



# punjab geographer



A DOUBLE BLIND PEER REVIEWED JOURNAL OF APG AND ISPER INDIA INDEXED IN SCOPUS

VOLUME 16

ISSN- 0973-3485

OCTOBER 2020



## SPATIAL DISTRIBUTION PATTERN AND SOCIO-ECONOMIC ATTRIBUTES OF BROILER FARMERS IN HARYANA

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### Abstract

*The falling income of farmers has turned into a perpetual agricultural crisis in India. The diversification of rural economy by promoting agri-business like broiler farming may play a key role in tiding over this crisis. The present study evaluates the course of development of broiler farming in Haryana during first two decades of 21st century. The study is primarily based on primary data obtained through field survey of 175 broiler farmers from Bhiwani, Kurukshetra, Karnal, Jind and Mahendergarh districts. The socio-economic attributes of broiler farms in the state have been analyzed with respect to social status (caste groups), economic status and educational status of the broiler farmers. The state has recorded 71 per cent growth rate in the number of broiler farms during the period of 10 years i.e. 2007 to 2017. Analysis reveals that broiler farming is dominated by landowning castes having medium to large landholdings. Most of the broiler farmers are large scale chicken producers, belonging to landowning castes and their farms are also economically more efficient. Educational level of broiler farmers has also a significant bearing on their level of profit.*

**Keywords:** Broilers, Chickens, Marketing, Input, Output, Agri-business.

### Introduction

Broiler chicken farming has emerged as one of the most profitable livestock businesses in India. This agri-business is being carried out in small scale poultry farms as well as in large broiler farms for large scale commercial production and marketing of broiler meat. Broiler breed is a small chicken with flexible bones that matures in a period of 5-6 weeks. Broiler farming does not need very big investment, grows very fast and gives returns within six weeks (Indria, 2018).

Broiler meat contains high quality protein and micro-nutrients which provides nutrition to the people (Neumann et al., 2002). Broiler farming has emerged as a fast-growing poultry segment in India with increased acceptance of broiler chicken meat in cities, towns and villages. The demand and consumption of broiler chicken have increased at a fast rate. During the last few years poultry farming has developed from a backyard venture into a fastest growing commercial sector (Reddy, 2015). In South

Asia, it is India that has taken lead in development of commercial poultry farming (Prabhakaran, 2003). Among different types of livestock farming, returns from capital investment has been found highest in broiler farming (Singh et al., 2010).

Fast growth and expansion of poultry farming have brought out significant positive changes in rural developing economy (Mack et al., 2005). In India, the major changes in poultry economy have taken place during post liberalization period with opening of world market and incentives given by government to the farmers to take up this agri-business (Mohanraj and Manivannan, 2012; Sridharan and Saravanan, 2013; Vetrivel and Chandrakumarmangalam, 2013). The poultry sector in India has been driven by increasing income and establishment of vertically integrated poultry agri-business (Landes et al., 2004). Usually, the commercial broiler farming is carried out in two formats: contract and non-contract farming. Under contract farming, contractor provides extension services, inputs, bears the transportation cost and risks of investment and marketing. While, contract farmer is responsible for labour, shed, electricity, water, litter material and other miscellaneous services. In non-contract farming, the broiler farmer has to bear all the expenses for procurement of chickens, feed, medicines and vaccines, overhead farm expenses and transportation. The farmers have to bear all the risks of investment, production and marketing (Satapathy et al., 2017).

Broiler farming has largely been analyzed and portrayed from the point of view of commerce and economic perspective (Kiran and Rao, 2013). This agri-business has been mostly studied from cost benefit perspective (Chhikara, 1989). In the present study, therefore, an attempt has been made to

understand the broiler farming in Haryana from geographical perspective by focusing on its emergence, spatial organization and socio-economic characteristics of broiler farmers.

### Objectives of the Study

Major objectives of the study are:

- to trace out the evolution of broiler farming and its spatial distribution pattern in Haryana and
- to analyze the socio-economic attributes of broiler farmers with respect to their social, economic and educational status.

### Study Area

The state of Haryana located in the north-western part of India, extends between latitudes of 27° 39' 0" to 30° 55' 5" north and longitudes of 74° 27' 8" to 77° 36' 5" east (Fig. 1). The total area of the state is 44212 km<sup>2</sup> accounting for about 1.3 per cent of the country. Haryana is predominately an agriculturalist state, where more than 70 per cent people are directly or indirectly dependent on agriculture. Initiation of Green Revolution in the state in mid 1960s has provided a boost to its agricultural economy. However, afterwards by late 1980s, the growth of agricultural economy stagnated. In response to it, diversification of agriculture has taken place particularly, during the last two decades. Commercial broiler farming has made major contribution in diversification of rural economy. Over the last two decades, Haryana has emerged as one of the economically developed states of India. Service sector boom along with sizeable industrialization has propelled a vertical increase in per capita income of the people. Overall, the state has shown a robust growth in all sectors of the economy during last three decades (IDC, 2014).

