Hoshangabad, and on the east by Seoni and Jabalpur. Nearly the whole district lies to the south of Narmada, occupying a stretch of 15 or 20 miles between the river and the northern range of the Satpura plateau.

The Narmada forms the northern boundary for a considerable length, and immediately beyond the river the southern scarp of the Vindhyan range extends like a line of cliffs almost along its banks. A small strip of territory lies to the north of the Narmada. The hilly country itself is generally not more than three or four miles in width. Between the Satpuras and the Narmada lies the greater part of the district, in the first of the wide alluvial basins. The surface of the valley is covered by a deep layer of block alluvial soil which is famous for its fertility. The general elevation is about 1100 feet above the sea, the fall in the course of the Narmada within the district being very slight. During its passage through Narsinghpur the Narmada receives the waters of several tributaries, principally from the south. Of these, the most important are the Sher and the Shakkar, with their respective affluents, the Macharewa and Chitarewa. Other smaller rivers are the Budhi and Sonar which form the western and eastern boundaries of the district and the Sarnrewa.
Commerce

Wheat has hitherto been the staple product of Narsinghpur district, forming about 50 percent of the total exports. Oil seeds, gram and other grains are also exported to a lesser extent. Ghee is sent to Calcutta and Bombay and hides and bones to Bombay. The exports of forest produce from Narsinghpur are not considerable, but those of the adjoining tracts of Chhindwara are brought to Sabai Station. The imports are principally cotton, piece-goods, salt, sugar, kerosene oil, tobacco and articles of hardware. Rice is imported by road from Seoni and Chhindwara, salt comes from Ahmedabad and pur or unrefined cane-sugar from Lucknow and Patna. Three annual fairs are held at Barman, Baretha and Sankai.

Narsinghpur Tehsil

It is an eastern tehsil of Narsinghpur district, lying between 22°-37° and 23°-13° N and 79°-38° E with an area of 1,106 square miles. The tehsil consists roughly of a belt of land near the Narmada river, where the soil has been improved by the action of drainage and much cut up into ravines, a rich black soil tract behind this, and then some sandy and stony land up to the Satpura hills on the souths.
Jadarwara Tahsil

Western tahsil of Narsinghpur district, lying between 22°-38° and 23°-15° N and 78°-27° and 74°-4° E, with an area of 870 square miles. The tahsil occupies a tract in the Narmada valley, consisting of a fertile plain of black soil, cut up into ravines near the river and covered by a narrow belt of the Satpura hill country.

3. Hoshangabad District

It is a district in the Narmada Division, lying between 21°-53° and 22°-59° N and 76°-47° and 78°-49° E, with an area of 3,676 square miles. It is bounded on the north by the Bhopal and Indore. On the east by Narsinghpur on the west by Nimar while the southern border touches with Chhindwara, Betul and Berar. The district consists of a long narrow strip forming the lower portion of the Narmada valley with sections of the Satpura hill country on the southern border. North of the Narmada lie the Vindhyan mountains, in places seen only as a far-off outlines, with the plains of Bhopal or Indore spread out below, in other places running in and following the line of the river, the water of which washed their base for miles. In these spots outlying spurs and hills are generally found on the southern side. One such spur, known as the black rocks, crops up close to Hoshangabad and supplies the town with building and paving stone.
With the exception of these outlines, the portion of the district adjoining the Narmada consists of an open black soil plain of great fertility. In the south the Satpuras generally run in successive ranges parallel to the line of the valley and trending to the south west. The portions included in the district consist of the block of the Pachmarhi or Mahanadee hills in the south-east. Another range of the Satpuras runs through the Hoshangabad and Harda tahsils with the valley of the Benwa behind it in the centre and another wild tract of the hill and forest on the south-west called Kalibhit, transferred to Nimar district. This extends to the taption the border of Berar. Most of the peaks of the Satpuras rise to about 2,000 feet or a little over, but in the Mahadeo hills there are trees with an elevation of 4,000 feet.

Hoshangabad town is 1,011 feet above the sea and the fall of the Narmada in this part of its course is rather less than 3 feet in a mile. From the Satpuras numerous streams run down through the valley to the Narmada having in the east, where the slope of the valley is rapid and direct, a very straight course and length of only about 24 miles, while in the west they make a circular sweep and usually flow for about 40 miles through the plain. The principal of these streams are the Dudhi on the east, dividing Hoshangabad from Narsinghpur, the Tawa flowing through the Hoshangabad tahsil, the Janjal separating
Seoni-Malwa and Harda, and the Machak on the west. These bring down with them large quantities of sand in their floods, which are very high and rapid, and deposit it on the banks, causing deterioration in the soil to a considerable distance. Where two or three rivers escaping separately from the hills draw close together the whole of the land enclosed between them is generally of poor soil over-run with jungle. Notable instances of this are to be seen in the system of rivers which unite near Sohagpur and those which join the Indra east of Seoni in both of which cases a large belt of forest reaches nearly down to the Narmada.

Rainfall and Climate

Rainfall is registered at the four tahsil head-quarters and at Pachmarhi. The annual rainfall at Hoshangabad town is 50 inches, and this probably be taken as representing the average for the plain. In the hills the rainfall is much heavier. Until within recent years the district has very rarely suffered from marked deficiency of rain. Thunder storms occur with comparative frequency in the hot season. The climate is on the whole healthy. The cold season is characterised by bright cloudless days and cold nights with piercing winds, frost is known, but water never freezes. The summer months are hot and dry, and during the rains the weather is somewhat oppressive, especially in the town of Hoshangabad.
General Agricultural Conditions

The prevailing soil of the district is the rich black alluvial loam of great depth and fertility which is characteristic of the Narmada valley. The average depth is estimated at 10 feet, but in many places it exceeds 30 feet. Inferior soil is usually met in undulating fields which have been founded of the finer particles or where the black soil is mixed with limestone pebbles or sand. A variety of sandy soil called Sihar, which is farmed from sandstone rock, produced only autumn crops, but responds to irrigation. The black soil of the Harda and Seoni-Malwa tahsils is the most fertile, and that of Sohagpur the least, being especially subject to deterioration by the action of the numerous rivers which intersect the tahsil, and wash down sandy deposits from the hills. Sihar or regular sandy soil is also more common here than elsewhere. In the whole district the different kinds of black soil cover about 88 percent and sandy soils about 12 percent of the cultivated area. Wheat is generally grown in unembanked fields and without manure or rotation. When a field shows sign of exhaustion, gram is sown for a year or two. As a rule autumn crops are grown only on the inferior soils, which will not support spring-crop grains, but the case of Jowar, which is now sown on black soil, is an exception to this. Now fertilisers are being used by the farmers.
Cattle

The cattle used in the district are to a large extent imported from the parts of Indore, Swaliyar and Narsinghpur which occupy the Malwa Plateau. The fair of Sankha in Narsinghpur is the great market at which they are purchased and they are commonly known as Sankha bullocks. They are large, strong and sluggish and generally white in complexion. Cattle are also brought to a less extent from Nimar. This breed being preferred for use in carts as they are light and active. The cattle bred in Hoshangabad itself are inferior to those imported. Buffaloes are not used for cultivation but those agriculturists who can afford it keep buffalows, cows for the production of ghee which is an article of export.

