CHAPTER-1

INTRODUCTION
1.1 INTRODUCTION

Agriculture is one of the oldest and most important occupations of man. Therefore, in any country almost half of the economic status directly or indirectly depends on agriculture. The role of agriculture in development can be similarly assessed on the basis of how it helps the development of an underdeveloped economy from the stage stagnation to the progressive stage. Agriculture also supports many industries by providing raw materials to them. Development of agriculture always depends on fertility of soil, rainfall, water resources, good and suitable climate, chemicals, improved seeds from technology etc.

The contribution of agriculture to India’s national income has always been very large. “At present the share of agriculture and allied activities in our national income is nearly 30 percent”\(^1\). We know that with the process of development the share of agriculture in the national income decreases, while the share of industry rises. India is also witnessing the same. Inspite of this, agriculture still has the largest share in India’s national income as compared to other economic activities. Further, it is estimated that for many years to come in future, the share of agriculture in national income will continue to remain the largest one in the case of India.

Agriculture is a source of employment. On the basis of occupation, rural households of India can broadly be classified into two categories; such as agricultural rural households and non-agricultural rural households. Agricultural rural households include farmers and landless agricultural labourers, these are all depending directly on agriculture for their living. On the other hand, non-agricultural rural households include artisans such as carpenters, blacksmiths, weavers and potters; these people are engaged in the

rural services such as barbers, washermen and teachers. It is often seen that these people cannot have sufficient earning from their own occupations alone. Hence, a large number of people among these households sometimes adopt agriculture as their subsidiary occupation. Besides this, all the occupations of non-agricultural rural households depend primarily on agriculture. It is clear that almost all rural households in India depend directly or indirectly, on agriculture for their livelihood. “Nearly 60 percent of our total working population and nearly 80 per cent of our rural working population even today get their employment from agriculture”\(^2\). When people do not get employment and livelihood in other sectors of economy they naturally come back to agricultural sector. It is estimated that the possibility of large-scale industry in the urban sector being able to provide significantly greater employment opportunities in future is not very great. Therefore, inspite of all its weaknesses, agriculture is likely to remain the most promising and the biggest source of employment in future and also.

Further it is the source of food requirements. “The country’s 95 crore population are also met by the agriculture sector. India is now nearly self-sufficient in food grains, especially in wheat and rice, which is due to the development taken place in agriculture. The per capita foodgrain requirement in India is about 172 kg per annum, which has almost been met. But in respect of pulses and edible oil the situation is of course not satisfactory. The per capita in take of pulses should have been 25.5 kg. Per annum but it is only 13.5 kg per annum. Our main concern is that the per capita availability of pulses has come down over the years. Similarly, the per capita availability of edible oil is 6.5 kg per annum, which is also below the recommended level (14kg)”\(^3\). Even then, the agriculture is largely meeting the overall food requirement of the India’s population, through in respect of two essential sources of nutrition pulses edible oil and vegetables the situation is not satisfactory.

\(^3\) Ibid, pp.4-5.
Besides this, it supplies fodder to livestock. "Fodder to nearly 25 crore livestock is also available only from the agricultural sector"\(^4\). In this way in India, we are dependent on agriculture for country’s food and fodder requirements. Both food grains and fodder are the basis and sectional commodities for living.

Regarding contribution to industrial development, agriculture plays vital role. It contributes to industrial development in two ways one by providing necessary raw materials to the industries and second, by purchasing the goods produced by the industries. “Many industries in India depend on agriculture for their raw materials, for example jute industry (raw jute), sugar industry (sugarcane), textile industry (cotton), edible oil industries (oil seeds) Gherkin industry (Gherkin cucumber) plantation industry,(fruits and vegetables) chilly industry etc. Similarly, demand for goods of many industries comes basically from agricultural sector\(^5\). For example tractor industry, agricultural implement industry, chemical fertilizer industry, pesticide industries, transport industry etc. Beside this, having the largest share in national income and employment the demand for goods of other industries and purchasing power of the people also depend mainly on agriculture.

Turning to its contribution to government revenue, the contribution of agricultural sector is quite large. The state governments in our country get average large amount every year as their land revenue. Besides, this, the revenue receipts from other taxes are also increasing with the growth of agriculture.

With regard to its role in the field of trade both in India’s external and internal trade, agriculture has a big place. "Agriculture makes an important contribution to India’s export trade also. Important items of agricultural exports are coffee, tea, oil cakes, tobacco, cashew nuts, spices, raw cotton, rice,


\(^5\) Sidhu A.S. (2001) "Current Status of Vegetables Research in India" Punjab Agri-University, India. [Rediff.com India Limited]
fruits and vegetables like gherkin and chillies, etc. The main trade items between different regions of the country are also agricultural products such as food grains, pulses, oilseeds, gherkin, chillies, fruits and vegetables etc.

Thus, from all points of view agriculture occupies an important and central place in our economy, which is why it is said that the growth of Indian economy primarily depends on the growth of agriculture.

The farmers generally produce two types of crops, viz., food crops and non-food crops (commercial crops). "The study of these two crops would reveal the stages of agricultural development and the nature of economy which is generally observed that the larger the area under non-food crops, greater will be the development, while balanced cropping means to grow both food and non-food crops with equal importance and weight age".

India has recently taken a bold step towards achieving self-sufficiency in food grains. However, self-sufficiency in the true sense can be achieved only when each individual in the country is assured of balanced diet. Varied agro-climatic conditions in India make possible to grow a wide variety of vegetable crops all the year round in one part of the country or another. India can claim to grow the largest number of vegetable crops compared to any other country of the world and as many as 61 annual and 4 perennial vegetable crops are commercially cultivated. Some of the important horticultural (vegetable) crops grown are solanaceous, brinjaoil, tomato, chillies, sweet pepper (capsicum) bulbous vegetable, onion, garlic, cucurbits, long melon, musk melon, snap melon, water melon, cucumber, gherkin, summer squash, bitter gourd, bottle gourd, pointed gourd (parwal), ridge gourd, round gourd, snake gourd, sponge gourd, wax gourd (cash gourd) root vegetables, carrot, radish, turnip, leguminous vegetables, broad bean, cluster bean, cowpea, dolichos bean, French bean, peas healthy vegetables, Amavathus, beet leaf, fenugreek, spinach, salad vegetables, lettuce perennial, vegetables, drumstick, curry leaf,

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agathi etc. These horticulture crops play a vital role in the process of economic development in general and industrial development in particular, as these crops being labour-intensive, generate employment opportunities for the rural population in the country. These crops are more profitable when we compare these crops to other crops help in maintaining ecological balance through increased biomass production per unit area. "India is the second largest producer of vegetables in the world next to China, with an estimated production of about 50.09 million tonnes from an area of 4.5 million hectares at an average yield of 11.3 tonnes per hectares. India share about 12 per cent of world’s output of vegetable from about 2.0 per cent of cropped area in the country"\(^8\).

The Karnataka has rare distinction of passing to different agro-climatic zones in which almost all the crops, fruits and vegetables can be grown. "Agro-products are grown in an area of 107.90 lakh hectares, whose production for 2001-02 touched 92 lakh tonnes. While horticultural crops are grown in 14.27 lakh hectares, the production is 114.90 lakh tonne during 2001-02. The total gross annual income from horticulture is Rs. 7.152 crore which is 40 percent of the gross annual income from combined agricultural sectors. As for as exports are concerned, farm sector contributes 13.61 per cent (Rs. 1749.22 crore) of the state total exports of 23000 crore worth of food exports achieved by the country during 2001-02. Karnataka has contributed about 10 per cent with coffee accounting for the major share at about Rs. 800 crore followed by cashew kernel"\(^9\).

India’s exports of the gherkin are steadily growing about 11436854 tonnes of gherkin with o Rs. 11781.68 lakhs were exported during 2000-01. This production has been increased to 11646864 tonnes of gherkin worth of rs. 12880.68 lakhs 2001-02, production was 114375400 tonnes of gherkin worth of rs. 113910.21 lakhs in 2004-05. "The total export of dry chilli from India during 2000-01 was 62447.68 tonnes valued Rs.22973.30 lakhs, which has

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\(^{8}\) Sidhu A.S. (2001) "Current Status of Vegetables Research in India" Punjab Agri-University, India. [Rediff.com India Limited]

stood up to 86575.34 tonnes, valued Rs, 36687.34 lakhs during 2003-04 over the years exports were increasing at the faster rate. It is estimated that during 2004-05 about 138000 tonnes of dry chilli with value of Rs.49900.00 lakhs can be exported from India"10.