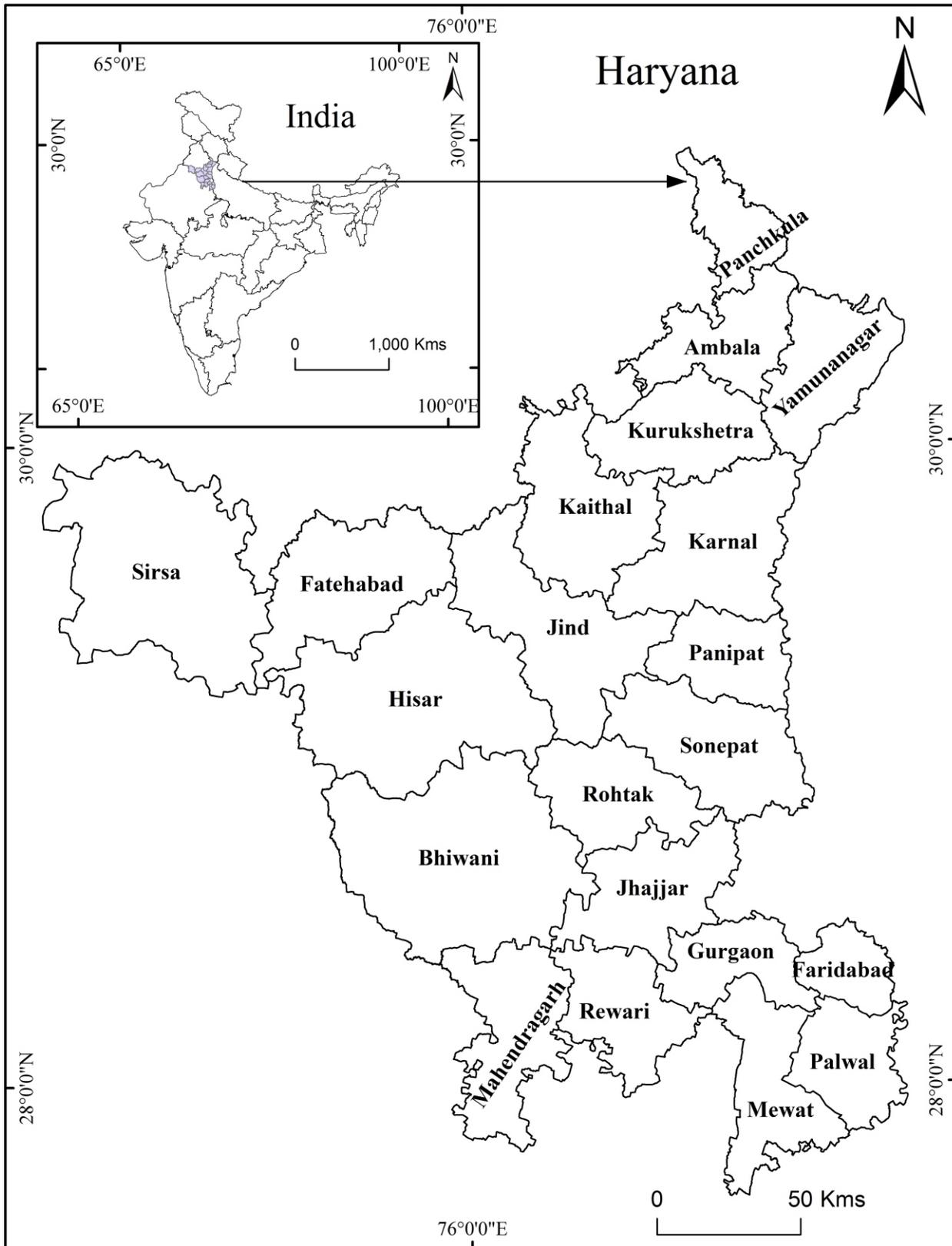


Fig. 1

### **Database and Methodology**

The present paper has utilized both primary and secondary data. The primary data have been generated through a field survey of 175 broiler farmers from Bhiwani, Kurukshetra, Karnal, Jind and Mahendergarh districts having higher concentration of broiler farms in 2013 by selecting 35 farms randomly from each district. Secondary data pertaining to number of broiler farms at the district level have been collected from the office of the Department of Animal Husbandry and Dairying, Panchkula (Haryana). Data have also been collected from private organizations, like Skylark Hatchery Pvt. Ltd Jind; Kissan Hatchery Farms, Gangoli and North Zone Broiler Association Safidon, Jind.

The broiler farmers have been classified into three caste groups, such as upper castes (Brahmin, Vaishya and Rajputs castes), landowning castes (Jat, Jat Sikh, Ror and Ahir castes) and other castes (Lohar, Khati, Balmiki and Muslim castes). On the basis of size of landholding, broiler farmers have been classified as small (up to 2 ha), medium (2-4 ha), large (4-6 ha) and very large (above 6 ha) to understand their economic status. The broiler farmers have also been grouped on account of educational levels, as illiterate and below primary; primary and middle; matriculation; senior secondary and graduates and above.

ArcGIS 9.3 has been used for preparing proximate location map of broiler farms in Haryana for the years 2007 and 2017. The input cost per chicken has been obtained by summation of annual feed cost, labour cost, cost of broiler, electricity cost, transportation cost, farm rent, medicine cost, etc. divided by number of chickens produced. The annual output of chicken has been calculated by

multiplying the annual production of chicken by price obtained. Output per chicken has been computed by dividing annual output by number of chickens produced in the farm during the year. On the basis of input-output, income of the farmers has been calculated.

### **Results and Discussion**

#### **Spatial Distribution of Broiler Farms**

Haryana has experienced fast expansion of commercial broiler farming during post economic liberalization period. Broiler farming initially started by some innovative businessmen and farmers in the vicinity of national capital territory but soon it spread to interior areas. There have been 1289 broiler farms in 2007 and the number increased to 2202 after a decade in 2017 (Table 1). In 2007, Mahendergarh with 158 broiler farms has been a leading district followed by Yamunanagar (140) and Karnal (133) districts. But in 2017, Bhiwani district (322) has the highest number of broiler farms followed by Kurukshetra (257) and Karnal (204) districts. Though there is not a discernible geographical pattern, yet the concentration of broiler farms is higher in north-central and western parts of the state (Fig. 2). Large clusters of broiler farms have been witnessed in Karnal, Yamunanagar, Jind, Hisar, and Bhiwani districts.

#### **Growth of Broiler Farms**

The number of broiler farms has increased by 71 per cent during the 10 year period of 2007-2017 (Table 1). Kurukshetra district has recorded very high growth rate (614 per cent) closely followed by Bhiwani district (600 per cent). Jhajjar and Mewat districts also have recorded higher growth rate than the state average of 71 per cent. Panipat, Sirsa, Jind, Karnal, and Hisar are other

