

CHAPTER 3

AGRICULTURE AND ALLIED ACTIVITIES

Coverage

3.1 The sector comprises agriculture proper, livestock and livestock products and operation of irrigation system. The economic activities included in agriculture proper are (i) growing of field crops, fruits, nuts, seeds and vegetables, (ii) management of tea, coffee and rubber plantations (iii) agricultural and horticultural services on a fee or on contract basis such as harvesting, baling and thrashing, preparation of tobacco for marketing, pest control, spraying, pruning, picking and packing and (iv) ancillary activities of cultivators such as gur making, transportation of own produce to primary markets, activities yielding rental income from farm buildings and farm machinery and interest on agricultural loans. Livestock and livestock products include breeding and rearing of animals and poultry besides private veterinary services, production of milk, slaughtering, preparation and dressing of meat, production of raw hides and skins, eggs, dung, raw wool, honey and silk worm cocoons etc. Operation of irrigation system comprises supply of water through various Government channels to the agriculturists. Agriculture and livestock activities go together and it is not always feasible to segregate the various inputs like livestock feed, repairs and maintenance costs, CFC etc., into those used in agricultural and livestock production.

Methodology and Source material

3.2 The contribution of this sector to the gross domestic product (GDP) is estimated in terms of gross value added (GVA) using the production approach. The estimation of GVA involves evaluation of the products and by-products and ancillary activities at the prices received by the producers and deducting therefrom the value of inputs of raw materials and services consumed in the process of production at purchasers' prices. In respect of operation of irrigation system by government sources income approach is used where the gross factor income generated as a result of providing irrigation services is estimated. The operation of irrigation system by the agriculturists is not separately taken into account as its output gets reflected in the value of output of crops and the expenditure on its operation in the overall input costs. Separate estimates of value of output from agriculture proper and livestock production are prepared while the estimates of GVA are worked out for the sector as a whole.

Sources of Data

3.3 **Agriculture production:** DESAg is the most important source for agricultural statistics used for the estimation of GVA. The principal sources of information used for purposes of building up the estimates are (a) the Land Use Statistics (LUS), (b) Area and Outturn of Principal Crops, and (c) Cost of Cultivation Studies.

3.4 **Land Use Statistics:** Statistics on land utilisation flow as by-product of a normal departmental activity of the State Revenue Departments who collect them for various administrative needs of land revenue collection. DESAg publishes these statistics in their annual publication entitled "Agriculture Statistics in India". Detailed statistics of land utilisation which mainly give classification of land put to various uses are continuously available since 1884, though over the period, scope as well as geographical coverage of statistics have been gradually expanding. Out of the total geographical area of 328.7 million hectares of the country, complete LUS are available at present for 305 million hectares i.e. for about 93 per cent of the geographical area. Statistics for nearly 86 per cent of the reporting area are based on complete enumeration, 9 per cent of the area on sample surveys and the remaining 5 per cent of the area on ad-hoc basis. Pending the publication of LUS, DESAg

releases estimates of area in mimeographed form under the titles (i) "Land Use Classification and Irrigated Area", (ii) "Area Irrigated Source-wise and Crop-wise", and (iii) "Area Under Crops". However, even these are released with a time lag of two to three years. The latest pertains to the year 1985-86.

3.5 Area and Outturn of Principal Crops: Periodic estimates of area and outturn of principal crops generally known as forecast crops initially prepared by the state agencies are consolidated by the DESAg and issued in the form of crop estimates. For these forecast crops, before the final forecast giving the estimates of area and production are issued, usually 2 to 3 forecasts are issued in respect of each crop indicating the area sown, condition of the crop at various stages etc. These forecasts are designed to indicate the main features of the crop at various stages of its growth. The estimates for these purposes are derived from variety of sources, which include timely reporting scheme (TRS), advance estimates given by the States and the reports furnished by the marketing intelligence officers of the DESAg located in different states. In arriving at the level of anticipated production, consideration is given to (i) rainfall and weather conditions, (ii) consumption/off-take of fertilisers, credit etc., (iii) expansion in area under high yielding varieties, (iv) condition factor which indicates the yield expectation, and (v) reports received from the Inspecting Officers in the states. The final forecast estimates containing both area and production for all the principal crops are released by the DESAg with a time lag of 4 to 5 months after close of the agricultural year. Revised estimates of production, based on complete coverage of area and yield through Crop Cutting Experiments (CCE) conducted by the respective state governments, of the preceding year are released alongwith the final forecast estimates of the year. Table 3.1 gives percentage area and production of principal crops covered by CCE at all India level.