Since India's agricultural productivity is very low and Indian farmers are poor, the agriculture in India has to be thoroughly reorganized and improved in order to grow more and attain self-sufficiency in food for the increasing population and produce more surplus for exports to derive the benefits of globalization. Besides attaining self-sufficiency in food, it must also raise the level of income of the farmers. Gherkin and chilli are very vital and dynamic instruments for increasing agricultural production, because gherkin and chilli are vegetable foods and commercial crops as an all-weather vegetables. Their cultivation and marketing create more than three-times human labour employment than the other crops. Gherkin being a short duration crop, it fits well in the cropping pattern of the farmers and fetches high returns per unit of area and time. Similarly, dry chilli is also a commercial crop.

1.2 SIGNIFICANCE OF THE STUDY

Gherkin and chilli are similar in their nature, i.e., both are commercial type, exportable, and horticultural, and at the same time these crops are commonly grown in any area. Hence, the study of social and economic impact of cultivation of these crops is very significant.

Gherkin: Gherkin is an important source of earning foreign exchange that is needed for importing capital goods for the rapidly expanding industrial sector. Though gherkin was introduced into India from outside, its cultivation extended swiftly over the entire country. Today India has emerged as one of the major countries growing and exporting gherkin on large scale.

In this part an attempt is made to highlight the importance of gherkin in terms of area, production at the national, state and district levels, socio-

10 Spice Board, ministry of Commerce, govt. of India, 2001-05.
economic profile of sample farmers, cost analysis conceptual foundations, cost of cultivation, gross returns, net returns problem in the cultivation of gherkin.

The European gherkin is not a distinct species of cucumber but a small form of cucumber that is also known to be picking cucumber. However, in production and trade, the term, “gherkin” refers to any immature cucumber fruit as usually pickled.

Gherkin pickled is a favourite lunch substitute in western-countries. The gherkin fruit is being used to treat the wounds in liver stock and antifeedant face cont in granaries. In Africa the plants have wide medicinal use. Palmitic acid, stearic acid, oleic, lionlenic and lionlenic acids, were isolated from fruits of cucumber angaria < var longipes. The juice proved highly toxic and the fadicaly was reduced, if the juice was boiled or by boiling the juice.

Gherkin is one of the short duration crops. “It is crop of 85 days crop to reach harvesting level. Productivity would be approximately 3 to 4 tonnes per acre and the best months used to be from February to march then from june-august. It is a good example of agricultural extension, each company has an agri extension team consisting of 5 to 25 experts that identify farmers and they enter into a buy back Gherkin with them”11. They supply seeds, pesticides, chemicals and some time even fertilizers.

“The Indian gherkin industry has maintained an average annual growth of over 20 percent during the last few years. After Srilanka failed to meet the demand for gherkin from North America, Spain, Italy, France, Holland and Japan, then 80 percent of our gherkin is exported to European countries and 20 per cent to North America”12.

Chilli: Though chilli was introduced into India from outside, its cultivation has been extended swiftly over to the entire country. Today India has emerged as one of the major countries growing and exporting chillies on large scale.

In this part, an attempt is made to highlight the importance of chilli in terms of area and production at the national and district levels, socio-economic profile of sample farmers, production-cost analysis conceptual foundations, cost of cultivation, gross returns, net returns and problems in the cultivation.

Chillis are extensively cultivated both as a garden and filed crop. Amongst the minor crops of India, chilli scores position and among the various spices grown in the country, chilli occupies a unique place.

Chilli, known to Indians only three centuries ago has become an important and indispensable ingredient of Indian food. Red pepper or chilli are well known for their pungently colour and flavour, without chilli the daily diet and rare occasions of celebrations small dry, dull and incomplete, food becomes rich juicy and tasty with the use of chillies.

1.3 GHERKINS AND CHILLI CULTIVATION: HISTORICAL PERSPECTIVE

Gherkin: It is one of the oldest cultivated vegetable crops. "Gherkin (cucumis angurial) is native of Asia and Africa where it was grown for food at least 3000 years ago. It was introduced to china in 1000 B.C and into France in the ninth century". The early settlers before Columbus grew it and other cultivators introduced it to India. The gherkin is well established in tropical, central and south America and grown widely in the West Indies. The West Indies gherkin is also called small cucumber.

Chilli: This is indigenous to Mexico, Central America, West Indies and South America. The plant was found growing wild on the banks of Amazon and in Eastern Peru in South America.

"Columbus is said to have brought and introduced chillies into Europe. By 1650, the cultivation and the use of chillies, as condiment and spices had spread all over Europe; Africa and Asia. The crop has of considerable importance in southern Europe. Portuguese introduced chilli to India from

West Indies, in the middle of the 17th century. Within a short period of three centuries, it spread all over India\textsuperscript{14}. And now India has emerged as one of the major countries, growing chillies. Chillies are known by different names in different languages in India.

Capsicum pepper or chillies are cultivated in a large number of countries. Some of the countries, producing hot type of chillies are India, Japan, Mexico, Nigeria, Uganda, Indonesia, Thailand, Pakistan, China, America and Turkey. The countries mainly producing mild varieties are Spain, Hungery, Portugal, Mexico, Cchili Moroocceo, Turkey etc. Chillies are also grown in United States of America to some extent.

1.4 NUTRITIONAL VALUE OF GHERKIN AND CHILLI:

One of the most important tasks facing the country is that of eliminating malnutrition among the vulnerable sections of the society. Gherkin cucumber is a good source of nutrition for the rich and poor alike. It has a special value as a food. It has a rich source of water, energy carotene and moisture.

Nutritionally, cucumber has little to offer the vitamin a content, compared to chilli and other vegetables. It is nil if the green rind is removed, vitamin content is moderate relative to other salad crops. Cucumber may develop noticeable bitterness of the skin due to a accumulation of terpenes (cucurbitacin). This accumulation is controlled genetically, at least in part and excessive soil Nitrogen will increase bitterness.

Chilli: Chillies are extensively cultivated both as a guarden and field crop. Amongst the minor crops of India, chillies score pre-eminent position and among the various spices grown in the country. Chillies occupy an unique place, it is known to Indians only three centuries ago has become an important and indispensable ingredient of Indian food. Red pepper or chillies are well known for their pungency colour and flavour. Without chillies the daily diet and rare occasions of celebrations become dry, dull and incomplete. Food becomes rich, juicy and tasty with the use of chillies.

\textsuperscript{14} Hosamani M.M. (1993) "Chilli", Published by Bharat Photo Offset Works, Dharwad, pp. 145-55
Chillies can be green or ripened red and both are utilized, in various forms, for various purposes. The dried one is most commonly used in all curries, soups and salads and other preparations, after breaking it up in small pieces or converting into powder. In India, use of chilli is common to all sections of population in their daily diet though the quantity of consumption differs. Green chillies are eaten raw with meals and are used in preparing “raw chutney” vegetable salad and even with dry chillies for flavouring and colouring curries etc. Poor who generally eat their bread with salt, green chillies and onion consume a major portion of green chillies.

Chilli sauce prepared from decoction of the chilli fruit in salt water or vinegar is also consumed by some section of the population. Dehydrated, curd salted chillies, which can be preserved for over six months, is a favourite dish in south India, dry chillies are mainly used for, pickles, papads, foods, curries, sauces, chutneys and other preparations because of its pungency, colour and taste. The varieties, which have thick pericap, less seed content and low pungency are preferred in the preparation of Mirchi Bhaji. Part of the chillies produced is powdered and sold to cater to the requirements of commercial establishments like hotels, restaurants and urban households. People generally prefer local varieties to others for use. Even there, pungency is the most important deciding factor in the selection of the chillies for use, followed by flavour and colour.

“Chillies form an important source of vitamin “C” i.e. Ascorbic acid. In ripe chillies the vitamin “c” content has been found to be much higher than in tomatoes. Besides being rich in vitamin ‘C’, chillies are also sources of vitamin ‘A’ and ‘B’ to some extent”15.

