarat</td>
<td>13.5</td>
<td>3 Tripura</td>
<td>7.1</td>
</tr>
<tr>
<td>Maharashtra</td>
<td>12.1</td>
<td>4 Manipur</td>
<td>6.9</td>
</tr>
<tr>
<td>Karnataka</td>
<td>11.4</td>
<td>5 Pondicherry</td>
<td>6.2</td>
</tr>
<tr>
<td>Madhya Pradesh</td>
<td>10.4</td>
<td>6 Lakshadweep</td>
<td>1.2</td>
</tr>
<tr>
<td>Nagaland</td>
<td>10.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Andhra Pradesh</td>
<td>8.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Orissa</td>
<td>7.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Haryana</td>
<td>6.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>West Bengal</td>
<td>6.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tamil Nadu</td>
<td>6.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uttar Pradesh</td>
<td>4.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bihar</td>
<td>4.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assam</td>
<td>4.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jammu &amp; Kashmir</td>
<td>4.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kerala</td>
<td>3.1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Landholdings in the state which vary from less than an acre to more than 100 acres. In some exceptional cases, the upper limit may go even up to 500 acres. A large proportion of the operational landholdings in Punjab are in the smaller size group. Nearly 66 per cent of them are less than 15 acres in size; another 25 per cent range between 15 and 30 acres; and the remaining 9 per cent are over 30 acres (Table 6). Long history of settlement, which dates back to 2500 B.C., and law of equal inheritance of parental property among all the sons resulting in the sub-division of landholdings generation after generation, low degree of industrialization and urbanization forcing most of the people to look towards the land for a livelihood and higher density of rural population largely explain the small size of landholdings in the state.

6 Various ways can be used for measuring farm size. It may be measured by the area under operation; farm business i.e. by the value and volume of output; labour input in terms of man hours per year and the type of tenure. None of these is free from criticism. However, 'area' because of the availability of statistics is most commonly used (Grigg, David, op.cit., p. 207). Area as a basis is also more meaningful in the context of land-use. Census of India too has adopted the same basis and defined a farm as 'an operational landholding is all land which is used wholly or partially for agricultural production and is operated directly or managed by one person alone or with the assistance of others (Census of India, Household & Economic Tables 1961). Grigg too has given exactly similar definition in which he has emphasized the role of management and operation rather than ownership, size or location. A unit of operation without any doubt is much more meaningful than ownership in matters of management.

7 Randhawa, M.S., op. cit. p. 38
Table 6

Number of Farms in Each Size Group in Punjab: 1961

<table>
<thead>
<tr>
<th>Size (In acres)</th>
<th>Number of Operational Landholdings (Farms)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 5</td>
<td>134,105</td>
<td>18.1</td>
</tr>
<tr>
<td>5 - 10</td>
<td>196,830</td>
<td>26.6</td>
</tr>
<tr>
<td>10 - 15</td>
<td>153,740</td>
<td>20.8</td>
</tr>
<tr>
<td>15 - 30</td>
<td>184,040</td>
<td>24.8</td>
</tr>
<tr>
<td>30 - 50</td>
<td>51,135</td>
<td>6.9</td>
</tr>
<tr>
<td>Above 50</td>
<td>16,575</td>
<td>2.2</td>
</tr>
<tr>
<td>Unspecified</td>
<td>4,205</td>
<td>0.6</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td><strong>740,630</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

SOURCE: Computed from District Census Handbooks Punjab.

Landholdings in Punjab are not only small but are also fragmented. Prior to the consolidation, which has been completed twice in the whole of the state, fields of a farm used to be located at as many as 15 different places, each widely separated from the others. However, consolidation of landholdings brought them up to a maximum of four locations. In general, the degree of fragmentation, before and even after consolidation, remained relatively high in areas where farms are small. The process of
Punjab
Average Size of Landholdings
1961
DATA BY TAHSILS

Source of Data: District Census Handbooks of Punjab, 1961
Punjab
Landholdings in Different Size Groups
as Percentage of All Landholdings
1961
DATA BY TAHSELS

Below 5 acres

5—10 acres

10—15 acres

15—30 acres

Source of Data: District Census Handbooks
of Punjab, 1961
Punjab
Landholdings above 30 acres as per cent of all Landholdings 1961

DATA BY TAHSILS

PERCENTAGE

Source of data: District Census Handbooks of Punjab, 1961
sub-division, however, is unending. Rather it has been accelerated during recent years (1951-66) due to the fast growth of population, increasing break-up of the joint family system, universal marriage becoming a rule even among the Jats who constitute most of the state's farming population and daughters entering in as equal inheritors of parental property to that of sons. Thus, the gains of consolidation are likely to be forfeited before long, if the menace of sub-division continues.