Commerce

Wheat, til, linseed and cotton are the staple exports of agricultural produce and teak and other timber and other produce of forest. Ghee is also exported to a considerable extent. Among minor articles are honey from the Pachmarhi hills, buildings and paving stone, brass vessels from Hundia and bamboo walking-sticks from Hoshangabad. Mahua is sent to Khandwa for the manufacture of country liquor. Salt comes from Ahmedabad and in small quantities from the Sambhar lake, sugar from Mirzapur and the Uttar Pradesh, gur from Betul and Berar, tobacco from
Muzaffarpur and rice from Chhattisgarh as the quantity grown locally is insufficient for consumption. Itarsi, Babai, Hundia, Sobhapur and Bankheri are chief weekly markets. Rahatgaon is special market for timber.

**Hoshangabad Tahsil**

Tahsil of Hoshangabad district, lying between 22°-18' and 22°-52' N and 77°-30' and 78°-5' E, with an area of 804 square miles. The tahsil consists of two well-marked tracts on the north the Narmada valley, a level upon black soil plain with a gentle slope from the Mahadeo hills to the Narmada river and on the south the elevated Bordha plateau covered with light sandy soil and surrounded by hills.

**Harda Tahsil**

Western tahsil of Hoshangabad district lying between 21°-53' and 22°-47' N and 76°-47' and 77°-31' E with an area of 1,139 square miles excluding Kalibhit tract of reserved forest. The northern portion of the tahsil consists of level plain fully cultivated, with black soil of great depth and fertility. In the west there are some low hills, while to the south the Satpura range runs through the tahsil.
Sohagpur Tahsil

It is an eastern tahsil of Hoshangabad district, lying between 22°-10' and 22°-39' N and 77°-35' and 78°-44' E, with an area of 1,243 square miles. The northern portion of the tahsil is an open black soil plain, covered by the action of the numerous streams flowing down to the Narmada. A low range of hills separates the valley of the Narmada from that of the Benwa and south of this again rise the masses of the Satpura hills, culminating to the east in the Pachmarhi plateau. Sohagpur is the poorest and least fertile tahsil in the District.

Seoni-Malwa Tahsil

It is a tahsil of Hoshangabad district, lying between 22°-13' and 22°-39' N and 77°-13' and 77°-44' E, with an area of 490 square miles. The tahsil which is a very small one, consists of a highly fertile black soil plain adjoining the Narmada and a strip of hilly country to the south.
Chapter Second
ECONOMIC SIGNIFICANCE OF COST STRUCTURE IN INDIAN FARMING
In India agriculture is way of life, but in the other countries it is not a way of life. It is a business and an industry in the sense of profit or loss. Farming is one of these industries in which the greater part of the total cost structure does not vary with output. This structure consists of what are called "fixed costs". In contrast to these are the "variable costs", which vary with output. The following classification indicates the precise nature of each of these types of costs.

**Fixed costs**

1. Rent for land and building (or interest on and amortization of mortgage).
2. Interest on investment in equipment and livestock.
3. Obsolescence or that part of the depreciation on buildings, machineries and livestock that does not vary with their use.
4. Insurance on buildings, equipments and livestocks, if possible.
5. Taxee on real estate and personal property.
6. The cost of family labour.
Variable cost

1. Current supplies such as seed and fertilizer.
2. Hired labour and other services.
3. Current repairs and replacements which vary with the use of buildings and equipments.

The classification of costs although describing the nature and indicating the function of each, does not indicate their relative importance in the productive processes. The magnitude of the fixed costs arises out of the fact that the expense of maintaining land, equipment and family labour is normally much greater than the cost of variable factors, such as seed, fertilizer, spray materials, and hired labour. This difference in magnitude, however, is not the most important feature of these two type of costs. This significance arises out of the fact that fixed costs tend to make adjustments in production much more difficult than to variable costs. And this difficulty tends to increase as the relative size of the fixed costs increases. When the farmer is faced with changing prices of his products, he cannot adjust quickly his fixed costs to take advantage of this situation. But this is not the case with variable costs, which may be adjusted quickly to change in prices of goods and prices of the products produced.
This difference in the two sets of costs is especially important to the farmer in the event that he faces a period of declining prices. Although not all fixed costs must be paid in cash each year, all contractual obligations such as principal and interest on mortgage debts, taxes, insurance premiums and cost of family labour, cannot be delayed. In the case of non-contractual obligations the costs continue in the form of depreciation and obsolesces of buildings, machinery and equipments. Even the rent of land and interest on capital may be delayed, but only at a sacrifice on the part of the owner. These costs, although they may be delayed, must ultimately be paid if the farmer is to remain in business. If they are not paid, the land, capital, goods and the family labour must be exploited. Hence, even under declining prices the farmer will attempt to produce and sell enough products to obtain an income that will at least enable him to recover his costs and to meet his contractual obligations.

Adjustments during periods of rising prices also are affected by cost structure. It is difficult, if not impossible, for the farmer to buy or otherwise acquire additional buildings or to buy expensive equipments. Thus the farmer is not able to take full advantage of rising prices by increasing production. In an event of rising prices, his only resource is to increase the use
of the variable factors and thereby increase the intensity of his operation. But this method has its limitation since production cannot be increased directly proportionally to the increase in the variable factors, that is, production may be increased only at a diminishing rate.

Nature of modern farming

Agriculture possesses characteristics that distinguish it from other sectors of our economy. Identification and description of these characteristics are basic as a means of understanding the nature of the problems of agriculture and for making adequate and fair appraisal of the solutions that have been formulated and put into effect or that may be suggested. Here, it is distinguishing characteristics of farming, how these characteristics give rise to specific problems and how they condition and set definite limits to their solution.

Characteristics of farming

The characteristics of farming which are readily recognised by any one familiar with the industry, are:

1. The home and farm business are integrated.
2. Farming is, in part, self-sufficient.
3. The functions of management and ownership are combined.
4. Most farms are small business units.
5. Farm products are not easily standardized.
6. Farmer's control over production is limited, and production is highly competitive.

