ABSTRACT

In today’s world rapid urbanization is one of the greatest challenges in the developing countries to ensure human welfare and sustainable environment. Due to inability of rural areas to provide better economic prospects, people are on move from rural to urban areas. As result new urban center are continue to come-up and older ones are increasing their territories. According to a current estimate, cities occupy 4 percent of the world’s terrestrial surface, which is a home for almost half of the global population (United Nation 2009).

The out world movement of city population and in- migrated rural people, to develop suburban, industrial residential and commercial areas results in a massive socio-economic change of cities. This phenomenon common in all developing countries which is more common in Asia where development of peri-urban areas can be seen as the process of suburbanization. Urbanization resulted in pressure on supply of food especially from cropping and livestock sectors of agricultural economy in the present era of agricultural intensive spread with value added crops and livestock, livestock husbandry appears to be the most blessing agricultural enterprise in peri-urban areas of most of cities.

Urbanization affects improvement in infrastructure, supply chains including marketing opportunities and cold chains at both nation and global levels. The urban population has varied forms of diet rich in fats, and animal protein characterized by higher consumption of meat, milk, poultry and other dairy products. This nutritional value and taste makes the livestock products as a desired food for majority of the people in the world especially in developing countries (WHO, 2003).

India has experienced rapid and unplanned urban growth since last decades. During 2001 the share of urban population was 27.81 percent with absolute number 1027 million population. It rose to 31.16 percent in 2011 (Census, 2011 a). This rapid urbanization has led to wide gap between the demand and supply of crucial services and infrastructure. Additional, problems of increasing urban poverty, risks to productivity, high health costs, environmental stress, and lack of access to basic services, such as water supply, sanitation, and housing have emerged in most of the major urban centers.
The increasing cost in the agricultural inputs coupled with the increasing transport cost, labour unavailability, competitive marketing and other constraints have led to reduction in the benefits in crop production. Livestock is one of the important segments of Indian agriculture. It has been practiced as auxiliary activity in the process of production of different food and non-food grains crops since antiquity. Livestock farming, however, has been appearing as one of the most important value added farming systems adopted in the country. It is an important source of food security as it provides meat and milk and other dairy products, which enrich the nutrition intake. Increasing urbanization and burgeoning middle class population as well as improvement in level of income and socio-economic transformation have expanded the demand of meat and milk products in developing countries.

Urban fringe or peri-urban areas are the important concentric zones at various radial distances from the city for the flow of perishable food resource like vegetables, milk and meat and their increasing demand has encouraged the peri-urban agriculture with the production of horticultural products and livestock husbandry. Mode and scale of production have been also changing up. This particular form of peri-urban agriculture has the potential to provide cheap, fresh and nutritious food. It also saves the expenditure incurred for packaging, storage and transportation and has potential to generate more employment and incomes.

**Study Area**

Aligarh district is one of the important districts located in the western part of Uttar Pradesh at a distance of 130 kilometers from Delhi. The district lies between latitudes 27° 34' N to 28° 11 'N and between longitudes 77° 29' E to 78° 38' E in the central part of Ganga-Yamuna doab. The total area of the district was 3700 sq.kms with a population of 3,673,889 persons in 2011. The district has been divided into 5 tehsils subdivision namely, Atrauli, Gabhana, Khair, Koil and Iglas. These tehsils are further subdivided into 12 development blocks namely, Atrauli, Gangiri, Bijauli, Jawan, Chandaus, Khair, Tappal, Dhanipur, Lodha, Akrabad, Iglas and Gonda, which include 1180 villages. Moreover, Aligarh city is an important administrative, commercial, industrial and educational centers experiencing continuous increase in the population. The present scenario of urbanization and commercialization of livestock production
has an impact upon farming system, vegetable cultivation and floriculture in the peri-urban areas of the city. Therefore, a detailed study pertaining to intensification and commercialization of livestock and its impact upon the farming system in the peri-urban areas of Aligarh city is necessary to understand its far-reaching effects upon the socio-economic conditions of the livestock rearers, environmental aspects and sustainable urban and peri-urban planning in modern era of globalization of trade.

Under the consideration of above mentioned significance of urbanization and its effects in various trends of change in its peri-urban areas, the researcher aims to understand the following objective.