Consolidation, besides diminishing the fragmentation of farms, had also regularized field boundaries. All fields were aligned to a grid marked by the Survey of India, thereby reducing them to a rectangular order. Their rectangular shape was only disrupted by the village settlements, roads, canals, drainage lines etc. Although farms have been reduced, more or less, to a uniform shape in the whole of the state, yet their size varies strikingly from area to area (Maps 126 to 128).

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9 In the past, it was customary to marry only the eldest son among Jats, who also used to be the sole inheritor of the ancestral property.

10 Earlier, sons were given the right to inherit ancestral property, but in 1966, a legislation was passed (The Hindu Succession Act, 1956) through which daughters too were entitled to an equal share of the parental property.
An elongated belt in northeastern Punjab, coinciding largely with the Siwalik hills and the cho-infested foothill plain, contains the highest proportion of the state's small sized farms. The average size of farm in this tract ranges between 5.2 and 10.9 acres. As far as the operational landholdings are concerned, 75 to 90 per cent of them are below 15 acres in size. The percentage of farms below 5 acres is also the highest (20 to 36 per cent) over here. Major reasons of small farms in this zone are related to early settlement and low proportion of land available for cultivation. Leaving aside the Siwalik hills and a narrow strip 4 to 6 miles wide in the immediate foothills, this belt once constituted the most fertile tract of the state. It is also relatively elevated, well drained and rainier. During the early phases of settlement, when people started moving out of the river valleys to colonize new areas for agriculture, naturally, this tract with its favourable environment for agriculture must have been the first attraction. Thus, this region had witnessed subdivision of landholdings for generations unparalleled by any other part (except the Upper Bari Doab) of the

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11 Seasonal streams and dissection in this region, is a phenomenon not more than 100 years old. See: Gosal, G.S., "The Problem of Desiccation of Jamuna-Sutlej Divide", The Geographer, Vol. 5, No. 1, 1952, p. 36.
state. This belt is traversed by closely spaced seasonal streams. As a consequence, the land available for cultivation and hence land per cultivating household has stayed low. In addition, higher concentration of Saini and Rajput population in this tract among whom the rule of universal marriage and equal inheritance of ancestral property prevailed through all times also somewhat speeded up the process of sub-division. Low degree of urbanization too is a contributory factor towards this end. Thus, long history of settlement, low proportion of cultivated area, concentration of Saini and Rajput communities and low degree of urbanization jointly speak for the highest proportion of small farms in this belt.

The Upper Bari Doab is also marked by small size of farms. However, they are relatively larger than those in the region already discussed. Average size of farms in this interfluvial tract varies from 10.1 to 12.3 acres. About 68 to 76 per cent of the operational landholdings here are below 15 acres; 5 to 8 per cent are above 30 acres; and 14 to 18 per cent of them are below 5 acres. Among other factors, early settlement has been instrumental in the progressive reduction of farms to small size in this region. This tract unlike the one already discussed, is also more urbanized.
By comparison, southern Punjab embracing Patiala, Sangrur, Bhatinda and Ferozepur districts is marked by relatively large size of landholdings. Average farm in this part of the state varies from 13 to 23 acres. About 50 per cent of the operational farms here are over 15 acres and 10 to 25 per cent are over 30 acres in size. The proportion of landholdings over 50 acres is the highest (from 2 to 8 per cent) in this region. Semi-arid conditions over a large part of the tract creating uncertainty in the success of agriculture, high (about 80 per cent) proportion of land available for cultivation and feudal system of land occupancy in most of its parts during recent history mainly account for the larger size of landholdings in this area. Taking into consideration local variations in the size of landholdings, this region may be divided into two parts; the east and the west. Less arid and better suited for the development of ground water resources, the eastern part offered fair scope for earlier settlement and fast filling in than its semi-dry dune infested western counterpart which also suffered from the disadvantage of brackish sub-soil water. Thus, the process of sub-division has been longer and faster in the east than the west, resulting in differential farm sizes.
Central Punjab covering western Bist Doab and northern Malwa form a transitional zone between the north and the south in the matter of size of landholdings.

In conclusion, the hilly and dissected northeastern strip, and the fertile, flat, abundantly irrigated and densely populated Upper Bari Doab and eastern Bist Doab are the areas of the state where farms are small in size. On the other hand, semi-arid conditions in western Malwa, and feudal system of land-tenure in the former princely states of Patiala, Nabha, Jind, Faridkot, etc., together are responsible for the relatively large size of landholdings in southern Punjab. The central part of Punjab constitutes the transitional zone.