7. The demand and supply of farm products tend to be inelastic.

8. Farming is subject to grant risks.

9. Financing farming is difficult task.

10. Farming can be conducted by operators with minimum educational qualification.

11. Fixed costs are usually a high percentage of the total costs of production.

The Integration of the Home and Business

Farming is a unique industry in that it combines a mode of life and a business enterprise. This combination no longer exists in present so called neighbourhood enterprise. With the exception of agriculture, these industries, however, do not play an important role in the life of the nation. It is true that they employ thousands of people, but the aggregate volume of production intended for sale constitutes a small percentage of the total national out-put.

Let us examine more closely this unique type of business enterprise. On the typical family farm the residence is not simply a home, separate, and apart from the farm, but it is the headquarters from which the farmer directs the farming operations. Nor do members of the
farms family form an independent unit. On the contrary they are an integral part of the farm. They assist the farmer in operating the farm and often advice him as to how the business should be organized and operated. The funds received from the sale of products are seldom, if ever, divided rigidly into those that will be used for personal expenditures and those that will be used to operate the business. Even if these funds were segregated, it would be difficult, if not impossible, to classify some purchases. In some instances the items purchased may be used partly in the home and partly on the farm. Many household utensils are of this type. Again, it is not an easy task to identify precisely the expenditures for investments in such items as water and lighting systems, which may be used to service both the home and the business. In these and other ways the farm and the home farms are integrated units.

The Self-sufficiency of Farming

In the early days of this country the farmer produced chiefly for his own needs. There were instances in which products, especially commercial crops are for the markets.

In the evolution of farming the element of self-sufficiency has been reduced in importance but by no means has it been removed. Studies by several investigators indicate that modern farming is still
partly self-sufficient as to food, fuel and shelter. Although seeds are purchased in much large quantities than formerly, most farmers retain a part of their crops for seed, commercial fertilizers are being used also in increasing quantities, but for the country the expenditures for fertilizers are relatively insignificant.

The Function of Management and Ownership in Farming

An important characteristic of farming is the association in one person of the functions of management and ownership. This association of the two functions is characteristics of early business enterprise. In former times, almost all types of industries were conducted by the individual who owned the business and controlled the operation of it. In modern times in commercial and industrial establishments, management is usually separated from ownership. That is to say, the owners or stockholders do not direct the details of the business but usually hire farmer's superintendents, and managers for this purpose.

Farming: An Industry of Small Units

In farming, the unit of organisation is small. There are two things that tend to limit the scale of production in farming, first, there is the dependence of farming upon area, and second, there is the discontinuous output due to the seasonality of production. Plants must
have space or area upon which to grow, and as a consequence, both animal and crop production must be conducted on an extensive scale. In most cases a large amount of labour and capital may be concentrated on a relatively small area. The concentration of labour and capital makes supervision comparatively simple and, hence make large scale operation possible. It is true, of course, that in some agricultural areas large farms will be found, but even in such instances a farm employing fifty or one hundred men is rare. However, a factory that does not employ more than fifty men, is considered small and numerous instances exist where thousands of workers are employed in a single factory and where immense outlays are made for materials and fixed capitals.

Because large scale production depends also upon continuous output, chiefly of a simple product, it is readily understood why agriculture cannot easily develop into a large scale industry. Instead of producing a simple product, the farmer is forced to diversify or to produce several products. The diversification in production thus forced upon the farmer makes it impossible for him to employ highly specialised machines or to introduce minute division of labour. Instead of having one machine for a given operation, farmers usually may employ machines that will do several operation. Instead of teaching the labourers to perform only task, the farmer must teach his
labourers to perform many tasks. Hence, in farming, the very foundation of large-scale production, continuous output and division of labour is lacking.

Farm Products not easily standardized

Another distinguishing feature of farming is the great difficulty attending the standardization of farm products. It is true that farmers, to a limited extent, any determine the character of their products.

For example, it is possible, by selecting and breeding, to change materially the character of plants and animals. But standardization by such means is not as effective as standardization by machine methods and processes. By use of machines it is possible to burn out large quantities of articles identical as to shape, size and quality. All that the farmer can do is to get the most uniform products possible by breeding, selection, and cultural methods and then to sort or grade the products. This method of sorting and grading, when compared with the machine method is expensive. To be sorted economically, agricultural products must be assembled, but as the output on the average farm is small, volume can be obtained only through some form of collective effort either private or co-operative. The efficient management of it is a difficult task.
Farmer's control over production is limited

One of the well recognised elements of success in the management of any business enterprise is control of production. When production is not controlled or not controllable, serious mal-adjustments are likely to occur, because, at times more products will be produced than can be sold profitably and at other times not enough products are available when prices are high. Some businessmen avoid over production and under production by adjusting their production (both as to total amount to be produced and the rate) to anticipated demand. They estimate the probable future prices and costs, and on these estimates decide the amount of goods that can be produced profitably. Farmers, as a rule, do not do this, they react the prices at planting and breeding time. If the prices of a specific product is high at planting time, the acreage used will be increased and if prices are low, the acreage will be reduced. The farmer reacts in a similar way in reference to animal production. When prices of animals or animal products are high, farmers embark on an extensive programme of expansion and when prices are low, they restrict their breeding operations. When the large output is sold, the prices are depressed, when production is sufficiently curtailed, prices are high. The typical farmer misses the market in almost every case.
But even if farmers could anticipate prices and base their production on anticipated market prices, they cannot control production because weather is an important factor affecting agricultural production and weather conditions cannot be accurately forecast. Farmers must plan their production programmes on normal weather conditions. If the weather is extremely favourable, over production may result and, of course, on the other hand, if weather conditions are unfavourable under production may also result.

Industrial establishments often gain control over production through combination. That is, independent establishments producing the same or similar articles often merge their interests into one large corporation. With one large corporation the control is centralised and the production may be better adjusted to anticipated demands. Such a control of production usually results in larger net profit than would be realised if each corporation operated independently the control of production through combination which is open to both manufacturing and commercial concerns. This is not used by farmers. Farmers do not associate themselves in groups for the purpose of control of production. It is a fact that farmers farm co-operative marketing association, but the object is not the control of production. The object is to market their products
efficiently. Any profits then realised are reflected back to the individual producer. This increase in profits tends to estimate the farmer to greater production, and this may mean lower prices. In other words, the board of directors of a co-operative marketing association seldom exercises control over the production of the individual members. If agricultural production is to be controlled, it must be controlled by the individual farmer and thus as has been noted, is a difficult thing to accomplish even under governmental supervision.