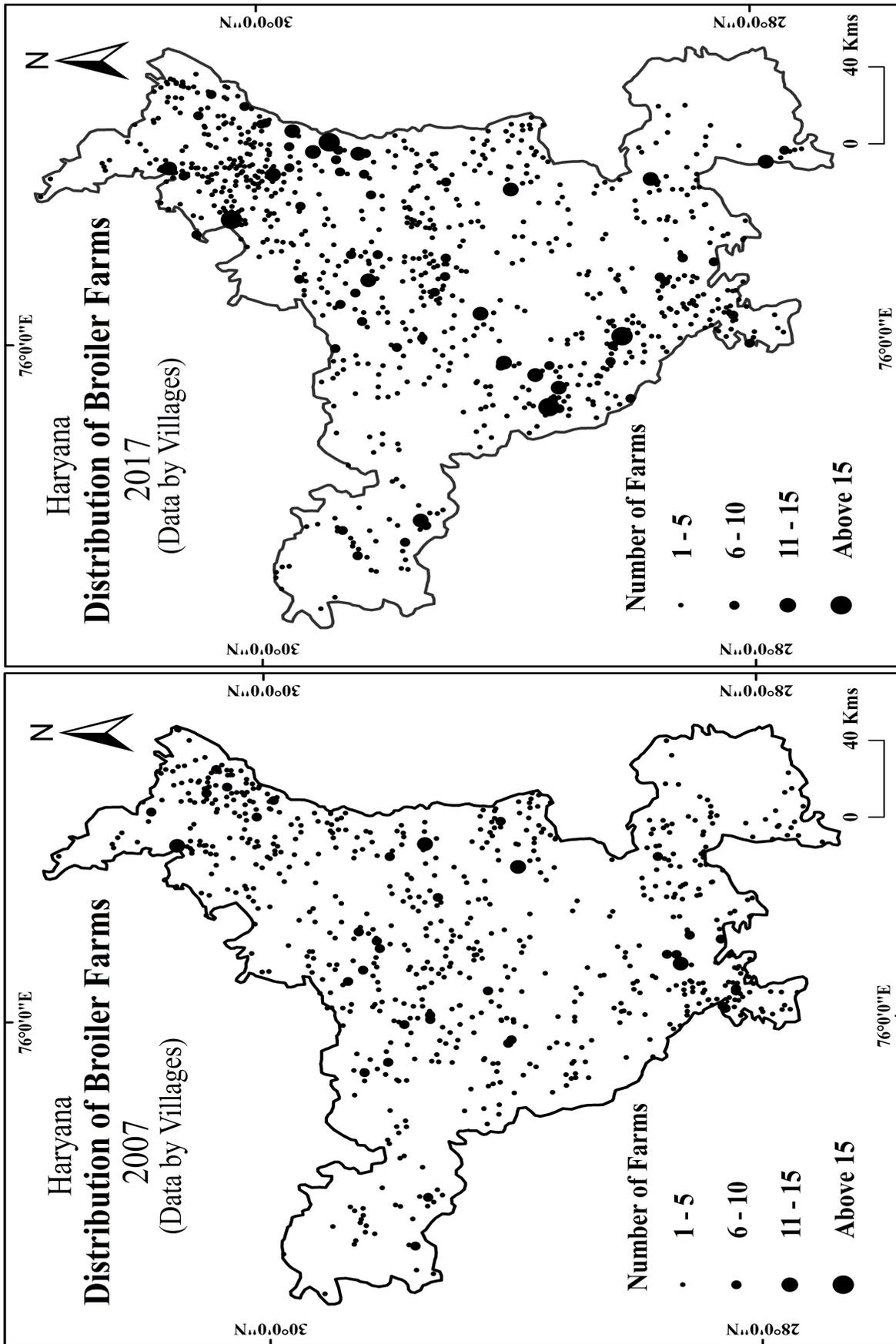


Fig. 2

**Table 1**  
**Haryana: District-wise Number and Growth Rate of Broiler Farms**

Districts	Number of Broiler Farms		Growth Rate (per cent)
	2007	2017	
Ambala	56	79	41.07
Bhiwani	46	322	600.00
Faridabad	06	08	33.33
Fatehabad	66	51	-22.73
Gurugram	35	35	00.00
Hisar	98	155	58.16
Jhajjar	13	32	146.15
Jind	85	188	54.79
Kaithal	104	107	2.88
Karnal	133	204	53.38
Kurukshetra	36	257	613.89
Mahendergarh	158	172	8.86
Mewat	28	52	85.71
Palwal	DNA	DNA	DNA
Panchkula	06	10	66.67
Panipat	45	68	51.11
Rewari	63	66	4.76
Rohtak	14	15	7.14
Sirsa	73	121	65.75
Sonipat	84	105	25.00
Yamuna nagar	140	155	10.71
<b>Total</b>	<b>1289</b>	<b>2202</b>	<b>70.83</b>

Source: Compiled by Authors, DNA: Data not Available.

districts which have also shown impressive growth of broiler farms i.e. above 50 per cent but less than state average. Negligible increase in number of broiler farms has been noticed in Kaithal, Rewari, Mahendergarh and Gurugram districts. Fatehabad district has recorded negative growth rate of -23 per cent. There is no discernible geographical pattern in growth of broiler farms (Fig. 3).

#### **Socio-economic Profile of Broiler Farmers**

Broiler farming has not been found popular among upper castes as only 13.7 per cent of total broiler farms have been owned by

upper castes (Table 2). It is dominated by landowning castes. About four of five broiler farmers belong to landowning castes. Other castes have only a small proportion of broiler farmers (8.5 per cent). Medium farmers dominate the broiler farming. They constitute about 42 per cent of total broiler farmers followed by large and small farmers. About one-fourth of broiler farmers are large farmers. While, another 13 per cent broiler farmers are very large farmers. Small farmers constitute about one-fifth of the total broiler farmers. This study reveals that largest proportion of broiler farmers is lowly