3.6 The DESAg has divided principal crops into three groups viz., forecast crops, non-forecast crops and plantation crops. The forecast crops covered are paddy, rice, wheat, jowar, bajra, barley, maize, ragi, small millets, gram, arhar, other pulses, tobacco, sugarcane, groundnut, castor seed, sesamum, rapeseed and mustard, linseed, safflower, niger seed, sunflower, soyabean, coconut, cotton, jute, mesta, sunhemp, black pepper, ginger, chillies, turmeric, coriander, cardamom, garlic, guar seed, arecanut, banana, sweet potato, potato, tapioca and onion, for which regular estimates (generally known as final forecast) are issued at state level. The estimates for non-forecast crops are ad-hoc in nature and do not have the same degree of accuracy as the forecast crops. The non-forecast crops covered are papaya, indigo and opium. The plantation crops covered are tea, coffee and rubber, the estimates of which are based on the returns received from the respective commodity boards.

3.7 Data on wholesale and retail prices which are collected on weekly basis by the DESAg are published in their (a) Bulletin of Agricultural Prices (weekly), (b) Wholesale Prices of Foodgrains (weekly), (c) Agricultural Prices in India (annual), and (d) Agricultural Situation in India (monthly). These prices are mostly collected under their marketing intelligence schemes. The centres selected for collection of wholesale prices are distributed all over the country.

3.8 Cost of Cultivation Studies (CCS): For the purpose of obtaining estimates of cost of cultivation of principal crops, a comprehensive scheme was initiated by DESAg in 1970-71. The scheme envisaged collection of representative data on inputs and outputs in physical and monetary terms and estimating therefrom the cost of cultivation per hectare and cost of production per quintal of the principal crops. The important items for which data are being collected through the CCS are (i) Quantity of seed rate by crops per hectare (ii) Value/quantity of by-products by crops per hectare, (iii) Consumption of diesel oil, mobile oil and grease per tractor/pump set in quantity and value terms, (iv) Utilisation of milk & milk products including details on conversion, (v) Electricity consumed both in value and quantity terms, (vi) Fodder fed to animals (green as well as dry), (vii) Concentrate fed to draught animals, (viii) Cost of insecticides & fertilisers, (ix) Repairs & maintenance expenses of farm machinery, and (x) Marketing expenses including transportation costs to the nearest

market/mandi. Information in respect of first three items mentioned above has been used for improving the estimates of inputs in the agriculture sector. Data available in respect of items like electricity, insecticides, fertilisers etc., are not utilised as better and more reliable data on such items are available from sources like Central Electricity Authority (CEA), Fertiliser Association of India (FAI), Pesticides Association of India (PAI) etc.

3.9 **Other sources:** There are many other agencies on which the NAD regularly depends for data pertaining to agriculture production. These are Tea Board, Coffee Board, Rubber Board, Arecanut Board, Directorate of Cashewnut Development, Central Bureau of Narcotics, DMI, NSSO, Directorate of Sugar and Vanaspati, apart from various studies conducted by the Agro Research Centres. The use of these data is discussed in the estimation of output at current prices.