The Elasticity of Demand and Supply in Farm Products

A characteristic of farming which gives rise to a number of important problems, is the nature of the demand for and supply of farm products. Since most farm products are necessities, there is little or no tendency for consumers to increase or decrease their purchases in response to price changes. Although consumers may, for example, increase their purchases of potatoes as prices decline, the response percentage-wise is much less than the percentage change in prices. The ratio between the rate of change in the quantity demanded and the rate of change in prices is the co-efficient of elasticity of demand. When such a co-efficient is less than unity (that is less, than one), the demand is said to be in elastic. Since the demand for farm products is,
in general, of this type, violent fluctuations in the prices of farm products occur. When the supply of potatoes, for example, is less than normal consumption requirements, prices will tend to rise, often to high levels; because the consumers will tend to buy their normal requirements whatever the price, if the supply of potatoes is in excess of normal consumption requirements, prices are apt to be low and may be very low, that is, consumers will not increase their purchases to any great extent simply because prices are low.

The supply of farm products also tends to be inelastic. Farmers respond to change in prices by adjusting their output. But farmers response to price changes depends not upon absolute changes in prices but rather upon relative changes, especially when a farmer has a choice in production. When this is true, a general rise in price of all products from which the farmer may exercise a choice may not result in a proportionate increase in supply. An increase will occur only for those products the prices of which have changed relative to the prices of other products. Because of this, farmers may, and often do, increase the output of some products even when all prices of all products are declining. Again, farmers may not increase output when all prices are rising, provided all prices are rising at the same rate. If, however, the price of some
products is rising faster than others, then (when farmers have a choice), production of the product with the more favourable prices will be increased, the production of others decreased.

Changes in output, however, are not entirely a function of prices. The reason for this is that weather, which affects output, is not price-conscious. Hence, a departure from normal weather conditions may change the volume of output quite apart from the effect of changing prices.

Farming is subject to great risk

Farming is constantly subjected to damage from excessive rainfall, drought, floods, insects, pests and plant and animal diseases. To a marked degree, urban industries can protect themselves against weather condition, and they are not subject to any larger extent, many risks peculiar to urban industries are insurable, but insurance companies have found it difficult to work out a plan that will give farmers adequate protection at a reasonable cost. As a matter of fact, farm insurance is confined largely to fire insurance.

The inability of the farmer to obtain protection has forced him to rely upon self-insurance. As a safe guard against extreme losses, he finds diversification of production the most effective. Although
Diversification of this kind does not always prevent losses from plant and animal diseases, insect pests and climate conditions, if it does tend to reduce losses from these causes.

Other means of avoiding losses have been developed. For example, plants have been bred that will mature within the usual period between killing frosts, others have been bred to resist drought and plant and insect diseases. These methods of adopting plants to conditions have often saved farmers from serious losses. In some instances, whole areas have been made prosperous following serious crop damage. Farmers also reduce losses by careful observation of weather conditions. By observing the normal occurrence of the last killing frost in the spring and the first killing frost in the fall, farmers may adjust their farm operations so that damage from freezing will be minimized or eliminated. However, when all of these various kinds of insurance are utilised, there still remains a considerable element of risk and heavy losses occur annually.

**Financing Farming Expensive**

Because of the various hazards to which agriculture is subject, agricultural production is not easily financed, credit based on crop production is hazardous and as a result the interest rates are often high. In the case of livestock, credit must be extended
over a period longer than a year, usually eighteen months to three years. Cattle, the basis of such security, may die, or they, may be moved from place to place. For these reasons, the extension of credit on cattle, unless the farmer is well known to the creditor, is not readily obtained at reasonable costs. These difficulties do not apply to land. Land is fixed and credit based on land may be easily obtained.

By contrast, industrial units have distinct advantages in financing. It is possible for such units to sell common stock which does not obligate the firm either to repay the stock or to pay anything for the use of the money received. In addition to common stock, preferred stock may be used to finance a business enterprise. This type of security is somewhat more demanding with respect to the payment of dividends but is nevertheless a means of obtaining money at low rates. Then, industrial firms have access to the loan markets for short time loans at very low rates. In these and in other ways business corporations can finance the capital structure and then operate at minimum cost, whereas for farmers the cost tends to be minimum.

Professional Training of Farm Operators, Limited

The essentials of successful farming are good health, physical strength, and ability to withstand for
Long periods. The general use of machinery in farming has relieved the farmer of some of the hard labour, but even so, physical strength is still a perquisite. The fact that the farmer must produce for the market and must judge to some extent market demands has sharpened his intellect. The process of commercialization in farming has not gone far enough, however, to make him an expert businessman.

Importance of the Study of Cost Structure

The agricultural industry may be considered as rationally organised and managed only if and when the nature of the articles it produces, the systems of farming it uses and its technical methods of operation are such as which ensures the highest net return possible considering its economic location. The farm cost studies throw much light on this aspect of economic location of agriculture or the "Spatial Organisation" as it is called. By economic location use we mean the combination of spatial factors which determine the farm prices of agricultural products and the cost of production on a given farm or in a given agricultural zone.

I will devote this part of these to the consideration of uses of cost data. It is a truism that in the ultimate analysis, the value of the cost data would depend upon the use to which we can put them.
At the same time, it is not a one-way relationship, because it is equally obvious that the manner and method in which the cost data are collected and their content will determine the range of their use and their utility. It may not be possible to give a complete and exhaustive list of all types of macro uses to which the cost data can be put. All that I can attempt is to mention some types of uses.

In the field of land reform

Again the field in which cost data could be used with much benefit is the field of land reforms. I shall only give one instance. Cost data are essential if the land reform policy is to be intelligently formulated and equally intelligently implemented. In order to decide the limit of maximum holding which may be permitted to an individual cultivator, one requires certain norms or criteria by reference to which this limit could be fixed. The family farm is indicated as one possible measure with reference to which the ceiling limit may be determined, but the definition of the family farm itself involves many questions of concepts and measurements. Should the family farm's size be determined with reference to income? Should it be determined in relation to the full employment of the family labour force? Should it be related to what is called the
plough unit? For determination of the ceiling limit by reference to any one of these criteria, we require information and knowledge about the working of the farming economy, which could be supplied only through the farm cost data. Further, there is the question of level of incomes, at what size of a farm would one get an income of Rs. 3,600.00 if that is the limit for the ceiling purposes? I may confess that what the planning commission on the advice of the Land Reform Panel had suggested, viz. three times the family holding was in a way unscientific. They had indicated in an earlier draft that a farm whose income was Rs. 1,200.00 per year should be considered as a family farm would probably earn much larger income than three times Rs. 1,200.00. Any way, this indicates that formulation of the land reform policy of such important matters as the maximum limit of an individual holding cannot be done in ignorance of the actual working of the farm economy and any intelligent formulation of policy would need information which could be supplied by farm cost data.