Medicinal value of chillies is of no mean measure. Mostly they are used in the preparation of indigenous medicines Medicinally chillies have been used, internally, in the past, as cures in stomachaches, carminatives and stimulants, aiding digestion and correcting digestive disturbances. It is also used for

curing various ailments including dropsy, collie, diarrhea, to ethane and black vomit. Externally, they have been employed as a counter-irritant to cure rheumatism; modern usages of the pungent capsicums. They are limited to the field of seasoning of food items it is also used in the manufacture of gingerale and ginger beer.

Recently, it has been discovered that oil called ‘oleoresin’ can be extracted from the chilli fruit with the help of solvents, oleoresin extract has varied uses. It can also be used in the manufactures of meat and sausage products, salad dressing and other processed food. Use of oleoresing is popular in pharmaceutical industry, where its burning effect is still used for the relief of skin irritation and muscular pain. Recently it is used in cosmetic industry as well. Thus a minor commodity “chilli” has major advantages for the place of Mexico, Chili Morocco, Turkey etc. Chillies are also grown in United States of America to some extent

1.5 STATEMENT OF THE PROBLEM:

Gherkin and chilli are important horticultural crops grown in India. Both vegetable crops are being cultivated on commercial venture and which requires huge capital skill, efficient management, timely showing, harvesting, and marketing of gherkin and chilli growers, like other cultivation. These farmers will have to face many problems, right from sowing to “cost of production” and cost of marketing. Benefits derived must be necessarily more than the cost incurred, then only gherkin it would be helpful to the social-economic welfare of vegetable grower.

Chilli production, cultivation and marketing is plagued by many imperfections and inadequacies in India. The growers of Chillies and Gherkin are facing problem like vagaries of monsoon, lack of knowledge about modern methods of cultivation, plant diseses. They are also incapable of marketing heavy investment on cultivation of Chillies and Gherkin. These problems have led to low productivity of cultivation of Chillies and Gherkin. These problems are related to production aspects. There are some severe problems on the
marketing side too. They include lack of drying and grading facilities, inadequate storage facilities, transport, marketing charges and farmers' ignorance about marketing trend. Cultivation and marketing problems have been affecting farmers.

Government of various states has taken up measures to establish orderly marketing conditions. The position on the marketing front however has not improved inspite of the measures initiated by the government.

In view of the multiplicity of cultivation production and marketing problems "An Economic Analysis of Gherkin and Chilli Cultivation in Karnataka: A Comparative Study" has been undertaken. This study aims at throughing light on most significant problems controlling the cultivation, production and marketing of Gherkin and Chilli in the study area.

1.6 REVIEW OF LITERATURE:

In this chapter, an attempt is made to review some of the existing literature on Gherkin and Dry Chilli cultivation conducted in different countries in the world and also in India.

Some of the earlier studies on various aspects of gherkin and dry chilli have been reviewed. Review of such past literature provides a base to the structure of the present study in more comprehensives away. The review of literature is presented in the following section.

Gherkin:

Tanya Korovkin (1992)¹⁺致力 examines the social implications of Gherkin farming Promoted in small holdings in a Chilean community. The article highlights the probable advantages of Gherkin farming, such as to elevate the rich peasants into the status of peasants-capitalists rather than to cause the proletarianisation of the peasant community. This trend finds historical evidence in the agri-business spurts: the tobacco boom of the 1950s and the

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fruit export expansion of the '70s and '80s, and the resultant socio-economic and organizational development in a Chilean small-holding Community. The inherent advantages of Gherkin agriculture (not importantly the higher Returns from land) seen to have motivated Chilean farmers. Though the fruit boom helped improve the income of landless families, mitigating marginally their poverty and Insecurity, the very seasonal nature of employment, and therefore income, hardly allowed any radical change in their economic status.

Kiresur et al (2002)\textsuperscript{17} in their paper “Gherkin farming - An Opportunity for Small and Marginal Farmers in the context of Trade Liberalization”, brings out the true picture of Indian agriculture in general, and the exact position of small and marginal farmers in particular. They have highlighted several mismatches in Indian agriculture vis-à-vis the agriculture scenario of developed countries though they concede that Indian farmers are participating and competing with their overseas counterparts in marketing agriculture commodities. They recommend Gherkin farming in view of its advantages to both the farming community and Gherkin as one of the better options for fulfilling the objectives of the Liberalized trade Regime.

Singh Sukpal (2000)\textsuperscript{18} looks into the role of Gherkin farming in agricultural diversification and development in terms of its practices and implications for producers and the Punjab economy. The paper focuses on the nature of Gherkins, studies the perceptions of both the farmer and the firm of the working of the Gherkin system and its effect on the local economy. He has highlighted the summary of the studies on 12 Gherkin farming “helped farmers for the better, gave more reliable incomes, generated employment especially for women, provided new skills in farming, and did away with the patron-client relationship between large and small producers” (Glover and Kusterer:1990, Fulton and Clark: 1996). Gherkin farming has several disadvantages too: poor


extension services, low prices to farmers due to haphazard pricing of the produce, inherent higher risk to cultivators, frequent delays in payment (Glover and Kusterer: 1990, Ghosh: 1994), weak bargaining power of farmers, sole dependence on companies for inputs as also credit (Fulton and Clark: 1996), over-exploitation of ground water and the threat of the environmental (Siddique: 1998) and finally, the fact that companies often move to new pastures (virgin plots) to exploit land and water resources at the least cost, (Torres: 1997) leaving former cultivators high and dry. One of the reasons for Gherkin farming coming into existence in India was the Land Ceilings Act, which stipulated “agribusiness firms cannot own and cultivate land for their raw materials requirements. To overcome the difficulties encountered in procuring from the open market, especially in perishables”. Therefore, the only option for agribusiness firms was to go in for Gherkin farming to safeguard their interests. The study reveals that for the success of Gherkin farming, there is need for institutional and organizational innovations in the rural sector. Gherkin farming should be under scrutiny from time to time; wide publicity should be given of the land available for Gherkin farming competitiveness; legal protection to be provided to growers under Gherkin farming and the Fair Trade Commission should monitor Gherkin farming practices on a continuous basis.

Behrooz Morvaridi’s (1995) article on “Gherkin farming and environmental risk: The case of Cyprus” examines the environmental degradation and productivity decline occasioned under Gherkin farming in the context of citrus production in North Cyprus. The study highlights the changes in terms and conditions of Gherkin farming brought about by farmers’ access to key resources like water etc. The paper highlights the fact that only large farmers are in a position to invest in irrigation to maintain productivity, though this trend was found to be short-lived and that “corporate profits are made at the expense of long-term productivity for farmers”. Interestingly, irrigation

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costs were not included under the Gherkin farming system and these were indeed a huge burden on the growers. Timely intervention of the Transactional reparation 13(TNC) may help to avoid over-exploitation of key resources. Irrigation with saline water has caused many fruit trees to dry up rendering large areas of land unproductive; incidence of this problem was found more in the case of marginalized farmers than their richer counterparts.

Piet Konings (1998)\textsuperscript{20} while evaluating the agro-industrial enterprises and plantation labour in Cameroon, focuses on the role of Gherkin farmers co-operatives associated with Pamela, a subsidiary of the giant Unilever Company, in the southern west province of Anglophone Cameroon. A small number of large producers of palm oil dominate the co-operatives under the guidance of the Pamela company management and the State. In the early 1980s when the continuance of the company was at stake, farmers themselves started a co-operative. While renewing the Gherkin with the above company, farmers demanded more autonomy vis-à-vis the company whose role was sought to be restricted to providing nurseries, transport and processing facilities.

Olesen’s (2003)\textsuperscript{21} study on “contracting production of peas” examines the Gherkin between farmers and the processor viz., Denis Co, Foods who had 50 years of experience behind them and have 4,100 ha. The production of peas by farmers was in conformity with the exact requirements of consumers – an objective realized through centralized decision-making. The study focuses on “general problems known from Gherkin theory such as hold-up, moral hazard, risk sharing, and discrimination”, and proceeds to suggest that a trade-off between these problems is found in the design of Gherkins. It was evident that the terms and conditions of Gherkins had undergone some 1 4 modifications, and it is probable that cultivators were able to enhance their bargaining power through negotiations with the processor.