- To estimate the demand of dairy product in Aligarh city.
- To understand Spatio-temporal dynamics of dairy farming in the peri-urban area.
- To assess the level of generation of employment & livelihood by Dairy farming.
- To assess the impact of urbanization on development of Dairy farming.
Hypotheses

The following hypotheses have been tested in the present study.

- Urbanization process reflected positive effect on development of Dairy farming.
- Dairy farming is positively related to generation of livelihood to people in peri-urban area.
- Dairy farming is key to alleviation of poverty & sustainable development of peri-urban area of Aligarh city.

Research Methodology and Data Collection

The study is mainly based on the primary and secondary data collected from various sources. Individual observation of the researcher during the field survey was also considered. The secondary data were obtained from the reports of various government and non-government agencies and scientific articles, book, thesis and dissertation. The primary data were obtained with the help of a questionnaire through field survey conducted in selected villages in the peri-urban areas of Aligarh city.

The Peri-urban areas are the transition zones, or interaction zone, where urban and rural activities are juxtaposed, and landscape features are subject to rapid modifications, induced by human activities. The peri-urban area is demarcated on the basis of latest Master Plan of Aligarh Development Authorities. The maximum distance demarcated for the present study is approximately 20 Km from the center of Aligarh city. Four buffer zones were made at an interval of 5 km. there by, 3 villages from each buffer zones were selected excluding innermost zone consisting Aligarh city, for the detailed field survey on the basis of population size and accessibility. The sampled villages were having the population below 5000. Thus, in total 9 villages, from the peri-urban area of the city were selected for detailed field survey.

A well framed questionnaire was used to collect data regarding population size, number of household, cropping pattern, family size, caste, land use pattern, educational status and livestock husbandry. Furthermore, they were enquired about the inputs and outputs in livestock husbandry, economic benefits obtained, trend and
pattern of various livestock species, presence of vegetable cultivation and floriculture, trend of vegetable cultivation and floriculture other social and environmental aspects pertaining to livestock husbandry and the effect of intensification and commercialization of livestock upon the socio-economic condition of the rural people, and the farming system.

A total of 9 villages were selected for field survey in the peri-urban area of Aligarh city. From these villages a total of 270 households were selected for questionnaire based data collection. The secondary data related to geographical setting of the study area including climatic condition, soil characteristics, rainfall, and vegetation, land use pattern, demographic characteristics and socio-economic characteristics of the district was obtained from different publication of government department and organizations.

The collected data were processed tabulated and presented well through construction of statistical diagrams and maps. Simple statistical techniques like comparative tables simple regression and SPSS software are used for analysis of the data. The present’s thesis is planned in to 5 chapters excluding introduction and conclusion as give below.

Introduction

Chapter 1: Geographical Background of the Study Area

Chapter 2: Review of Literature

Chapter 3: Dairy Farming in Peri-Urban Area

Chapter 4: Socio-economic Structure of Dairy Farming & Farmers

Chapter 5: Urbanization, Livestock Products Demand and its Impact on Development of Dairy Farming

Conclusion & Suggestions

Introduction discusses the importance and significance of present work along with objectives, hypotheses and research questions relating to present research problems. The geographical background of the study area is described in the chapter one. It includes both physical and cultural attributes which directly or indirectly affect the
urbanization as well dairy farming in the area. The literature survey which dealt with the study of dairy farming, urbanization and peri-urban area is discussed in chapter two. Chapter third includes the spatio-temporal pattern of dairy farming in peri-urban area of Aligarh city. Fourth chapter of the work highlight the socio-economic profile of the dairy farmers and dairy workers whereas chapter five is concerned with the description of urban growth, demand of livestock products and its effect in the development of dairy farming in peri-urban area. The precise summery of the study, problems and suggestions for the sustainable development of urban centre and peri-urban dairy farming are discussed in conclusion and suggestions.

In this way the present research work encompasses to reveal that, the recent phenomenon of urbanization and its ripple effects on development of dairy farming in the peri-urban area of Aligarh city. The Aligarh city has witnessed a significant level of urban sprawl in the last two decades. The city has witnessed a population growth of 89.29 percent during 1991-2011. Though, the municipal limits of the city have been revised from time to time, but non-planning and underdevelopment has made the peri-urban areas to have several socio-economic and environmental problems.