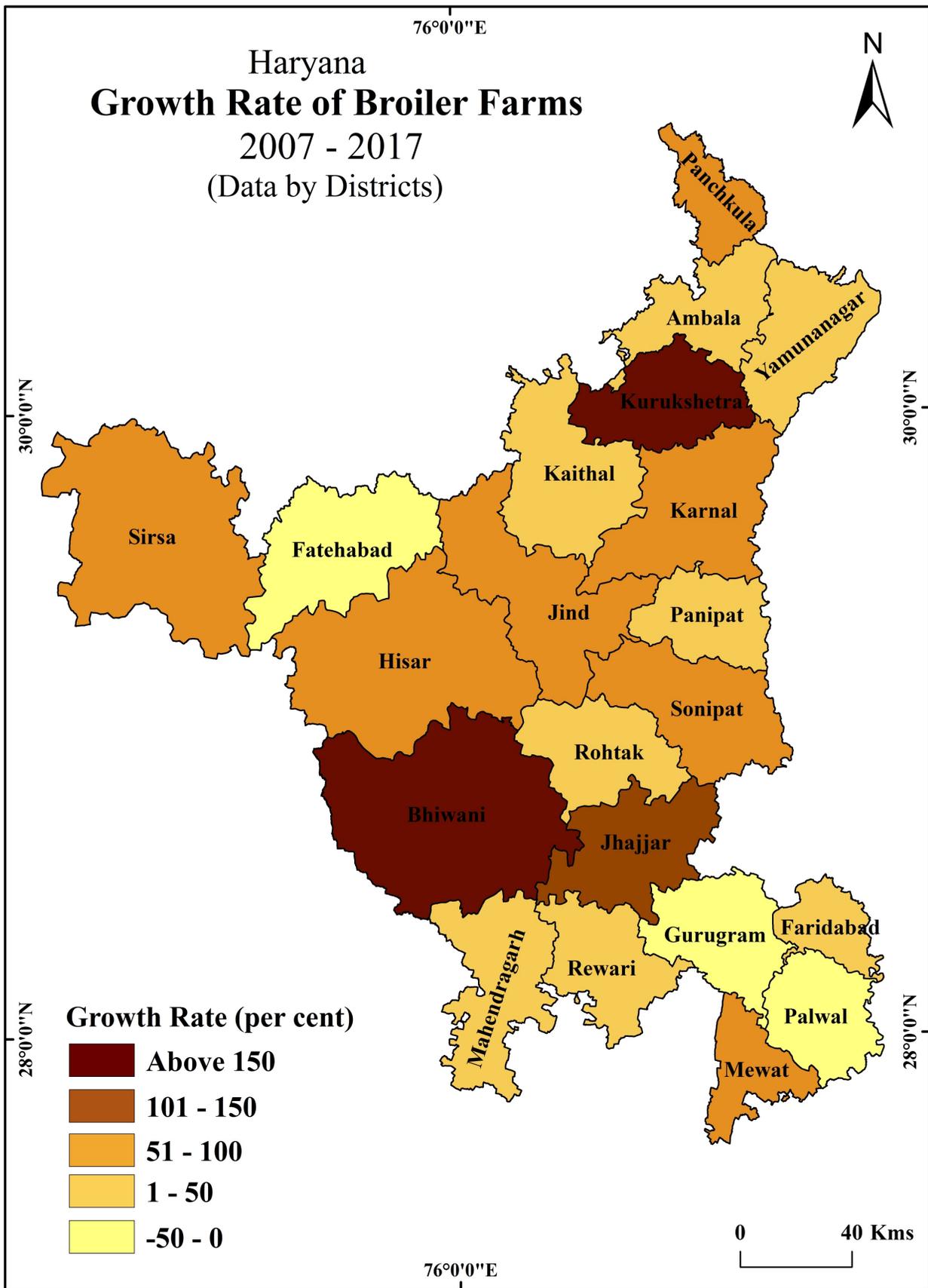


Fig. 3

**Table 2**  
**Haryana: Number of Broiler Farms by Socio-economic Status of Farmers**

Social Status		Economic Status		Educational Status	
Upper Castes	24 (13.70)	Small Farmers	38 (21.70)	Illiterate and Below Primary	32 (18.30)
Landowning Castes	136 (77.70)	Medium Farmers	73 (41.70)	Primary and Middle	51(29.10)
Other Castes	15 (08.50)	Large Farmers	42 (24.00)	Matriculation	36 (20.60)
-	-	Very Large Farmers	22 (12.60)	Senior Secondary	25 (14.30)
-	-	-	-	Graduate and above	31 (17.70)
<b>Total</b>	<b>175 (100.00)</b>	<b>Total</b>	<b>175 (100.00)</b>	<b>Total</b>	<b>175 (100.00)</b>

Source: Compiled by Authors; Figures in parentheses are percentage of total

educated, of which 29 per cent are primary and middle level educated, while another 18 per cent are illiterate or below primary level educated (Table 2). About one-fifth broiler farmers are matriculate and about one-third have attained senior secondary or graduation and above level of education.

#### **Physical Capacity of Broiler Farms**

The physical capacity of broiler farm means the number of broiler chickens that can be reared in a farm annually. Table 3 reveals that about two-fifth farms have medium annual capacities (30001-60000 chickens). Another 45.14 per cent farms are of large and very large capacity (above 60000 chickens). There are only 16 per cent small capacity farms (up to 30000 chickens). About 42 per cent farmers of upper caste own medium capacity broiler farms, while only 16.67 per cent of their farms are of large capacity. It means that upper castes mostly own medium and large capacity farms. Landowning castes have made major contribution in broiler farming. These castes account for about 77 per cent of total broiler farms. About half of the farms of landowning castes are of large and very large capacity, while 37 per cent are of medium capacity. The average annual capacity of broiler farms in the state is 68754

chickens. Farm capacity has been found largest (71750 chickens) among landowning castes and smallest in other castes (41400 chickens).

It is evident from Table 3 that most of small farmers have small and medium capacity broiler farms. On the other hand, a large proportion of large and very large farmers have large and very large capacity of broiler farms. Most of the medium farmers are having medium capacity broiler farms. On the other hand, about 87 per cent small farmers own small and medium capacity broiler farms. Overall, capacity of broiler farms has been found highest among very large farmers (121681 chickens) and lowest among small farmers (36447 chickens).

Education is not a determinant factor of the capacity of broiler farming. Interestingly, illiterate and below primary farmers own about 47 per cent of large capacity broiler farms (Table 3). About half of the farms owned by primary and middle educated farmers are of medium capacity. The farmers with senior secondary and higher education are mostly having medium and large capacity broiler farms. Overall, there is no perceptible variation in the capacity of broiler farms across different educational levels of farmers.