A study by Dileep et al. (2002)22 on "Gherkin farming in tomato: An economic analysis" focuses on the cost, returns and resource use efficiency, and the effect of Gherkin farming on price, production and income of farmers as also yield variation, marketing costs and the possible losses to farmers. The study was conducted in the Ellenabad block of Sirsa district in Haryana, where the Gherkin system has been in practice since 1989. Two processing firms, viz., Hindustan Lever Limited (HLL) and Nijjer Agro Foods Ltd (NAL) were studied. A sample of 50 Gherkin farmers were interviewed (30 under HLL & 20 under NAL), out of 125 tomato rowers under the Gherkin system, 50 non-Gherkin farmers were also interviewed during 1999-2000. The study reveals that the processing firms preferred large farmers for Gherkin farming. The cost incurred, yield and gross return obtained by Gherkin farmers were almost double compared with that of non-Gherkin farmers. The uncertainty over yield and price was much less under Gherkin farming. Surprisingly, the price received for tomato by non-Gherkin farmers was found to be higher than that of Gherkin farmers. Transportation cost was a major component of marketing costs. Farmers demanded that the Gherkin between the farmer and the corporate should be enforceable by law; it is necessary through fresh legislation by the government. Over usage of inputs like fertilizers and pesticides should be brought down to ensure plant protection and to secure higher yields and farmers need to be educated in this regard. A crop insurance scheme needs to be introduced for tomato farming which induces risk due to higher incidence of diseases and pest attack besides possible adverse climatic conditions.

Clapp (1994)23 examines the unequal representation of Gherkin farming in Latin America. This could be because of this politics of representation, which is the prime reason for the social relations of Gherkin farming. He suggests that an alternative representation of Gherkin farming, which focuses on the contradictions of wage labour, has an indirect control over labour and an

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uncertain supply to farmers and that lead to disguised proletarianisation. The politics of representation can be absolved through regulating ‘the moral economy of the Gherkin’ between the company and peasant community. 15 Gherkin farming has taken firm roots and is expanding in the agriculture sector of developed countries, whereas, in developing countries the agro-industrial integration is still to consolidate despite having made initial inroads (Watts: 1992). He argues that the “rural sector in the periphery is less a terrain of independent peasant production and commodity circulation through trade - or indeed of the state or direct foreign investment in estate production – than a crucible in which innovate forms of social integration and agrarian corporatism that link growers to state and private capital is forged”. Agriculture in Punjab has witnessed a second revolution, one of the prime promoters of it being Buta Singh Khullar who is among the growing band of rebels. It was his vision that led to crop diversification from traditional crops like wheat and paddy to the adoption of Hole, a high yielding variety. These crops ensured food security in the country to a large extent. Secondly, chief minister Amerinder Singh’s decision to appoint a committee headed by S.S.Johl, who was earlier chairman of the Agriculture Costs and Prices and also Vice-Chancellor of Punjab Agriculture University, to take-up promotion of crops other than wheat and paddy. The Johl committee report recommended that millions of acres under wheat and paddy needed to be brought under other crops, and suggested a Central Government assistance of Rs, 1,280 crores to the state government for ‘crop adjustment programme’, whereby Rs 12,500 per hectare was to be given to farmers to adopt crop diversification (to avoid risk). Similar demands were put forth by other states, which resulted in the above suggestion not being accepted. Another remedy put forth by the committee was to adopt Gherkin farming to reduce the burden on Punjab Agro Industries Corporation. The book on “Green Revolution Reconsidered” highlights the need for crop diversification. Several other researches, too, have endorsed the above pinion. Since then, Gherkin farming has expanded considerably - from 12,000 acres in 2002-03 to 25,000 acres in 2003-04. (Range Sarkar: 2004).
With this unique Gherkin farming experiment, Punjab is trying to develop a diversified portfolio of crops that can compete with wheat and paddy. The high yielding varieties of oilseeds such as Hole can give higher returns of Rs 3,300 per acre as compared Rs 10,000 from wheat. Crops grown under Gherkin farming are generally short duration crops, while some are traditional crops.

Rangi and Sidhu’s (2003) paper, “Gherkin Farming in Punjab”, examines some of the policy issues related to Gherkin farming in the Punjab State Scheme. The data was culled out of the report of Punjab Agro-Food grain Corporation Ltd, Chandigarh, and covers many advertisements in the newspaper on Gherkin farming as also responses of the few Gherkin farmers who were interviewed. Again after a gap of 16 years, the S.S.Johl committee has been reconstituted. The committee recommended that in 10 Lakh hectares now under paddy and wheat crops, crop rotation should be introduced to replace paddy/wheat by crops that consume less water to check the adverse effects on the ecology and also to meet the demand for such produces in the country. “Vegetable crops are more labour intensive and can provide 4-5 times more employment opportunities in rural areas, as compared with wheat and paddy crops”, says the report.

Sharma, Gavrah and Jain (1997) reported that the cropping intensity was higher on vegetable farms (227 percent) than the non-vegetable farms (165 percent) due to assured source of irrigation in vegetable farms. On non-vegetable farms, only canal irrigation (protective irrigation) facility was available. Kharif crop accounted for 44 percent and 61 per cent of the area in vegetable and non-vegetable forms respectively. The reasons allocated for vegetable crops are less due to insufficient ground water in tube wells in the summer season. The average cost was higher for tomato and paddy and lowest for gram and lathyrus and vegetable and non-vegetable forms respectively. The costs of vegetable crops are four to five times higher than on non-vegetable 

corps. Net return and benefit cost ratio were higher for chilli, followed by gherkin cucumber and cauliflower on vegetable farms. Gram, and paddy crops gave maximum net return and benefit cost ratio on vegetable farms. The average benefit cost ratio on vegetable farms was lower than non-vegetables farms, as the vegetable growers did not get remunerative price for their produce in the market. The net farm income realized by the vegetable growers was more than two and half times that of non-vegetable growing farmers.

Bhalera, Sant Kumar and Prasad (1992)\textsuperscript{26} Studied the input use efficiency of seed fertilizer, insecticides, human labour and irrigation with the help of Cobb Douglas production function fitted to the data for nine vegetables, rainfed and irrigated groundnut and mixed and pure mustard. The efficiency of input use is studied by estimated Marginal Value of Productivity (MVP) marginal cost (MC) ratios. The results indicate negative values for labour for all crops except mustard and over use or misuse of seed, fertilizers and irrigation for some of vegetable. MCP-MC ratios, which are mostly greater than unity in vegetables and irrigated groundnut for most of the inputs, indicate their efficient use and less than unity for some of the vegetables, rainfed groundnut and pure mustard. It indicates less than optimum use policy prescriptions were suggested to concentrate on timely and adequate supply of these inputs including technical know-how at reasonable cost.

A study by Ratna Reddy (1993)\textsuperscript{27} on size productivity relationship between farm size and productivity holds well in majority of the regions, which was mainly due to the higher labour intensity on small farmers and also due to intensity of material input to some extent. Higher labour intensity on small farmers are due to the availability of cheap family labour and also the use of more hired labour.


As far as net returns to farming was concerned, the small farmers were not able to convert their output advantage to higher net profits due to their higher total expenditure especially in the case of local paddy. This is due to the reason that small farmers try to maximize their output, while large farmers try to maximize profits. The reasons for this may be (i) small farmers produce more in order to meet the higher food requirements of a large family and (ii) they may not be able to reduce their total expenditure by adopting labour substituting technologies like tractors as they cannot afford.

Green Agro Pack (2000)\(^{28}\) made an attempt to examine the per acre input of Karnataka. The total cost which consisted of establishment cost and annual maintenance cost of gherkin cultivation accounted to Rs. 7000 per acre. Human labour, manure, fertilizers and pesticides are the important item of expenditure. The total yield of gherkin was observed to be 23.07 tonnes per acre, while gross returns per acre were Rs. 17302.50. It is based on the total returns and total costs, the output input ratio worked out to be 2.48.

Hanumanthappa (1996)\(^{29}\) studied the costs and returns from gherkin production in Bangalore district by the survey method, observed that the cost of production was influenced by the size of the vine plantation, spacing age of the gherkin (vines) intensity of labour input.