On the other hand the purpose of national agricultural policy of Government is considered as significant in the study of farm costs, because so many farmers have found that their own individual efforts are not adequate to enable them to cope with modern economic development. The farming conditions are determined by
various external forces controlled and regulated by Government in accordance with a clearly or vaguely defined economic policy which again is not static but ever changing and has often an industrial bias. It is becoming increasingly evident that measures for improving the present farming efficiency involve a well-integrated combination of individual adjustment and public action with the public action programmes furnishing a favourable setting for the adjustments that farmers can make on their own farms.

The increased emphasis on agricultural policy in recent years has served to direct many farm cost studies towards specific problems raised by current or contemplated government agricultural programmes. External economic forces continue to shift rapidly and the achievement of efficiency in operating the farm unit is resulting in increased commercialisation of agriculture. Thus rapid changes both in technology and economic condition will make the job of organising and managing a farm a difficult undertaking in the future. Research work in farm costs will need to be greatly expanded if it is to furnish the factual and analytical foundation for the guidance that will be needed. Public programmes are designed to aid, encourage and facilitate adjustments that will increase the income and security of farmers and the conservation of agricultural resources. All
these programmes are affected by the cost of farm management whenever they involve changes that affect operating units directly. Hence, the objective of farm cost research as a basis for guiding the formulation and application of action programmes on farms cannot be over-emphasized.

"The aim of investigation in farm organization or cost data will then be that of providing information and formulating principles which will assist farmers in attaining high standards of economy and efficiency in the application of scarce and valuable resources to the ends of material production and revenue returns."

**In the Policy of Co-operative Farming**

Similar use of the farm management data can be made for policy on co-operative farming. For this purpose it is important to know what the resource position would be if 10, 15 or 20 un-economic farms are joined together. Will it improve the efficiency of the farm economy and the utilisation of resources? Any definite view on this question would depend upon the data obtained from farm cost studies. In the absence of that, once again, it would be difficult to formulate an intelligent policy.

"Apart from this, the intensification of farming is not just a matter of mechanically increasing farm expenses and investing more capital; the increase

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must be rational and must be in accordance with the principles of scientific management. Farm costs help to judge directly the quantities of the material and means of production used. The influence of the quality factors on farm returns can only to measured indirectly on the basis of accountancy results, by means of certain indices. These indices are provided by the imputation of the value of draught animals, of the relation between costs of labour, and the expenses for the purchase of seeds, fertilizers and concentration feeds, by the net receipts per head of cattle and lastly by the consideration of certain special aspects of the relations existing between the net return and the increase in farm expenses."

For the purpose of Price Policy

It is obvious that for the purposes of price policy, we would need farm cost data, e.g. for operating the parity formula. Indices necessary for operating the formula could be constructed only with the help of the cost data. Similarly, for the purposes of policy in regard to procurement of the marketable surplus and for finding out something about the factors which influence the marketable surplus the farm cost data would be very useful. Is it the increase or the decrease in production that increases the proportion of the marketed crop? or is it the price, if so, high or low? If we want to have

1. Intensification of farming on the returns of Agriculture by Joseph Deslarzes - International Review of Agriculture, 1943.
a firm idea about these relationships on which so much economic development depends, we would need very elaborate data over a period of time.

In this aspect Governments are mainly influenced by the objective of either protecting agriculture or taking decisions on matters relating to agricultural policy particularly in the sphere of adjusting prices, fixing the rates of taxation on land or other revenue considerations. The price support programmes and the system of subsidies for production of special crops adopted by many western Governments are clear indications of the approach of the modern welfare state towards agriculture. One of the most important features of agricultural economics at the present time is the policy of fixing price well in advance of future production. There is one very important aspect of this development, if prices are to be fixed in advance and are to be fixed at levels which will be fair to all concerned then these prices must be based on the fullest and most reliable information. Much of this can only be provided by the farmers themselves and must be forthcoming to a much greater extent than at present if the objectives of the price fixing policy are to be attained. In any system of price fixing the question "what does it cost to produce?" and "how do such cost vary under different conditions or indifferent parts of the country?" are fundamental. Such questions can be answered only by means
of costing studies conducted on a scientific method. In short a serious gap in our knowledge of agricultural economics is the lack of information on commodity costs which can only be provided by the full costing of the farm.

For the question of Factor Market

I think, farm cost data could also throw very useful light on the question of factor markets. This is a field in which we have very little information. How many of the farm inputs are produced locally? How many of them depend upon imports from the urban area? This whole question of rural-urban nexus can be better understood with the help of the farm cost data. In regard to estimation of marketable surplus from cost studies, sometimes this may not be possible in as much as cost studies do not attempt to collect data regarding family consumption, which would be necessary for the purpose.

Besides, family consumption varies from year to year and there may be shifts in the consumption of superior and inferior cereals. Some more possible uses of cost data for policy and analytical purposes were that the comparative cost data could be used for the purpose of recommending regional cropping pattern on the analogy of principles governing location of industries. As against this it may be pointed out that a region would be justified in continuing the cultivation of particular
crop even if the cost were higher compared with those in other regions, for the decisions in this regard will be governed by the alternatives available to the cultivators in the region.

Dr. Horring observed that in western European countries cost data were primarily used for the purpose of fixation of prices in local markets as well as in wide markets at levels which would maintain parity of incomes in farming with the incomes in comparable occupations generally, only the costs of efficient units were taken into consideration for the purposes of price fixing. There was a demand that returns to farmers on such farms should be comparable with the wages of industrial workers. Prof. Gadgil pointed out that in India, historically the main purpose of cost studies was to derive data for State Policy rather than for guidance to individual farmers.

Cost data are likely to be used in future by farming interests to demand a fair deal as was being done in western European countries. Cost data could prove more useful for crop planning use, for advising on (a) crop pattern plan and rotation and (b) efficient use of inputs for particular crops. They could also help in recording change in regard to (i) production of major crops, (ii) adoption of improved practices and (iii) value of capital assets of farms.
question of Income Distribution

If the planners are interested in the question of income distribution then also cost data and income data from various types of farms and crops and regions would throw valuable light to it. Cost data could be used for the estimates of national and regional incomes and further for calculating shares in income of various factors such as those of agricultural labourers, cultivators, middlemen and rentiers. Some other factors also affect income of the farmers. Mention may be made of the use of cost data for purposes of income taxation for estimates of savings and investments in farming and by farming families.