**Table 3**  
**Haryana: Annual Capacity of Broiler Farms by Socio-economic Status of Farmers.**

Status	Farm Capacity (Number of Chickens)					
	Up to 30000 (Small)	30001-60000 (Medium)	60001-90000 (Large)	Above 90000 (V. Large)	Total	Average
<b>Social Status</b>						
Upper Castes	02 (08.33)	10 (41.67)	08 (33.33)	04 (16.67)	24 (100.00)	68875
Landowning Castes	21 (15.44)	50 (36.76)	40 (29.41)	25 (18.38)	136(100.00)	71750
Other Castes	05 (33.33)	08 (53.33)	02 (13.34)	00 (00.00)	15 (100.00)	41400
<b>Total</b>	<b>28 (16.00)</b>	<b>68 (38.86)</b>	<b>50 (28.57)</b>	<b>29 (16.57)</b>	<b>175 (100.00)</b>	<b>68754</b>
<b>Economic Status</b>						
Small Farmers	17 (44.74)	16 (42.10)	05 (13.16)	00 (00.00)	38 (100.00)	36447
Medium Farmers	09 (12.33)	40 (54.79)	19 (26.03)	05 (06.85)	73 (100.00)	57479
Large Farmers	01 (02.38)	09 (21.43)	16 (38.09)	16 (38.10)	42 (100.00)	88690
Very Large Farmers	01 (04.55)	03 (13.64)	10 (45.45)	08 (36.36)	22 (100.00)	121681
<b>Total</b>	<b>28 (16.00)</b>	<b>68 (38.86)</b>	<b>50 (28.57)</b>	<b>29 (16.57)</b>	<b>175 (100.00)</b>	<b>68474</b>
<b>Educational Status</b>						
Illiterate and Below Primary	05 (15.63)	04 (12.50)	15 (46.87)	08 (25.00)	32 (100.00)	73125
Primary and Middle	08 (15.69)	25 (49.02)	10 (19.61)	08 (15.68)	51 (100.00)	66058
Matriculation	06 (16.67)	18 (50.00)	09 (25.00)	03 (08.33)	36 (100.00)	63416
Senior Secondary	03 (12.00)	09 (36.00)	08 (32.00)	05 (20.00)	25 (100.00)	71120
Graduate and Above	06 (19.35)	12 (38.71)	08 (25.81)	05 (16.13)	31 (100.00)	68483
<b>Total</b>	<b>28 (16.00)</b>	<b>68 (38.86)</b>	<b>50 (28.57)</b>	<b>29 (16.57)</b>	<b>175 (100.00)</b>	<b>67960</b>

Source: Compiled by Authors; Figures in parentheses are percentage of total

### Period of Broiler Farm Establishment

The establishment of broiler farms in Haryana started in 1990s. About one-fourth farms have been started before 1995 and another 29 per cent have been established during 1996 to 2000 (Table 4). Between 2001 and 2005, about 24 per cent broiler farms have been opened by the farmers. There have been only 22 per cent broiler farms opened after 2005. However, a lesser number of broiler farms has been opened during recent period. It is the upper castes that took initiative, as about 38 per cent of their farms have been established up to 1995. But later on, upper castes have been outnumbered by landowning castes. Largest proportion (31 per cent) of broiler farms owned by landowning castes have been established during second half of 1990s. Other castes have taken up this agri-business after 2000. Overall, landowning castes have dominated in the

ownership of broiler farms during all time periods.

During the initial period (up to 1995), large and very large farmers took initiative of starting broiler farming. About 50 per cent large farmers and 41 per cent very large farmers have joined this agri-business up to 1995 (Table 4). During 1996-2000, small and large farmers have also started taking up broiler farming. At present broiler farming is dominated by medium size farmers followed by large and small farmers. Illiterate and below primary farmers, primary and middle level educated farmers are prominent in starting of broiler farms in Haryana. But educated farmers have been at eminent position in the establishment of broiler farms during the period 1996-2000. There is no significant variation in adoption of broiler farming according to different educational levels of farmers.

**Table 4**  
**Haryana: Broiler Farms by Year of Establishment and Socio-economic Status of Farmers**

Status	Year of Establishment				
	Up to 1995	1996-2000	2001-2005	After 2005	Total
<b>Social Status</b>					
Upper Castes	09 (37.50)	06 (25.00)	07 (29.17)	02 (08.33)	24 (100.00)
Landowning Castes	33( 24.26)	42 (30.88)	29 (21.32)	32 (23.52)	136 (100.00)
Other Castes	01 (06.67)	03 (20.00)	06 (40.00)	05 (33.33)	15 (100.00)
<b>Total</b>	<b>43 (24.57)</b>	<b>51 (29.14)</b>	<b>42 (24.00)</b>	<b>39 (22.29)</b>	<b>175 (100.00)</b>
<b>Economic Status</b>					
Small Farmers	03 (07.89)	11 (28.95)	11 (28.95)	13 (33.33)	38 (100.00)
Medium Farmers	10 (13.70)	24 (32.88)	16 (38.09)	23 (58.97)	73 (100.00)
Large Farmers	21 (50.00)	09 (21.43)	10 (23.82)	02 (5.13)	42 (100.00)
Very Large Farmers	09 (40.91)	07 (31.82)	05 (11.90)	01 (2.57)	22 (100.00)
<b>Total</b>	<b>43 (24.57)</b>	<b>51 (29.14)</b>	<b>42 (24.00)</b>	<b>39 (22.29)</b>	<b>175 (100.00)</b>
<b>Educational Status</b>					
Illiterate and Below Primary	21 (65.63)	06 (18.75)	03 (09.37)	02 (06.25)	32 (100.00)
Primary and Middle	15 (29.41)	13 (25.49)	11 (21.57)	12 (23.53)	51 (100.00)
Matriculation	02 (05.55)	11 (30.56)	14 (38.89)	09 (25.00)	36 (100.00)
Senior Secondary	02 (08.00)	11 (44.00)	07 (28.00)	05 (20.00)	25 (100.00)
Graduate and Above	03 (09.68)	10 (32.26)	07 (22.58)	11 (35.48)	31 (100.00)
<b>Total</b>	<b>43 (24.57)</b>	<b>51 (29.14)</b>	<b>42 (24.00)</b>	<b>39 (22.29)</b>	<b>175 (100.00)</b>

Source: Compiled by Authors; Figures in parentheses are percentage of total

### Generation of Broiler Farmers

The analysis of generation of farmers currently engaged in broiler farming provides an insight into the continuity of this agri-business across generations. About 58 per cent of total surveyed broiler farmers belong to first generation (Table 5). While 31 per cent of them, belong to second generation. Rest of the farmers belongs to third generation of broiler farmers. There are only 42 per cent upper castes farmers who come from first generation, while about 87 per cent other (mostly lower) caste farmers belong to first generation. About 17 per cent upper caste and 11 per cent landowning castes farmers are from third generation. It reveals that there is a continuity of this agri-business among the farmers belonging to upper and landowning castes.