Moreover, the rapidly increasing population has generated demand of nutritious food especially milk, meat and milk products at the household, domestic and commercial level. The growth in the demand of milk in Aligarh city is 63.50 percent during 2001-2015. There are some pockets of livestock husbandry in different parts of the Aligarh city. These pockets are generally on the outskirts of the city. Similarly, the growth in the demand of meat in Aligarh city is estimated at 39.79 percent. The increasing demand has led to growth in milk and meat processing units, shops at 22.99 percent and 47.54 percent levels in Aligarh city during 2001-2015. Huge demand of milk and milk products has resulted in increase of prices by three times during 2001-2015. The significant increase in meat processing units has resulted in increasing the price of livestock in the areas adjoining Aligarh city on account of higher proportion of Muslim population as well as linkage with capital city New Delhi.

The comparative analysis of productivity, income level, employment potential, and environmental impacts between urbanization and development of dairy farming in
peri-urban area revealed that, the farmers witnessed a high degree of intensification of livestock, employment generation and positive environmental impact ever than before. The rural livestock units located in the peri-urban areas of the Aligarh city perform in commercial manner. Dairy farming in peri-urban areas needs to undertake measures for sustainable development of livestock husbandry, farming system and optimum socio-economic up-gradation of farmers involved in both primary and economic activities.

Socio-economic profile of people and area has affected the dairy farming system to a considerable extent. 65.55 percent of total households in sampled villages, are directly or indirectly involved in dairy farming sector. On an average, the people involved in dairy farming belonging to other backward groups shared 39.21 percent of all dairy farmers, whereas high castes and scheduled castes are participating with 33.21 percent and 27.56 percent share to total dairy farmers. Females contribute a lot in various operations of dairy farming.

Economic stratification is also reflected in the study of dairy farming in the study area. Poor and small farmers are contributing a lion share in this sector of agriculture economy. Dairy farming provides livelihoods and employments to a large number of people in rural areas through their involvement in various operations like rearing, collection, and marketing.

As far as the occupational profile is concerned, the study revealed that, 65.55 percent households in the selected villages of the peri-urban area of Aligarh city are involved in dairy farming activities. Majority of dairy farmers keep dairy farming as primary occupation and cropping as complementary or supplementary to agriculture. The proportion of income generated from dairy farming varies within socio-economic profile of the dairy farmers. Marginal and small farmers derive largest share of their income from dairy farming as compared to medium and big farmers. Similarly, other backward castes earned largest share of their income from same occupation.

The dairy farmers are utilizing their income for different purposes like crop farming, dairy farming, housing/infrastructural development, social obligations and education. House construction, maintenance and other infrastructural development are the most
important expenditures of dairy farming income in the study area. Priority of utilization of the income differs with socio-economic status of farmers. Poor and land- less marginal farmers spend their income maximum on house/infrastructure and dairy farming whereas, big and medium ones prefer cropping, infrastructural development and dairy farming. Education is the last preference of expenditure for every group of dairy farmers. Similarly, high castes dairy farmers have their preference of expenditure on crop farming, dairy farming and infrastructural development in descending sequential order. Other backward castes follow dairy –infrastructure and cropping sequence whereas scheduled castes show their sequence spending order as infrastructure-dairy farming and social obligation. Education remained as last preference for all social groups except the scheduled castes which have rather higher percentage of their expenditure, as compared to other groups.

On the basis of above discussion and finding related to urbanization and its effect in dairy development in the peri-urban areas, some suggestions for sustainable development of dairy farming in the study area have been appended as follows.

- Planning for improved infrastructure in peri-urban area of Aligarh city is the foremost need to ensure sustainable resource development.
- Improved veterinary services for development of livestock husbandry and dairy farming.
- Development of efficient transport network and facility of refrigerated carriers is needed in the areas of milk production for easy and quick transportation, and marketing of dairy products.
- There is need for establishing micro credit system at very low interest rate and sanctioning loan should be easy process.
- Livestock insurance system and dairy credit cards should be available in the area to reduce risk caused by death of animals.
- Dairy farming extension programs and motivation for adoption of new innovation and technology should be launched.
- Co-operative societies both at producers’ and marketing level should be developed.