"At the present time there is one another general aspect in national planning the purpose of which is served by the study of farm costs. The justification of an equitable distribution of incomes from farming among the owners of farmers, on the one hand, and the workers, the creditors and Government on the other which is being increasingly recognised. This is the result as already observed, of the pressure of events consequent on the great progress made in transport and marketing, and a growing tendency to consider agricultural problems from the point of view of the national economy rather than from that of the farmer's private economy. The
contribution made by agriculture to the economic welfare of the community, the revenues it brings into the persons engaged in it and the return it gives on the capital invested in farming are all important facts which require to be ascertained.1"

This has given rise to the concept of 'Social Income' in agriculture and farm cost studies furnish the basic data for an accurate calculation of social income. "The aggregate of all the incomes derived from farming is technically known as "social income" of agriculture, it represents the sum total of all the values obtained from a farm. It may, therefore, be defined as the expression of the creation of values.2"

It is calculated by adding together the wages paid to workers and employees, the interest on debts, the taxes and the farmer's income which consists of the return on the farmer's own capital and of the fair wage claimed (calculated but not actually paid out) for the work performed by the farmer and his family.

"Only farm costs can supply accurate data concerning the amount and the valuation of farm income. Farm accountancy alone can enable us to form an opinion concerning the extent to which under payment in agricultural production depends on factors inherent to the farm

itself, bad organisation, irrational direction of production, impractical use of the means of production and labour, lack of proportion between labour expenses and operating costs, too small area etc. or the extent to which this underpayment is related to general economic evolution, to economic policy and to the economic system and can, therefore, be mitigated or eliminated only by Government action. What the farmers demand is a fair share of the national income and in order that national income estimates may be calculated on fairly correct basic, extensive farm cost data should be made available. The purpose of farm cost studies in evaluating social income will become clear when it is noticed that the first Report of the National Income Committee in India (1951) refers to this point and observes that the problem of estimating the gross value of agricultural output is complicated by the fact that there is no census of agricultural production as such nor are their authoritative and comprehensive studies of agricultural costs covering the entire country and all the crops.\textsuperscript{1}

In the determining Agrarian Structure

One more possible use of the cost data is in the field of determining the rational lay out of the land surfaces or the pattern of agrarian structure. Planners in the country may have various social or economic

\textsuperscript{1} First Report of the National Income Committee, April, 1951, Page 20.
objectives and the cost data would be helpful in choosing the pattern of agrarian structure which would be most conducive to the fulfilment of those objectives. If the objective is maximisation of agricultural product, what type of holdings should be economy have? If the purpose is to give the maximum marketable surplus, what type of agrarian structure would be more helpful? Alternatively, if the major concern is with the welfare of the agrarian community, we may have a different type of agrarian structure, and the farm management and cost data would indicate the type of agrarian structure most suitable for the fulfilment of a particular social or economic objective. Similarly, the national policy will be concerned with the problem of the crop pattern. Here, too, the cost data would throw light on the availability of alternatives, their economic implications and measures which would need to be adopted for implementing the policy.

So the farm cost data are valuable in respect of the agrarian reforms. India is revolutionizing her land policy on the main criterion that land should belong to those who actually till the soil. The amicable settlement of the issues arising from these reforms, such as the determination of an economic holding, fixation of land rents, compensation etc. depends upon correct compilation of the income derived from these lands. Determination of the income is possible only if the cost of production could be worked out on some standard uniform basis.
Again, major irrigation and land improvement projects have been taken on hand by the Government, both Central and States, involving a huge outlay. The determination of sale or rental value of the lands under command of these projects could be reasonably estimated if the data of cost of production of crops planned to be taken on these lands could be worked out by some standard method.

Similarly, Government policy in regard to the operation of many useful and ameliorative measures, for the agriculturist and agricultural labour, depend upon the availability of standard reliable data of costs of production. Crop insurance, cattle insurance, fixation of standard wages for agricultural labour and agricultural marketing are instances in point. Much of the impressive features of Government's agricultural policy in the sphere of taxation and revenue can be removed if costing data are available on a reliable method of calculation. Again, viewed from the angle of national planning farm cost studies have a distinct purpose in furnishing data on specific aspect of agricultural planning. It must, of course, be recognised that in agriculture, most functional maladjustments are so deeply rooted in the very nature of this branch of production that the possibilities of their elimination are extremely limited, and planning can generally do no more than mitigate their effects.
this overall limitation farm cost studies serve the purpose of assisting in increasing the efficiency of farm management and organisation in any scheme of planning in agriculture.

Another important aspect of agricultural planning in which farm cost studies serve a valuable purpose is that relating to intensification of farming. The relation between the intensification of farming and the profitableness of agriculture constitutes a basic element in the whole system of agricultural economics. This can be ascertained only on information obtained from the operation and results of accounting of the individual farm concerned. Before working out plans for agricultural re-construction it will be necessary to find an answer to the following questions based upon the solid foundation of an empirical study of the real condition of the farm.

(1) What is, according to the concrete data of farm accountancy statistics, the real influence exercised by the intensification of farming upon profitableness of agriculture?

(2) What are the possibilities of further intensifications existing under different local conditions?
(3) On what should intensification of agriculture rest under these varying conditions due account being taken of the special characteristics of the different localities?

In this way we see that farm cost data are very useful in the field of macro-economics.

**Micro use of the cost data**

From the point of view of the individual farmer, the ultimate object and purpose of farm cost studies is to reveal to him the financial position of the business of farming. It is obvious that it is only by extensive study of the economic side if agriculture by means of farm cost data that most of the problems of the individual farmer can be investigated in a scientific manner. They are an aid to the improvement of organisation of their farms and raising their income and standard of living.

Farm cost studies are at best a statistical method for assessing the processes and the results of the operation of a farm from the ordinary business point of view. The chief limitation is that cost account cannot be universally used since we have no facilities for dealing with a large number of farms. Financial accounts collected from a proper sample of farms offer perhaps the only methods by which we can hope to get a fairly precise measure of the farming position all over the country.
The function that cost accounts can perform for the individual farmer and his farm is to aid him in the management of his farm rather than to enable him to compare the total costs and sale prices of his separate products. They can help to avoid waste and to compare the expenses involved in alternatives which may be open to him the circumstances in which he is placed. The compilation of cost accounts for the purpose of trying to compare individual product costs and selling prices may in most cases be impracticable. But they may help in arriving at marginal costs. The analysis of costs may also be carried with further advantage in comparing prime costs and surpluses, and also the overhead charges, in respect of farms similarly situated. The comparisons may not yield conclusions on dissimilar farms operating under different conditions. The economist may, however, get information which helps him to advise farmers if she is familiar with their circumstances and environment.

According to Dr. Warren, "cost accounting provided only the means for comparing an exceptional farm with a more normal one." In the opinion of Dr. Taylor "cost accounts should be used not as a basis of statistics, but as a means of helping the farmer to visualise his own problem. He need to know the relative profits of the alternative crops and the relative costs of producing these crops!"