Largest proportion of medium farmers (67 per cent) and small farmers (61 per cent) are from first generation. Similarly, about 45 per cent of very large and about 48 per cent of large farmers also belong to first generation (Table 5). About one-fourth large farmers and 14 per cent of very large farmers belong to third generation of broiler farmers. Thus, large and very large farmers have been the promoters of broiler farming in Haryana and their next generations also adopted this activity.

About 38 per cent less educated farmers are third generation broiler farmers. While, a large proportion of more educated broiler farmers is from first generation. Whereas, about one-third illiterate and below primary educated farmers are also from first generation. It indicates that this agri-business

**Table 5**  
**Haryana: Broiler Farms by Generation and Socio-economic Status of Farmers**

Status	Generation of Farmers			
	First	Second	Third	Total
<b>Social Status</b>				
Upper Castes	10 (41.67)	10 (41.67)	04 (16.67)	24 (100.00)
Landowning Castes	79 (58.09)	42 (30.88)	15 (11.03)	136 (100.00)
Other Castes	13 (86.67)	02 (13.33)	00 (00.00)	15 (100.00)
<b>Total</b>	<b>102 (58.28)</b>	<b>54 (30.86)</b>	<b>19 (10.86)</b>	<b>175 (100.00)</b>
<b>Economic Status</b>				
Small Farmers	23 (60.53)	15 (39.47)	00 (00.00)	38 (100.00)
Medium Farmers	49 (67.12)	18 (24.66)	06 (08.22)	73 (100.00)
Large Farmers	20 (47.62)	12 (28.57)	10 (23.81)	42 (100.00)
Very Large Farmers	10 (45.45)	09 (40.91)	03 (13.64)	22 (100.00)
<b>Total</b>	<b>102 (58.28)</b>	<b>54 (30.86)</b>	<b>19 (10.86)</b>	<b>175 (100.00)</b>
<b>Educational Status</b>				
Illiterate and Below Primary	11 (34.37)	09 (28.13)	12 (37.50)	32 (100.00)
Primary and Middle	34 (66.67)	12 (23.53)	05 (09.80)	51 (100.00)
Matriculation	24 (66.67)	10 (27.78)	02 (05.55)	36 (100.00)
Senior Secondary	14 (56.00)	11 (44.00)	00 (00.00)	25 (100.00)
Graduate and Above	19 (61.29)	12 (38.71)	00 (00.00)	31 (100.00)
<b>Total</b>	<b>102 (58.28)</b>	<b>54 (30.86)</b>	<b>19 (10.86)</b>	<b>175 (100.00)</b>

Source: Compiled by Authors; Figures in parentheses are percentage of total

has been mostly initiated by illiterate and less educated farmers. In fact, broiler farming has been started by less educated farmers and upper caste farmers. But during last two decades it has spread among more educated middle and small farmers.

#### **Ownership of Broiler Farms**

Ownership of broiler farms is defined in terms of number of owners, i.e. single or multiple owners. Single owners account for about 78 per cent of all broiler farmers. The proportion of single owner farmers is highest among upper castes (83 per cent) and another 10 per cent broiler farms have double owner partnership (Table 6). About three-fourth farmers from landowning castes are also single owners of broiler farms. The proportion of multiple owners is highest among other

castes. It seems that lower caste owners pool their resources to establish broiler farms.

The proportion of single owner farms is highest among very large and large farmers (about 86 per cent). Comparatively low proportion of single owners is found among medium farmers and small farmers. The highest proportion of three or more owners is among small farmers (21 per cent) followed by medium farmers (12 per cent). But the proportion of two owner partnership is highest among medium farmers (15 per cent). It reveals that small and medium farmers tend to pool their resources for carrying out broiler farming, whereas large farmers mostly favor single ownership.

Table 6 depicts that illiterate and below primary educated farmers have highest proportion of single ownership. Senior

**Table 6**  
**Haryana: Broiler Farms by Number of Owners and Socio-economic Status of Farmers**

Status	Number of Owners				
	Single	Two	Three	Four and More	Total
<b>Social Status</b>					
Upper Castes	20 (83.33)	02 (08.33)	01 (04.17)	01 (04.17)	24 (100.00)
Landowning Castes	105(77.20)	16 (11.76)	09 (06.62)	06 (04.42)	136 (100.00)
Other Castes	11 (73.33)	00 (00.00)	02 (13.33)	02 (13.33)	15 (100.00)
<b>Total</b>	<b>136 (77.71)</b>	<b>18 (10.29)</b>	<b>12 (06.86)</b>	<b>09 (05.14)</b>	<b>175 (100.00)</b>
<b>Economic Status</b>					
Small Farmers	28 (73.68)	02 (05.26)	05 (13.16)	03 (07.89)	38 (100.00)
Medium Farmers	53 (72.60)	11 (15.07)	04 (05.48)	05 (06.85)	73 (100.00)
Large Farmers	36 (85.71)	03 (07.14)	02 (04.76)	01 (02.38)	42 (100.00)
Very Large Farmers	19 (86.36)	02 (09.09)	01 (04.55)	00 (00.00)	22 (100.00)
<b>Total</b>	<b>136 (77.71)</b>	<b>18 (10.29)</b>	<b>12 (06.86)</b>	<b>09 (05.14)</b>	<b>175 (100.00)</b>
<b>Educational Status</b>					
Illiterate and Below Primary	30 (93.75)	01 (03.12)	01 (03.12)	00 (00.00)	32 (100.00)
Primary and Middle	36 (70.59)	08 (15.69)	06 (11.76)	01 (01.96)	51 (100.00)
Matriculation	27 (75.00)	04 (11.11)	02 (05.56)	03 (08.33)	36 (100.00)
Senior Secondary	20 (80.00)	03 (12.00)	02 (08.00)	00 (00.00)	25 (100.00)
Graduate and Above	23 (74.19)	02 (06.45)	01 (03.23)	05 (16.13)	31 (100.00)
<b>Total</b>	<b>136 (77.71)</b>	<b>18 (10.29)</b>	<b>12 (06.86)</b>	<b>09 (05.14)</b>	<b>175 (100.00)</b>

Source: Compiled by Authors; Figures in parentheses are percentage of total

secondary educated farmers also have comparatively higher proportion of single ownership (80 per cent). The lowest share of single ownership of broiler farms have been witnessed among primary and middle level educated farmers. Furthermore, the proportion of four or more partner ownership is highest among the farmers with higher education level. Analysis indicates that there is no relationship between level of education and number of owners of broiler farms.