Hinton (1989)\(^{30}\) reposted that the UK vegetable market comprises tomatoes, cucumbers and lettuce as the main vegetable crops (celery piraguas) and minor commodities such as a borigines, peppers and Chinese leaves. The author concluded that tomatoes dominate the group with an annual apparent consumption per head of 7 kg, lettuce is next in importance, having an annual consumption of over 4 kg per head, and small cucumber followed with an annual consumption of nearly 2 kg per head. The three salads are all characterized by large variations in seasonal consumption. The lowest in

autumn and end winter and the highest in spring and summer, about the district seasonal profile is in part determined by supply. Demand and supply trends in the UK market are assessed in detail, taking into account both domestic production and imports from other EC countries. Two major market determinants identified are product quality and timing of supply.

Jiang Shatad (1996)\textsuperscript{31} in his study of experiments showed that increasing the stand density of maternal plants and the number of seed gherkin plant could increase the yield of hybrid seed. The optimum density proved to be 45000 plant/ha. If fruits growing on the lateral branches between nodes of a 14 of the main steam were retained as seed gherkin cucumbers, the yield of hybrid seed could be increased with no loss of seed quality.

Bolots Kikh and Leivi (1987)\textsuperscript{32} Obtained highest yield of gherkin cucumber 128.2 tonnes/ha and economic return were observed after applying 90 kg Nitrogen, 60 kg each of P\textsubscript{2}O\textsubscript{5} and 40 tonnes FYM /ha at a plant density of 15000/ha.

Kynel and Jaso (1965)\textsuperscript{33} in a sandy loam soil of southern moravia, the highest yield with the good proportion of top quality picking cucumber fruits was found with pre-sowing application of 68 or 102 kg N.104 or 156 kg P\textsubscript{2} O\textsubscript{5} and 108 or 162 K\textsubscript{2} /ha. The treatments produced yields of 22,457 to 24,804 kg/ha.

In light soils, a high rate of N (100.90 kg /ha) was found to produce a yield of 448 bu/ha compared with 302.63 bu/ha control of agunivicious gherkin cucumber. (Nicklow, 1965)\textsuperscript{34}

Supplementary banded phosphorus applied to pickling gherkin cucumber cv. Shaahal 22-increased yield on the day of maximum yield by 45

per cent compared with control. Harvesting also three-day earlier and treated crop contained higher proportion of smaller fruits (Nerson 1980)\textsuperscript{35}

Navarro and Locassio (1980)\textsuperscript{36} who reported higher yield with ordinary super phosphate compared with diamonium phosphate or concentrated superphosphate. They found yields of 15.8, 21.2, 20.3 and 19.9 tonnes/ha with 28.56 and 112 kg P\textsubscript{2}O\textsubscript{5}/ha respectively.

H.C. Padmaraj Jain (2002)\textsuperscript{37} has been made a study on transaction of gherkin in agriculture cultivating in Chikkamangalur district. It is found that the total yield per acre was approximately Rs. 1.5 lakh. It was found that prices play an important role in guiding the farmers in allocation of resources. The study also reveals that the output and area under gherkins are dependent upon its harvest prices lagged by one year.

The Sterling Agro Company. Director, Pandey (2001)\textsuperscript{38} found that the biggest advantage of the farmers is that they get their pre-determined price for their produce once in every two and half months. Every farmer earns an average Rs. 7 per kg. The smaller is the gherkin higher is the value in terms of money. It was observed that "A good farmer could grow up to 4 tonnes per acre. His net profits at the end of harvesting, after taking care of all costs would be around Rs. 10,000. All that is needed is adequate water.

Santkumar, Dixiy and Chandro Sen (1997)\textsuperscript{39} attempted to identify the constraints in increasing the productivity in vegetables and suggest strategies to raise output and improve the quality of vegetable required for the national and international markets. The total area under vegetable is hardly 2 to 2.5 percent of the total cropped area. It has been observed that there is a wide gap in the


productivity of vegetables at the state level. The productivity can be increased by the application of new hi-tech in the cultivation of vegetables. The major constraints which hinder the vegetables production are low priority in planning and non-availability of reliable area, production and productivity statistics, low productivity owing to low supply of inputs such as quality seeds, plant protection chemicals and in efficient marketing systems involving huge post harvest losses.

**Chilli** : studies on cultivation of chillies are limited in number. They relate to various aspects of chillies like cost of cultivation, output, return, manpower, price structure, cost of marketing, etc. Research papers, reference books, dissertations, published and unpublished doctorate these constitute the main literature available on the subject.

Raj Reddy (1995)\(^40\) has made a study of marketing of chillies with special reference to Guntur, Warangal and Ananthpur districts in Andhra Pradesh. In this published doctorate research study, Raj Reddy has made an indepth analysis of cultivation practices of chillies assembling and distribution, grading packing and transportation, price structure and the role of regulated markets in the marketing of chillies. The study covers ten years period from 1975 to 1985. Based on a sample survey of farmers and merchants the study provides an insight into the marketing problem confronting this important primary product which has good potential for domestic and export sales. The researcher has analysed all the aspects of the marketing mix pertaining to marketing of red chillies. The findings have a practical value and go a long way in improving the marketing prospects of important spice in the country’s economy. This study has a bearing on the analytical approach in this research work.

Yeladhalli (1980)\(^41\) has made a study of production and marketing of dry chillies in Dharwad district. He has made an elaborate, analysis of cropping

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pattern, growth rates, costs return and profits. His analysis of relationship between market trends and prices of chillies is very relevant. Equally analytical is comprehensive backed by empirical evidences in the leading chillies markets in Dharwad district. The author has made use of advanced statistical techniques to derive precise inferences. The author has made an attempt in providing a comprehensive picture of issues of marketing of dry chillies is quite useful for the future researchers. However, his reflection on the role of intermediates in the marketing of dry chillies seems inadequate. The present study has tried to overcome this deficiency.

Mishra, Vishwakarma and Rawat (1999) have made a study of production and marketing of chillies Azamgorh district of Uttar Pradesh. The authors have made study with two main objectives (1) to work out the cost of cultivation and cost of production of chillies and (2) to study the price spread in the marketing of chillies. The findings of the study are quite revealing, the average cost of inputs for marginal farm was Rs. 22,782.67 per hectare while the average cost of input for small and medium farms were Rs. 22,498.79 and Rs. 21,528.87 per hectare respectively. The overall average cost of farm inputs was Rs. 22,439.02 per hectare. The return from the production of chillies was 11 quintals for marginal farms 13 for small farms and 15 quintals for medium farms. The average yield was 13 quintal. The gross income from marginal, small and medium were Rs. 51,785.00, Rs. 50,928.91 and 49,751.79 respectively. The average gross income was 50,957.45 per hectare. Net incomes from the respective size of farms were Rs. 29,002.33, Rs.28430.12 and Rs. 27,902.92. The average net income was Rs 28,518.45 per hectare.

The price spread for the sale of chillies, studied by the authors, reveals that the producer received 98.82 percent of the consumer price when producer sells to consumer. The price received by the producer is 90.85 per cent of the consumer price when producer sells to the retailer and then to consumer. While the price received by the producer is 74.17 per cent when the chillies are sold to

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a consumer through producer wholesaler-retailer-consumer channel. The study is a simple survey in a chillies market in Andhra Pradesh. Such studies have a good bearing upon similar studies like the present one and are useful to future researchers.

Murthy N.S.R (1998) has made a study on “chillies-quality improvement at farm level”. He has pleaded for quality improvement at farm level keeping in view of the quality conscious consumers in the sophisticated markets of Europe and the USA. He has suggested to adopt mechanical drying as it would reduce the drying period and would help retaining the colour of the red chillies. He has proposed for scientific grading and packing of chillies particularly for export market.

Suresh (1998) has studied on chillies international markets and Indian Exports is quite revealing and has practical significance to exporters of dry chillies from India. He has highlighted the competition from China to India exports of chillies and pleaded for the necessary improvement in the marketing efficiency of India for exports. He has pleaded for diversifying exports of different verities and makes of red chillies and emphasized the importance of exporting oleoresin to western markets where there is good demand for the same.