Land tenure, as previously stated, does play a significant role in determining agricultural land-use and production. It is defined as an agreement whether written or oral under which land is held or occupied. The land may be held by a person, who owns it or who simply cultivates it without having ownership right. Owner cultivation is a superior form of tenure, as owner's interests in land are long ranging. He tries to maximise production while taking every care to maintain soil fertility by resorting to practices such as soil conservation, adequate inputs, proper rotation of crops and the like. Such a tenure results in efficient farming.
By contrast, a tenant-cultivator's interests are guided by the duration of the tenure which generally is short. He aims to achieve maximum output from the fields without giving due care to maintain soil productivity. Under such a type of tenure, emphasis on more paying and less demanding crops is great and depletion of soils is fast.

In Punjab, three different types of tenurial systems are recognised regarding which data are maintained:

1. Land owned or held from the government.
2. Land partly held from the government and partly from private persons on payment in money, kind or share.
3. Land held from private persons or institutions on payment in money, kind or share.

Out of a total of 768,825 rural cultivating households in Punjab in 1961, 364,960 (47.5 per cent) were owner cultivators; 305,050 (39.7 per cent) who held land partly from the government and partly from the private persons; and the remaining 98,815 (12.9 per cent) were those who hired land only from private persons or institutions (Diagram 1). The type of tenure in which a part of land was held from the government, is more or less a form of owner cultivation. In such cases, land was given to the tenants on long lease basis which in most
cases was passed on to them permanently afterwards. Such cultivators also hired some land from private persons to supplement their income. However, the exclusive form of tenant cultivation, in Punjab, is that in which cultivators have no land of their own. During the middle fifties, Punjab Government initiated a few land reforms aiming at abolition of Zamindari system, reduction of disparity in the distribution of land and giving permanent occupancy rights to the tenants. However, these reforms faced many difficulties in their implementation because of the loopholes in the law and strong lobby of the big landlords. The government also adopted slow implementation policy in order to avoid social disorders. But in recent years the situation has somewhat improved. Although a lot of bungling in the form of transferring land on papers by the big landowners to their kith and kin took place, a small part of the surplus land did come to the tenants. The total result of these developments is that more than most states in India, Punjab has emerged as the state of owner cultivators. Such a situation, among other factors, has contributed significantly to the progress and prosperity of the state in the field of agriculture.

Randhawa, M.S., cit. pp. 46-47.
PUNJAB

Owner Cultivator Households as per cent of total Cultivating Households: 1961
DATA BY TAHSILS

Per cent

PUNJAB

Land Tenure 1961

PERCENT

1 2 3

1. Owner Cultivators
2. Partly Owner and partly Tenant Cultivators
3. Tenant Cultivators

PUNJAB

Households partly Owner and partly Tenants as per cent of total Cultivating Households: 1961
DATA BY TAHSILS

Source of Data: District Census handbooks of Punjab, 1961

PUNJAB

Tenant Households as per cent of total Cultivating Households: 1961
DATA BY TAHSILS

Source of Data: District Census handbooks of Punjab, 1961
Land tenure in Punjab fails to display any clear regional pattern (Maps 129 to 131). Thus, only a generalized and brief account of the regional variations, in this regard could be attempted here. Punjab north of the Sutlej river, shows higher proportion of owner cultivation. In this region farms are generally small. As a result, farmers find their lands hardly sufficient for themselves with little surplus for renting out. Tenant cultivation is relatively high in the flood plains. Large tracts of flood affected marginal lands in these belts are agriculturally less rewarding. As a result owners of these lands prefer to rent them out. Similarly, in Patiala district, which forms a part of the former princely state, tenant cultivation is high. Most of the Malwa region, where landholdings are large and also where government waste lands are not inconsiderable shows relative concentration of those tenants who partly held land from the government and partly from private persons or institutions. On the other hand, characterised by small farms, northern Punjab is marked by more of owner cultivation.

In sum, landholdings in Punjab are relatively large in the Indian context but are very small from the new world standards. Consolidation of landholdings, particularly during the post-Independence era, has
converted the badly fragmented farms into compact blocks of land, facilitating the development of well / tubewell irrigation in a major way. Also, the implementation of the land-reforms, however faulty and incomplete, has made its own contribution in bringing the land to the cultivators, thus paving the way for faster and healthier agricultural growth in Punjab. However, the continuing process of sub-division is likely to reduce the size of landholdings considerably before long. Further decline in the size of landholdings is bound to reduce the efficiency of agriculture and slacken the tempo of agricultural progress in the state. Thus, there is an urgent need to formulate a policy to check further sub-division.