#### **Occupational Combination of Broiler Farmers**

Farmers generally combine broiler farming with other occupations. There are only about 3 per cent broiler farmers who are dependent only on this agri-business (Table 7). The proportion of such broiler farmers is

highest among upper castes (about 8 per cent). The highest proportion of broiler farmers is engaged in dual occupation of agriculture and broiler farming (about 71 per cent). About 76 per cent farmers of landowning castes, 54 per cent of upper castes and 53 per cent of other castes are practicing broiler farming along with agriculture. About 10 per cent broiler farmers are having business along with this occupation. About 17 per cent of total broiler farmers are also in service (Table 7). Interestingly, proportion of such broiler farmers is highest among other castes.

Further, 10.5 per cent of small farmers have adopted only broiler farming as occupation. The proportion of farmers carrying out agriculture along with broiler farming is highest among large farmers (76 per cent) followed by medium farmers (74 per cent).

**Table 7**  
**Haryana: Broiler Farms by Occupational Combination and Socio-economic Status of Farmers**

Status	Occupational Combination of Broiler Farmers				
	Only Broiler Farming	Agriculture and Broiler Farming	Business and Broiler Farming	Service and Broiler Farming	Total
<b>Social Status</b>					
Upper Castes	02 (08.33)	13 (54.17)	05 (20.83)	04 (16.67)	24 (100.00)
Landowning Castes	02 (01.47)	103 (75.74)	11 (08.08)	20 (14.70)	136 (100.00)
Other Castes	01 (06.67)	08 (53.33)	01 (06.67)	05 (33.33)	15 (100.00)
<b>Total</b>	<b>05 (02.86)</b>	<b>124 (70.86)</b>	<b>17 (09.71)</b>	<b>29 (16.57)</b>	<b>175 (100.00)</b>
<b>Economic Status</b>					
Small Farmers	04 (10.5)	23 (60.53)	04 (10.52)	07 (18.42)	38 (100.00)
Medium Farmers	00 (00.00)	54 (73.97)	06 (08.22)	13 (17.81)	73 (100.00)
Large Farmers	00 (00.00)	32 (76.19)	03 (07.14)	07 (16.67)	42 (100.00)
Very Large Farmers	01 (04.54)	15 (68.18)	04 (18.18)	03 (13.64)	22 (100.00)
<b>Total</b>	<b>05 (02.86)</b>	<b>124 (70.86)</b>	<b>17 (09.71)</b>	<b>29 (16.57)</b>	<b>175 (100.00)</b>
<b>Educational Status</b>					
Illiterate and Below Primary	00 (00.00)	31 (96.88)	01 (03.13)	00 (00.00)	32 (100.00)
Primary and Middle	02 (03.92)	41 (80.39)	05 (09.80)	03 (05.88)	51 (100.00)
Matriculation	01 (02.78)	32 (88.89)	02 (05.55)	01 (02.78)	36 (100.00)
Senior Secondary	02 (08.00)	14 (56.00)	05 (20.00)	04 (16.00)	25 (100.00)
Graduate and Above	00 (00.00)	06 (19.35)	04 (12.90)	21 (67.75)	31 (100.00)
<b>Total</b>	<b>05 (02.86)</b>	<b>124 (70.86)</b>	<b>17 (09.71)</b>	<b>29 (16.52)</b>	<b>175 (100.00)</b>

Source: Compiled by Authors; Figures in parentheses are percentage of total

Such occupational combination is least popular among small farmers (61.5 per cent). Interestingly, 18 per cent of very large farmers follow broiler farming and business as occupational combination. The service-broiler farming combination is found least prevalent among very large farmers.

Table 7 shows that 8 per cent of senior secondary level educated farmers follow only broiler farming occupation. The agriculture-broiler farming combination of occupation is found most prevalent among illiterate and below primary level educated farmers (97 per cent). On the other hand, this occupational combination is least prevalent among the farmers with higher level of education (only 19 per cent). The business-broiler farming occupational combination has been observed

most popular among the senior secondary level educated farmers, while it is least prevalent among less educated farmers. About 68 per cent broiler farmers having graduation and above level of education are engaged in broiler farming along with service. Generally, highly educated broiler farmers mostly practice broiler farming-business or broiler farming-service occupation, while lesser educated farmers carry out broiler farming with agriculture.

#### **Annual Chicken Production**

There are only about 11 per cent broiler farms which produce less than 25000 chickens per year (Table 8). While another 30 per cent farms produce 50001 to 75000 chickens annually. About 27 per cent broiler farms have

annual production of chicken more than 75000. It reveals that majority of broiler farms do mass production of broiler chickens. The proportion of small size production farms is highest among other castes (20 per cent). About 32 per cent broiler farms are of medium size in terms of production. Also, in this category, other castes have higher proportion. Upper castes have highest proportion of very large production broiler farms (about one-third). While, small and medium size production farms are owned by other castes.

Broiler farms owned by small farmers are low production farms, producing less than 25000 chickens per year. None of very large farmers owns small size chicken production farm. Large and very large farmers mostly own very large size broiler farms in terms of production. About 54 per cent very large farmers also carry out very large-scale chicken production. The study highlights that

scale of production of broiler chicken is directly proportional to the size of land-holding of broiler farmers.

The proportion of small size production farms is highest among graduate and above farmers (16 per cent). It is followed by less educated farmers (primary and middle educated) 14 per cent and below primary and illiterates, 13 per cent. Contrary to this, the proportion of farmers educated up to senior secondary level is highest among the farmers having large and very large-scale broiler production. High proportion of matriculate farmers is carrying out large scale chicken production. There seems to be no relationship between education level of broiler farmers and scale of broiler production.