Naik, D and Patnaik S. C. (1984) in there study on the impact of prices on area, output and productivity to potato in Orissa and concluded that the price played an important role in guiding farmers in the allocation of resources. The growth rate of area output and prices of potato were statistically significant. The study also revealed that the output and area under potato were dependent upon its harvesting prices lagged one year.

Patnaik and Naik (1987)\footnote{Patnaik S.C. and Naik D., (1987), "Production and Marketing of Groundnut in Orissa". \textit{Indian Journal of Agril. Marketing}, 11(2) : 69 – 79.} in their study have examined trends in area, production and yield of groundnut between 1971-72 to 1982-84. The data referred to the year 1981. The growth in area and production of groundnut during the study period were statistically highly significant. But the growth rate in yield was found to be negatively significant.

According to Sharma (1988)\footnote{Sharma J.L., (1988) "Production Performance of Punjab Agricultural-District Wise Analysis". \textit{Agricultural Situation in India}, 43 (8) : 675 – 680. Dept, of Extn. Education, Punjab Agril. University, Ludhiana, Punjab, India.} the growth rates of area, yield and production of major crops (groundnut, sugarcane, cotton, paddy, wheat, maize, rape seed and mustard) were collected at the district level in Punjab for the period from 1965-66 to 1984-85. The cropping pattern had witnessed a major shift in favour of wheat in rabi season and paddy mainly at the expense of green rape seed. While the area under paddy had increased at the expenses of maize, groundnut and cotton, yields increased significantly in most districts for wheat, paddy and sugarcane. Production problems and suggestions for increased productions are noted for each crop.

For Naik and Mohanty (1991)\footnote{Naik D. and Mohanty B., (1991) "A Anatomy of Production and Marketing of Groundnut Oil in Orissa". \textit{Indian Journal of Agril. Marketing}, 5(1): 51- 60. Directorate of Research and Development of Agril. Economics - Orissa.} the objectives of this study were to the trends in area, production and productivity of groundnut in different districts of Orissa. The growth rates in area and production of groundnut during the period from 1970-71 to 1987-88 were statistically highly significant in all districts except Karaput. Even though, groundnut yields in Orissa was the highest in India during the year 1985-86 to 1987-88. The growth rate in yield over the years was negative and non-significant.

Raju and Luckose (1991)\footnote{Raju K.V. and Luckose C.K., (1991) 'Trend in Area Production and Impact of Chillies from India". \textit{Agricultural. Situation in India}, 45 (11) 767 – 772. Dept, of Applied Economics, Cochin University if Science and Technology.} in their study have analysed the trend in production and yield per acre of chillies and examined the relationship between the price changes and acreage. It also evaluated the export potential of chillies.
with support of relevant statistics between 1970-71 and 1987-88. Area under cultivation, production and productivity had increased. The government is urged to create an economic environment conducive for greater production of chillies.

Studies on Costs, Returns and Profit

Patil and Acharya (1974)\textsuperscript{50} found in their study per hectare yield of sugarcane and banana decreased with an increase in the use of inputs. The net profits were found to be more in the case of sugarcane than in the case of banana on account of stable and higher prices for sugarcane.

Lohar and Diskalkar (1978)\textsuperscript{51} stated that, large-scale cultivation of dry chillies would reduce the cost of production and increase the marketable surplus. They recommended that more market yards should be established at the taluk level to reduce the cost of marketing. They also emphasized the need for separating fresh and old stocks of chillies to get better prices.

Rameshkumar et al. (1993)\textsuperscript{52} studied the economics of hybrid tomato production in Anekal taluk of Bangalore district and found that the total cost of cultivation (including marketing cost) worked out to Rs. 593227.66 per ha. The farmers on an average received a gross return of Rs. 154437.50 from tomato crop per hectare after accounting for all costs. The net returns per hectare were of the order of Rs. 95209.84.

Studies on Adoption and Recommended Technology

Dudani and Sethi Rao (1969)\textsuperscript{53} reported that only 11.23 per cent of the farmers had adopted seed rate, 12 percent adopted spacing while over 60 per cent had no knowledge about the plant protection chemicals to be used. Only about 24 per cent of the farmers had applied recommended levels of fertilizer.

\textsuperscript{52} Rameshkumar S.C., Suryaprakash S., Nanjareddy C. and J.V. Venkatram, (1993) "Economic Analysis of Hybrid Tomato Production in Anekal Taluk, Bangalore District".
Reddy and Lakshmana (1969)\textsuperscript{54} observed that the adoption of improved seed, recommended those of farm yard manure and plant protection measures were by 100, 69.3 and 15.3 per cent of farmers in that order. They further stated and recommended seed rate was adopted by 98.67 per cent of the farmers.

Dwarkinath et al (1970)\textsuperscript{55} found that 91 per cent of potato farmers had adopted the practices of both farm yard manure and improved seeds, whereas, other practices namely, seed treatment, plant protection and fertilizer application were adopted by 73.60 and 47 per cent of farmers respectively.

Desai (1975)\textsuperscript{56} reported that out of the nine important practices recommended for potato cultivation, six of them were not adopted to a considerable extent by the potato farmers. He observed that improved seeds, seed rate and earning up were followed by all the farmers, whereas, other practices such as recommended schedule of irrigation, seed treatment, plant protection, spacing, application of farm yard manure and chemical fertilizers were adopted by only 64,42,39,9 and 20 per cent of them in that order.

Aswathaiah et al. (1976)\textsuperscript{57} reported that majority of the farmers had adopted the improved cultivation practices which involve less cash expenses or no cash expenses, such as sowing time, spacing, application of farm yard manure, weeding and earthing up. On the other hand, practices which involved cash expenses such as fertilizer application, use of weed decides and plant protection measures had been adopted by majority of the farmers.

\textsuperscript{57} Aswathaiah et al. (1976) \textit{Genetic Variability and Correlation Studies in Sweet Pepper (Cannucm L)}, Horticulture Science, p. 397.
Hallappanavar (1979)\(^{58}\) reported that in case of practices like certified seed, seed rate, further application of fertilizers and interval between irrigations, an uniform pattern of adoption behavior was exhibited by farmers of varalaxmi cotton cultivation, whereas, certain other key practices like plant protection chemicals with insecticides and fungicides and fertilizer application were adopted by the farmers of the experimental village to an appreciable extent when cropped to the farmers of the central; village.

Ansari (1979)\(^{59}\) reported that all the respondents of both the command areas had adopted the recommendation to use the certified seeds. A large majority of respondents of both the command area had adopted proper sowing time optimum seed rate, use of recommended those of fertilizer, time of fertilizer application, number of irrigations, interval between two irrigations, giving light irrigation after each picking and type of irrigation method for cotton crop.

However, certain practices were practically adopted by the respondents of both the command areas namely, use of Farm Yard Manure (FYM). Use of plant protection chemicals, number of sprayers/dusts, chemicals which control shedding of floral parts, whereas, on both other hand, poor adoption was observed regarding four practices namely, spacing between rows and seeds, overdosing excess irrigation at flowering stage, chemical weed control and deep plugging of land after the harvest crop.

Kantharaj (1980)\(^{60}\) observed that majority of sunflower growers (50) had medium adoption level of recommended practices, whereas, 22 per cent of farmers were low adopters and 28 per cent had high adoption level.


Pamadu (1986) reported that majority of the farmers had adopted the practices like sowing time, seed rate and F.Y.M. application and relatively less percentage of the farmers had followed the important practices like variety, seed treatment, rhizobium treatment, and application of fertilizer and protection measures.

Malagi S. N. (1985) reported that seed treatment; fertilizer application and use of plant protection chemical were not adopted by majority of the farmers.

Babar and Waghmore (1985) in a study conducted on onion cultivation in Maharastra with special reference to resource use and productivity in onion cultivation. They observed that the use of human labour, bullock labour and application of organic manure and fertilizers were observed to be linear and the marginal value productivity of expenditure on organic manure and fertilizer was higher than its marginal cost. So there was scope for increasing the use of organic manure and fertilizer at least unto the recommended level. The other important factor in the cultivation of onion was the human labour. The marginal productivity of which was observed to be higher than its marginal cost, implying the scope for increasing the use of human labour to the extent of optimum level for increasing level.