The observation of Prof. Ashby on the point put in a nutshell the real use and limitation for farm cost studies, "It is not our business to tell a man how to run his farm. If we can give him information to assist him in checking upon his policy or action our function cease, we should supply a basis for intelligent examination and criticism. When we have done that, we have done our work."

The utility of farm costs can also be found in the analysis of why some farmers made higher incomes than others. The practices of the higher income farmers would themselves require maintenance of farm accounts or similar records. Such data of descriptive character could also be used for teaching and other general utility purposes. For purposes of comparison they have to be used with caution as they seldom permit of valid generalisation. Because of the heterogeneity among the farmer and the number of variables affecting net farm income, they merely show by means of cross classification. The quantitative relation between the various factors that determine the farm income.

Dr. Bhattacharjee has described in one paper about the farm cost data — "the uses are in securing measures which would give an idea about the efficiency of the various factors as well as relationship between

them, so that the farmer could make the necessary organisational adjustments or take appropriate decisions in operation to secure the desired end."

Dr. Majumdar explained in one paper the relationship between family budget and consumption level and also the credit needs for borrowing. According to him there are certain specific uses to which these cost studies can be put. Firstly, the cost studies should give the farmer the amount of various products needed for the family living. There it is connected with family budget and family consumption. Secondly, it may be of use to see how much he needs for his family living for the whole year in which case he needs to have information on what he is producing, how much he gets in term of money (or he could get, so that he could clear his debts) and how much he needs to borrow.

If we take the point of view in which Dr. Majumdar is interested (in maximum profit) then a whole series of questions as regards the uses of cost studies would come, I would like to indicate briefly a few important ones.

The first one relates to adjustment problems in farm management, e.g. the steps necessary to increase the productivity, the yield per acre, or the production of animals. These are not actually cost of production
studies but are subsidiary information gathered such as yield control, eliminating losses and questions such as whether it is profitable to spend money on watching or putting fences.

Secondly for the choice of crops, there is a suggestion to study cost of production of groups of crops and mixtures. That would certainly help in the choice of crops, the question is whether it is the inferior cereals or superior cereals which bring more prices, or whether it is the labour saving crops or labour-utilising crops etc. Then there is the question of feed requirements.

There are labour conflicts arising out of labour requirements from the time the crop is sown until it is harvested. The requirements vary from week to week, month to month. The problem is how to choose the crops so that we can avoid these conflicts. We have different varieties of crops difference in regard to the time required to produce them as also in regard to the returns that they can bring necessitating shifts in emphasis on each crops. These things are taken for the farm as a whole. When we come to individual crops, the most important thing is input-output relationships and the relative analysis.
There is one more important thing so far as the farmer is concerned, and that is the great variation in costs. We can allocate costs to labour, bullocks, equipment and materials. The study at the Allahabad Agricultural Institute Farm has brought forth result that there is a tremendous amount of variation in each of these factors during the fourteen years.

The uses of cost data in farm production may be further distinguished as follows:

(a) In setting up farm budgets and pre-estimating the receipts and expenditures of alternative operating plans and also in farm planning.

(b) In determining the highest profit input of any input factor and the output or yield which maximises profit.

(c) In determining which farm prices pay best.

(d) In choosing which kinds or types of productive agents maximise profits - Cattle vs Mechanical.

(e) In determining what combination of lines of production maximises profit.

(f) In determining ways of reducing cost of maximising profits at the same time.

The largest use now being made of cost data is in farm budgeting and farm planning. Professor Andrew Boss opinion that is of the opinion that -
"Such data will serve a farmer as a basis for making trial budgets of different combinations of his farm enterprises and forecasting probable results before settling upon his yearly production programme. In this way it is possible for him to fit his programme to probable labour and power supplies and to estimate in advance and provide for the method needed for material requirements. Study of the results of past operations will reveal the weak and the strong enterprise that enter into his farm organisation plans and contribute to the net income. Knowledge thus gained should result in a steady improvement in efficiency of production."

So to serve this purpose the cost data must confirm to the following specifications:

(1) They must keep physical costs and money prices or cost rates separate. Only if they are separate can they be adjusted to fit different cropping systems and farming practice and to fit the changing prospective prices of crops, seed, fertilizer, wages of labour, from year to year. Farm budgets and plans always look to the future.

(2) They need to be expressed per acre, per cow and the like more often than per unit of product.

(3) Cost data for use in budget analysis need to be adjusted constantly for changes in technology.

(4) The cost data for major variable inputs, like fertilizers for crops and feed for livestock, should as far as possible be in the form of a range of inputs with an accompanying range of outputs. They need to show how the outputs vary with inputs.

The uses of cost data in production are always in farm planning either for next year's production programme or some longer time programme. Such planning must be on the basis of some set of prices. The farmer will be on safer ground if he can keep himself alert with respect to changes in them than assuming stability in prices and wages rates.

Importance and uses of cost studies and their objectives in various foreign countries

It may be that Indian farmers have little use for cost data, but can make increasing use of the knowledge of letter in technology. It may be that the technical education and extension are very necessary, but the type of problems relating to selection of a technique which the economists know, will give good returns. In Holland the production increased very much before the war, but at that time, no cost studies were available and the concentration was on the technical side of production. Labour, the biggest input, was available
more than was used. In most of the farms it was just a variable cost i.e. the cost of the extra output and intensification of arming. It is not just the knowledge of all the cost and the extra input that brings the return which the farmer should possess, the important thing is to solve one's own problems (that is to say, it is not knowledge of the figures, but the knowledge of the technical practices as well that the farmer should have).

The main use of farm management data in Europe is for the price policy as also the distribution of national income. The relative influence of the two depends on the object of the farm policy in different countries. For instance in Sweden the Government promise farmers that they would get the parity part of the national income as it was just before the war, the cost based on the survey of the entire farm sector of the nation (farm level) the total output was assessed and put at 100. If the rise in the input is 30 percent, then there should be a similar rise in the output, of course, the quantities were given in the calculation, but the prices had to be supplied by the Government, changing the prices by making the import levy, higher or lower, influencing mainly the price level. The remarkable thing was that the nominal output (i.e. value of output) was lower in 1938 than the nominal
in-put (i.e. value of input), because the labour was calculated against the wage norm of labour in industry; so that was included in showing the total cost. In that way the cost would be higher than the value of output. A special policy was followed. They first used the calculations of the national farm, but changed it afterwards to a sample of farm units. They were a little but stricter about the choice of farms. A rational element entered into the price policy, i.e. not to pay an industrial wage to every farmer independent of the size of the farm. The whole policy should be directed to a more reasonable size of farms. In Sweden they came to the conclusion that the right type of farm was more than 100 acres. But when they looked at the statistics it was found that there was hardly any farm of that size in Sweden. So they reduced the minimum size to somewhere between 50 and 75 acres of arable land and that is now the normal farm in the Sweden price policy and they take groups of farms of this size. They decided that in this size group the value of output should cover the total cost, including the rent of land, interest on capital and wages for the labour used on this kind of farm at the rate payable to industrial labour. It does not mean that these figures are used for farm management purposes, but the main method used was for the set up of the price policy. One can extend its use for comparing the results
with other groups of farms and see why one farm group is better than the other and so on.