### Input, Output and Income of Broiler Farmers

On an average, a broiler farmer spends

**Table 8**  
**Haryana: Broiler Farms by Annual Production and Socio-economic Status of Farmers**

Status	Annual Production (Number of Chickens)				
	Up to 25000 (Small)	25001-50000 (Medium)	50001-75000 (Large)	Above 75000 (Very Large)	Total
<b>Social Status</b>					
Upper Castes	02 (08.34)	08 (33.33)	06 (25.00)	08 (33.33)	24 (100.00)
Landowning Castes	15 (11.03)	42 (30.88)	40 (29.41)	39 (28.68)	136 (100.00)
Other Castes	03 (20.00)	06 (40.00)	06 (40.00)	00 (00.00)	15 (100.00)
<b>Total</b>	<b>20 (11.43)</b>	<b>56 (32.00)</b>	<b>52 (29.71)</b>	<b>47 (26.86)</b>	<b>175 (100.00)</b>
<b>Economic Status</b>					
Small Farmers	12 (31.58)	18 (47.37)	08 (21.05)	00 (00.00)	38 (100.00)
Medium Farmers	06 (08.22)	32 (43.84)	26 (35.62)	09 (13.32)	73 (100.00)
Large Farmers	02 (04.77)	04 (09.52)	10 (23.81)	26 (61.90)	42 (100.00)
Very Large Farmers	00 (00.00)	02 (09.09)	08 (36.36)	12 (54.54)	22 (100.00)
<b>Total</b>	<b>20 (11.43)</b>	<b>56 (32.00)</b>	<b>52 (29.71)</b>	<b>47 (26.86)</b>	<b>175 (100.00)</b>
<b>Educational Status</b>					
Illiterate and Below Primary	04 (12.50)	05 (15.62)	07 (21.88)	16 (50.00)	32 (100.00)
Primary and Middle	07 (13.72)	20 (39.22)	13 (25.49)	11 (21.57)	51 (100.00)
Matriculation	02 (05.55)	14 (38.89)	15 (41.67)	05 (13.89)	36 (100.00)
Senior Secondary	02 (08.00)	06 (24.00)	10 (40.00)	07 (28.00)	25 (100.00)
Graduate and Above	05 (16.13)	11 (35.48)	07 (22.58)	08 (25.81)	31 (100.00)
<b>Total</b>	<b>20 (11.43)</b>	<b>56 (32.00)</b>	<b>52 (29.71)</b>	<b>47 (26.86)</b>	<b>175 (100.00)</b>

Source: Compiled by Authors; Figures in parentheses are percentage of total

Rs. 122 per chicken, whereas average output per chicken is Rs. 149, providing him a profit of Rs. 27 per chicken (Table 9). Farmers from other castes have highest average annual input of Rs. 128 per chicken, while landowning castes have highest average output (Rs. 157) per chicken. Consequently, the profit margin of the farmers is highest among landowning castes, i.e. Rs. 31 per chicken. The lowest profit has been recorded by other caste broiler farmers. Thus, broiler farms owned by landowning castes are economically most efficient.

Table 9 shows that small and large farmers have highest average input per chicken (Rs.124). Medium farmers have lowest average input per chicken (Rs.119). Whereas, average output per chicken is lowest among small farmers (Rs.147) but it has been witnessed highest among very large farmers (Rs.152). Average income per chicken is highest among very large farmers (Rs. 31) and lowest among small farmers i.e. Rs. 23.

Remarkably, broiler farms owned by very large and medium farmers are economically more efficient than other farmers.

It has been found that illiterate and below primary and graduate and above farmers have lowest average input per chicken i.e. Rs. 120. Input level is slightly high among the matriculate broiler farmers. The highest output is recorded by the farms owned by graduates and above, i.e. Rs. 153 per chicken. But output per chicken (Rs. 143) is lowest among illiterates or below primary level educated farmers. The farms owned by graduate and above educated farmers have recorded highest income of Rs. 33 per chicken, while illiterate and lesser educated broiler farmers earn Rs. 23 per chicken. It reveals that the broiler farms owned by more educated farmers are economically more efficient than less educated farmers.

### Conclusions

Haryana has witnessed a fast expan-

**Table 9**  
**Haryana: Broiler Farms by Income and Socio-economic Status of Farmers**

Status	Average Input-Output and Income in Rupees		
	Input Per Chicken	Output Per Chicken	Income Per Chicken
<b>Social Status</b>			
Upper Castes	122	149	27
Landowning Castes	126	157	31
Other Castes	128	141	23
<b>Total</b>	<b>122</b>	<b>149</b>	<b>27</b>
<b>Economic Status</b>			
Small Farmers	124	147	23
Medium Farmers	119	149	30
Large Farmers	124	150	26
Very Large Farmers	121	152	31
<b>Total</b>	<b>122</b>	<b>149</b>	<b>27</b>
<b>Educational Status</b>			
Illiterate and Below Primary	120	143	23
Primary and Middle	123	149	26
Matriculation	125	151	26
Senior Secondary	122	149	27
Graduate and Above	120	153	33
<b>Total</b>	<b>122</b>	<b>149</b>	<b>27</b>

Source: Compiled by Authors.

sion of broiler farming largely concentrated in north-central and western parts. Over the period of 2007 to 2017, the number of broiler farms has increased by 71 per cent with highest growth rate recorded by Kurukshetra district followed by Bhiwani district. Broiler farming in Haryana is mostly dominated by landowning castes. Most of broiler farms are of medium and large farmers. Level of education however has not any specific relationship with the ownership of broiler farms. The physical capacity of broiler farms belonging to landowning castes and very large farmers is higher than other categories of farmers. On account of different educational levels of farmers, there have been no noticeable variations in the capacity of broiler farms. Upper castes dominate the establishment of broiler farms up to 1995 but afterwards landowning castes have taken the lead. Similarly, very large farmers have taken a lead in establishing broiler farms in the beginning but at present medium size farmers are dominating. Furthermore, broiler farming is mostly started by lesser educated farmers and the educated farmers joined at later stage.

About three-fourth broiler farms are of single owners. Their number is highest among upper castes. Large and very large farmers are also mostly single owners of the broiler farms. Joint ownership of broiler farming is highest among farmers of other castes. It seems that they are pooling their resources for establishment of broiler farms. About 71 per cent of broiler farmers are carrying out agriculture along with broiler farming. Similarly, large proportion of landowning castes is engaged in agriculture along with broiler farming. Educated farmers mostly pursue occupational combination of broiler farming-business or broiler farming-service, whereas lesser educated farmers mostly

combine broiler farming with agriculture.

Majority of broiler farms (57 per cent) are large scale chicken producers (more than 50000 chickens in a year). Scale of broiler production is directly proportional to the size of landholding. The average profit of broiler farmers is Rs. 27 per chicken. The broiler farms owned by landowning castes are economically most efficient as their profit per chicken is highest. Similarly, per chicken profit is highest among the farmers with graduation and above qualifications, suggesting that education is a significant factor in determination of broiler farm's income.

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