Partiban et al. (1989) in their study observed that the cost involved in growing the capsicum crop and the returns varied considerably between the farms. Large farms were more efficient in producing the crop. Recommendations to improve the productivity on small farms are given.

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Lavania et al. (1966) studied the marketing of Agri-produce in Eastern Uttar Pradesh during 1963-64 in five districts. The study rendered the existence of high price spread due to multiplicity of change by various marketing functions, disasters sales and a variety of malpractices. To solve this problem, they suggested the establishment of cooperative marketing societies.

Kahlon and Karam Singh (1969) studied the marketing of grapes in aboard district of Punjab and identified the following channels.

1. Producer, pre-harvest chilli, Commission agent, retailer consumer.

2. Producer, pre-harvest chilli, wholesaler, retailer, consumer.


Sriraman (1969) in his study on marketing of chillies opined that the commission agent and wholesaler were mainly responsible for the distribution of chillies. They handed about 90 per cent of the marketable surplus and the village merchants managed the rest.

Thakur D. S. and Singh N. (1971) conducted a study on market supply and prices of onion in Ludhiana and Panipat markets of Punjab. They identified the following channels.

1. Producer village, merchant/wholesaler, retailer, consumer.

2. Producer, commission agent, wholesaler, retailer, consumer.

3. Producer, consumer.

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Goverdhan (1978)\textsuperscript{69} found that in Karnataka 41.67 per cent of the chilli growers in his study disposed of their produce through commission agents and 26.67 per cent through cooperative society. Among the rest, 23.33 per cent used both commission agent and cooperative society and only 8.33 per cent used cooperative society as well as sold the produce directly to traders.

Naidu and Hanumanthaih (1988)\textsuperscript{70} made a comparison in the marketing costs and margins involved in two important spice crops viz., Turmeric and chillies and also the market efficiency of turmeric market (Duggirala) and chillies market (Guntur) A.P. A sample of 120 farmers and 10 processing industries were selected from the vicinity of each market yard for the year 1987-88. The marketing efficiency was estimated using shepherds formula. Commission agents were present at the regulated market for chillies but all were eliminated completely from the turmeric market. Marketing cost and margin were abnormally high in chilli trading and chilli powder retailers were found to be taking usually high margin. The marketing efficiency of the turmeric market was found to be high.

1.7 OBJECTIVES OF THE STUDY:

The present study has been conducted with following objectives viz;

1. To study economics of cultivation and production of gherkin and dry Chilli in the study area.

2. To estimate the input-output ratio in production of gherkin and compare it with dry chilli.

3. To analyse the pattern of growth in productivity and production of gherkin and dry chilli.

4. To identify the marketing channels for gherkin and dry chilli.


5. To analyse the problems involved in cultivation and marketing of gherkin and dry chilli.

6. To suggest remedial measures for the improvement of production and marketing of both gherkin and dry chilli in the country.

1.8 HYPOTHESES:

The following hypotheses have been formulated for the purpose of testing them in the light of the empirical data collected for the present study viz;

1. The farmers derive profits by the cultivation of gherkin and dry chilli, (H1)

2. The gherkin cultivation comparatively more or less profitable for cultivators than dry chilli. (H2)

3. Both the crops will enhance the economic prosperity of farmers. (H3)

1.9 METHODOLOGY OF STUDY:

To evaluate the objectives of the study, a multistage random sampling method was adopted. In the first stage two talukas were selected, in the second stage ten villages were selected and in third stage, the farmers growing gherkin and dry chillies were chosen.

19.1 Selection of the Study Area:

Haveri is the leading district in gherkin and dry chillies cultivation in Karnataka. To evaluate the objectives of the study Ranibennur and Savanur talukas have been selected which are the two as the study area taluks out of seven talukas of Haveri district. This is due to the fact that, it has been the highest area under gherkin and dry chilli cultivation among all the talukas of Karnataka state. This taluka was purposively selected because this taluka ranks second in the production (cultivation) and marketing of gherkin and dry chillies in Karnataka state, Ranibennur and Savanur these talukas are central places for cultivation and marketing of gherkin and dry chillies in Haveri district. It has
the area of 260 hectares and 33274 in hectares farming about 26.69 per cent, 22.99 per cent and production 8564 tonnes and 48811 tonnes respectively, during the year 2004-2005.

A multistage random sampling design was adopted for the selection of sample farmers. In the first stage, two villages were selected at random from the Ranibennur and Savanur talukas, in their second stage, ten villages were selected and to the Third stage, 400 sample farmers growing gherkin and dry chillies in the year 2004-05 and 2005-06 were selected at random from the selected villages.

1.9.2 Selection of Talukas

Gherkin and dry chillies are cultivated through the Haveri district. However, the large-scale cultivation of gherkin and dry chillies is concentrated in Ranebennur and Savanur. These two talukas account for 27.73 per cent and 32.70 per cent of the total area under gherkin and dry chilli cultivation respectively during the year 2005-06 in the district. Hence, those talukas were purposively selected for the present study (see chapter-2 Table-2.19). In order to represent the Ranebennur and Savanur taluks were selected for following reasons.

(a) Reasons for Ranebennur Taluka:

1) Ranebennur taluk is irrigated area; it receives irrigation from Tungabhadra river.
2) Ranebennur taluk represents all the stages of area of gardens (Ist, IInd, IIIrd) when compared to other taluks to gherkin and dry chillies crop area growing talukas.
3) Existence of agro-based industries in Ranebennuer taluka is one of the important reasons for selection as compared to other taluka.
4) With regarded to the price fluctuation of the gherkin and dry chilli, area cultivation in Ranebennur taluk is considered as stable when compared to other taluks of Haveri district.
5) There are several seed companies have been established in this taluk

6) Agricultural Produce Marketing Committee (APMC) of Ranebennur is considered one of the reputed markets in Karnataka and Green Agro Company and Sterling Agro Products and Processing Company in Ranebennur Taluka.

(b) Reasons for Savanur Taluka:

This taluka has been selected for following reasons.

1) The economy of the Savnur taluka stands on the cultivation and production of chillies rather than gherkin.

2) Most of the farmers have fixed land for chilli cultivation only.

3) Savanur taluka is dryland area. Only few parts of land have irrigation facility. Long staple dry chilli and gherkin have been grown in assured moisture condition such as lift irrigation holding command area of irrigation etc, while land for dry chilli propose of the short staple chilies are grown in the rainfed areas of the taluka in the kharif season.

4) Savanur taluk Agricultural Produce Marketing committee (APMC) is one of the reputed markets.

5) Last but not the least, Savnur taluka has more advanced fixed land for chilli cultivation profusely as compared to other crops.

1.9.3 Selection of Sample Villages

As per 2001 census there are 103 and 88 villages in Ranebennur and Savanur talukas respectively.

From the two selected talukas five villages from each taluks were selected where the maximum percentage of area was considered. Keeping in view the concentration of gherkin and dry chillies area in each talukas, five villages were selected. From each village, 40 farmers were selected forming a total sample size of 400 farmers. Among them, 184 small, 120 medium and 96
large farmers were selected randomly. The major gherkin and dry chilli growing villages having all the stages and all categories of farmers (small, medium and large) were selected for the study. From each village 40 sample farmers were randomly selected randomly. The names of the selected villages are (see chapter-4 Table-4.14) from Ranebennur and Savanur talukas during the year 2005-06 seasons was obtained from the office of the Assistant Director of Horticulture at Ranebennur and Savanur from the Green Agro Pack Company. The data were also collected through the Village Accountants of the Revenue Department, who have direct contact with the farmers of various villages in taluka and also by contacting Assistant Director of Agriculture at Ranebennur and Savanur taluks. On the basis of information gathered from Village Accountants and the list obtained from Asst. Directors of Agriculture and Horticulture.

The list of villages which had cultivated and irrigated and Non-irrigated long staple dry chillies and gherkin were obtained from the office of the Assistant Director of Agriculture of the selected taluka and the top five villages having the highest dry chillies and gherkin area were selected from the list. Totally ten villages were selected from the two talukas. The names of the selected villages were as follows: Medleri, Heeladhalli, Belur, Kudrihal, Choudadanyyapur, villages were selected from Ranebennur taluk and Neeralagi, Karadagi, Chikkamugadur, Hiremugadur, Kalkoti villages from savanur talukas were selected.