The British way for price fixing is about the same as in Sweden. British law does not provide for a price parity but since change in cost is taken care of (for a change) in the price level) in actual practice, the British agriculturists get a parity with the other sectors of the economy. They use more than one approach to determine costs. They use national farm accounts and also accounts of samples of farms. They use more than one approach to determine costs. They use national farm accounts and also accounts of samples of farms. They also use unit cost calculation and call it "cost structure". They use it only if there is a change in the unit cost, say, for instance, if wages go up at 10 percent, how will it effect the price of sugar beet, the price of wheat etc.? Though there is a price policy, their main interest is in the national accounts, the national farm, and at the same time the financial accounts of groups of farms all over the country. For financial accounts they confine themselves just as in Sweden to certain groups of farms only, namely, commercial farms. Neither the subsistence farms nor the part time farmers are considered.

In Germany there is a long tradition for book-keeping, they use farm management circles mainly for comparing figures. In Germany they have only this one
method to use, that is samples of the financial results of groups of farms. In Norway it is about the same as in Sweden. In Denmark there is not much of price policy, I think that Newzealand, Australia and Denmark may be one of the small groups of countries where there is a free market policy. Denmark exports nearly half of its agricultural produce. It is more a statistical barometer about the situation in agriculture which they make use of for management purpose, mainly by comparing.

Denmark is very active in the field of agricultural research. There are research projects where they have separate fact finding, say for instance, on the influence of the kind of buildings on meat production and pig production. They have more of the special research projects. It is not possible to get material out of groups for that special kind of information.

In Holland it is the same as in Germany. There is no parity price policy, but there is a price policy promising the farmers and the farm workers a wage comparable with that which can be earned in industry for the same kind of work. For the assembly of data, I must stress again, the farm is again the unit. These input output data give information about the facts as to how far the different groups in different regions reach this norm of wage and by how much prices have to be changed to reach that level in agricultural income.
In addition to the farm accounts, there are the unit cost calculations for many products. More than half of milk is produced on dairy farmers which specialise in milk production. So there is no problem at all, since in their case the bases for unit cost and farm cost calculation are identical. In all cases of specialisation, i.e. poultry or pigs, unit costs are easily calculated. In the first place, they know the total income of the family. Just as in England where there is a cost structure (i.e. unit cost), if there is a change in the wage level, it will effect of course the different products in a different way according to amount of percentage of labour in the cost structure of each product.

Farm management has attached great interest after the war and in the special institute which assembled the figures for these financial accounts for the different farms and for the unit cost, they have tried to use them also for the farmers, however, it was soon found that the unit costs are not of much help. Then we had to follow budgeting methods and calculate for every product what we call the balance between the variable cost and the output. Quite a lot, i.e. 75 percent of the total cost, would be fixed cost for the farm, viz. cost of land, buildings, machinery and the family labour. It is not out of pocket expenses; it is just an amount of fixed cost. Only the output of different crops and the variable costs you incur
for different crops will tell you something important about income variations. By changing the pattern one can see if total income will be larger or not. Farmers do not see if their unit costs look favourable to the price, but they do see how a change in the production pattern will influence their income. It may be that their income is growing a little bit by the extra labour, but it depends on how high the level of income you have to compare by how much labour intensity has to be increased for this extra output. In making progress for farm management, we have to collaborate with animal husbandry experts and the technical experts in arable farming, for fertilizers etc. All this tends to influence input and output relations and gives rise to rather a major problem of the layout of farms. There is the Government scheme to re-allocated lands and the Government subsidises this heavily. It is rather a problem to find out what is the effect of a better lay out of the fields for the farms. If the fields are scattered, you cannot use your machinery as it should be used. You have to drive long distances from the fields to home and so on. This aspect of farming cannot be reflected in book-keeping. It is no good to say that it is immaterial how you layout the farm. Of course, the layout is a difficult thing to handle. There are many other influences also which we cannot find in book-keeping. Let me say that as in science, you have to make experiments or more special measurements for special programmes,
e.g. to see on a farm with scattered fields, how many hours it takes for the transport how many more hours it takes to plough the fields and the harvest them, and so on. If there is a little bit surplus labour, they spread out their labour, and you will see no difference in the financial results; if there is a little bit more work, it does not form the farmers so much. There is the compensating factor that he will till the fields near the farm house better, and use the fields rather away in another way as they do not have so much transport. There are complicated affairs the book-keeping instrument is not enough to see what is happening really on farms.

In the United States they have done quite a lot of farm management research. The book-keeping results and the cost data results are no doubt of some importance for farm management purposes but not overwhelmingly.

As far as Europe is concerned, the gathering of cost data and financial accounts is mainly for the purpose of determining the distribution of income and secondly, for price fixation. As you know, the problems in Europe and the United States are not primarily the raising of production. Production is rising quick enough and there are surpluses. The problem is that the farmers do not get better results from over-production. Therefore, it is their income position that is to be safeguarded. That is the main problem in Europe and in the United States of America.
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<td>(c) Cotton(lint)</td>
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* Final Estimates
** Includes five major oilseeds viz. groundnuts, rapeseed and mustard sesame linseed and castorseed
@ Sale = 170 Kgs. † Sale = 180 Kgs.
OIL SEEDS GROWING DISTRICTS

- Groundnut
- Sesamum
- Linseed
- Rapeseed & mustard
DISTRIBUTION OF NORMAL RAINFALL IN MADHYA PRADESH

Normal Annual Rainfall

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<th>Cms.</th>
<th>Description</th>
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<tr>
<td>120 - 150</td>
<td></td>
</tr>
<tr>
<td>100 - 120</td>
<td></td>
</tr>
<tr>
<td>80 - 100</td>
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</tr>
<tr>
<td>Under 80</td>
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</tr>
</tbody>
</table>

Legend:
- Black: Over 150 Cms.
- Dark Gray: 120 - 150 Cms.
- Medium Gray: 100 - 120 Cms.
- Light Gray: 80 - 100 Cms.
- White: Under 80 Cms.