1.9.4 Selection of Sample Farmers:

The total sample size is 400 farmers, of which 200 from each taluka and 100 from each crop and each taluka. Within the taluka out of five villages selected for the purpose 40 farmers were selected randomly from each village equally from different farm categories. (see chapter-4)

The farmers of the sample villages were divided into three size group, based on the size of their holding, namely small (0 to 5 acres), medium (5-10 acres) and large (above 10 acres). The list of farmers with the size of land
owned was obtained from the records available with the Village Accountants (Talathis) of respective villages. From each of this size – groups, 184 small farmers, 120 medium farmers and 96 large farmers, from both the crops together in 10 villages were selected at random. A total of 400 sample farmers were chosen for detailed investigation on cost of production and quantity produced and sold, various problems faced by them in the cultivation of gherkin and dry chillies respectively.

To evaluate the objectives of the study area was taken to select only such farmers who grown gherkin and dry chilli in the year 2005-06. All 400-sample farmers selected had grown gherkin and dry chilli both the crops in the year 2005-06 during the Agricultural season of the distribution of sample farmers. (seen chapter-3 table -3.3.)

1.9.5 Selection of Crops:

This research work endeavors to examine the economics of two important horticultural crops, viz., gherkin and dry chilli, these crops can be suitably grown in regions of scanty rainfall and soils of interior quality importantly, when grown systematically. They have been proved to be cash crops. The agronomists have thorough experimentation recommended adoption of these crops. Especially Haveri taluka in the drought – prone areas of Karnataka as a course of better farming and a means of higher earning for the farmers of these areas. The state government has provided incentives to the farmers for changing their cropping pattern in favours of horticultural activity of this type, many seeds company viz., Green Agro Pack Company, Mycoko Company, Sterling Agro Products Processing and Agricultural Research Station, Hanumanamatti has released suitable verities of these crops for commercial production or cultivation of gherkin and dry chilli in preference to other crops. Hence, these two crops were chosen.
1.9.6 SOURCES OF DATA COLLECTION:

The main respondents of the present study are crops, gherkin and dry chilli cultivation in Haveri District. The researcher has adopted simple random sampling for selecting respondents on the basis for the research study and maintains objectivity.

The main sources of data collection of the present study are two viz:

A. Primary sources, and
B. Secondary sources.

A. Primary sources:

The researcher through fieldwork collected the data from the primary source. In order to collect information, structured, closed ended questionnaire interview schedule was administered to the respondents in the sample to elicit data for analysis in order to arrive at objective conclusions. The researcher has also collected information by talking orally to the respondents. This helped the researcher at the time of analysis of data and to put the conclusions drawn in an appropriate manner.

For evaluating the objectives of study, necessary primary data were obtained from the selected farmers through personnel interview method with the help of pre-tested and structured schedules. Farmers were asked questions in local kannada language. The data collected refer to the agriculture season of year 2005-06, most of the farmers had not maintained the records, receipts and expenditure on various aspects of gherkin and dry chilli cultivation. Hence, the collection of data has based on the recall method and on the basis of enquiry made with the farmers of the study area.

The data collected from the farmers are related to preparation of land, seeds used, cost increased on the purchase of various inputs, total production, storage facility and it is cost of cultivation. The time of sale, price received and marketing of gherkin and dry chilli respectively and various problems faced by the farmers etc.
B. Secondary Data:

Secondary data were also obtained from various government offices at taluka and district level and also from gherkin and chilli seeds companies for a period of five years. Some un-published data have been collected from the various offices such as:

1. Assistant Director of Horticulture, Haveri.
2. Deputy Director of Horticulture, Ranebennur and Savanur.
3. Assistant Director of Agriculture, Ranebennur and Savanur.
4. Office of Tahasildar, Ranebennur and Savanur.
5. Agriculture Research Station, Hanumanamatti.
9. Government Information Board, Karnataka State Produce Processing and exports, Bangalore.
10. Directorate of Horticulture Department, Bangalore.

Based on these, an extensively use of books, journals and others published newspapers and materials have been made to draw the conclusions.
1.9.7 Tools of Analysis:

The study has used simple statistical methods for analysing the available data. Tabular analysis of data is followed to identify and compare the cost return and net profit of different size group of farmers to understand the economics of gherkin and dry chilli cultivation in the study area for the year 2004-05 to 2005-06. The cost of production returns and profit for both comparative crops.

1.10 SCOPE OF THE STUDY:

The present study deals with the cost of cultivation and net returns profitability analysis of gherkin and dry chilli cultivation in Haveri district, from different angles i.e., on the bases system of cultivation, method of cultivation in different types of farmers. The study is limited to an in-depth analysis of various problems and issues involved in the marketing and cultivation of gherkin and dry chilli in selected are covered by the study. The main thrust of the study is to face on the production-cost analysis, gross returns, net returns, net profit, problems of cultivation and marketing of gherkin and dry chilli.

1.11 LIMITATIONS OF STUDY:

1. The interview method of data collection enquiry the respondent to recall from their memory operation carried out, hence the findings are subject to error in memories of respondents.

2. Only two taluks were selected for the study. Hence, results are largely applicable to those areas where similar conditions prevail or exist. Generally, gherkin and dry chilli growers do not maintain any books of records. The companies maintain books of accounts on limited base but not on scientific lines.
1.12 CHAPTER SCHEME:

Chapter-I deals with introduction, significance of the study historical perspective, statement of problems. Review of literature, Objectives and Hypotheses of the study, Methodology, selection of the study area, selection of the crops, selection of the villages, Selection of the sample farmers and nature and sources of data, primary and secondary data, tools of the analysis, scope of the study and limitation.

Chapter-II Presents the gherkin and dry chilli in India and Karnataka: An overview.

Chapter-III Deals with profile of the study area, geographically location of Karnataka, Haveri district. Location of the physical aspects, climate, rainfall, soil, population, land utilization pattern, irrigation, intensity of cropping, transport system, profit of selected talukas. Demographic profile, selected villages, Availability of socio-economic amenities in selected villages, land use pattern in selected villages, analysis of data.

Chapter-IV Presents the socio-economic profile of sample farmers, Location, Demographic characteristics, education status of sample growers, sex group, age group, occupation patterns, size of laid holding, ownership of land holding, landless farmers including leased in land. The modern equipments used for gherkin and dry chilli cultivation by the farmers, number of bullocks, owned other assets, Irrigation, sources of irrigation, Agricultural assets of sample farmers, cropping pattern in sample farmers, cropping intensity. Area under the gherkin and dry chilli cultivation during the year 2005-06, of sample farmers. Cost of production, Cost concept, Evolution of inputs and conclusion.
Chapter-V deals with production-cost analysis, gross returns and net returns, net profit and input-out ratio, Production of the gherkin and dry chilli, Estimation cost of cultivation of gherkin, Estimation of cost of cultivation of dry chilli, Estimation of cost of cultivation of gherkin and dry chilli comparison, Estimation of gross and net returns of gherkin, Estimation of gross and net returns of dry chilli, Estimation of gross and net returns of gherkin and dry chilli comparison, Reason for the cost of variation and conclusion.

Chapter-VI Deals with problems in the cultivation of marketing of gherkin and dry chilli, introduction of factors affecting cultivation and production of gherkin and dry chilli, agro-climatic condition, Cultural and agro-economic practices of gherkin and dry chilli, land preparation, fertilizer application, sowing, inter culture and irrigation, training (sticks), plant protection, manures, harvesting, Labours, Cost of production, Credit, Price fluctuation, Problems faced by the farmers in the cultivation and production of gherkin and dry chilli in the study region, seeds, fertilizers, pesticides, and chemical credit requirement, labour and cost comparisons analysis of marketing efficiency, operation (technological) efficiency, pricing (economic) efficiency, Marketing functions of gherkin and dry chilli, grading, packing, storage, transportation employment special features of marketing gherkin and dry chillies, Problems faced by the farmers and their views on various aspects of gherkin and dry chilli, marketing in study region, conclusion. Transportation and storage facilities, collection of price information. Transportation charges of gherkin and dry chillies, the rejecting of production of gherkin and dry chillies, the times of payment produces.

Chapter-VII Presents the summary of the findings and conclusion