Livestock Production

3.10 **Integrated Sample Survey:** Recognising the need and importance of reliable and comprehensive data on various aspects of livestock including production of livestock products on a regular basis, the Government of India initiated a centrally sponsored scheme during the Fifth Five Year Plan called Integrated Sample Survey (ISS). The scheme envisaged establishing/strengthening the statistical cells in the Animal Husbandry Directorates of various states and Union Territories for the purpose of conducting sample surveys for the estimation of livestock products and carrying out other statistical activities. State-wise sample surveys on estimation of production of major livestock products were taken up in 1976. The detailed data collected include recording of milk yield of the selected animals, feed consumption of bovines, particulars such as breed, number of lactations completed, production and disposal of milk and milk products; production and disposal of dung and study of bovine practices; production, purchase and disposal of eggs, feed supplied to poultry birds, their diseases, deaths and disposals and breed composition etc., and study of poultry practices; sheep number and wool production in the selected flocks, pattern of disposal of wool, feeding and grazing practices of sheep and their diseases, deaths and disposals and study of sheep practices; and number of animals slaughtered according to species, breed and age on the day of visit, live weight and carcass weight after slaughter in the case of meat production.

3.11 The Government of India also constituted a Technical Committee of Direction (TCD) for improvement of animal husbandry and dairying statistics in the country. The committee has on it, members representing various statistical organisations at the Centre and in the States, besides subject specialists in the field of animal husbandry. The objective of the committee is to (i) identify the important data gaps, (ii) propose relevant statistical schemes for collection, analysis and dissemination of information, (iii) evolve suitable statistical methodologies and also (iv) provide approval from time to time for the release of results at the State/National level. The TCD is responsible for finalisation of production estimates of milk, eggs and wool. The production estimates of these items available state-wise through the ISS are examined rigorously by the TCD for their consistency over the years and by taking into consideration the other aspects like climatic factors etc., which contribute towards their production. However, for any particular state, if the survey results are not available then the ad-hoc estimates of production prepared by the State Animal Husbandry Departments are being substituted.

3.12 With the introduction of ISS and with the efforts of the TCD, the Ministry of Agriculture releases regularly state-wise and all India production estimates of milk, egg and wool. The latest data released by the Ministry of Agriculture, of these items, pertain to the year 1986-87. However, still there are problems with regard to the meat production estimates. The regular release of meat production estimates is yet to be started by the Ministry of Agriculture.

3.13 **Indian Livestock Census:** Indian livestock census (ILC) conducted quinquennially is the main source of data on livestock. This provides age-wise and sex-wise data at the district level on a number of different categories of animals separately for urban and rural areas. The estimates for inter-censal and post-census years are arrived at on the basis of compound growth rate observed for each category between two consecutive censuses.

3.14 **Other sources:** Apart from the sources mentioned above, the NAD uses the data collected by different agencies like State Animal Husbandry Departments, DMI, NSSO, Central Silk Board, KVIC. The information culled from these sources is used for preparing the estimates of production of poultry meat, meat by-products, silk worm cocoons, honey etc., which are discussed in detail in the estimation of output at current prices.

Inputs

3.15 **Fertiliser Statistics:** FAI is publishing data pertaining to state-wise dispatches of fertilisers made by the Central Fertiliser Pool, Indian Potash Ltd. and other domestic manufacturers both material-wise and nutrientwise in the publication "Fertiliser Statistics". Figures pertaining to pool dispatches are collected by the FAI from the Departments of Agriculture of the various states and mainly relate to imported nitrogenous and complex fertilisers. However, as regards non-pool fertilisers, the data relate to indigenous material. The total figures of dispatches to various states are arrived at after combining the figures from the pool and non-pool handling agencies. The estimates of state-wise consumption of chemical fertilisers are also published nutrient-wise, which are collected by the FAI from the State Agriculture Departments. However, these estimates are not very reliable and it has been observed that generally the annual consumption of fertilisers has been more than the distribution.

3.16 **Other sources:** The CCS provides information on different inputs already discussed in paragraph 3.8. In addition data from different sources are used to estimate the value of other inputs. The important sources are the NSSO, Indian Agricultural Statistics Research Institute (IASRI), AIDIS, DMI, ISS, PAI, CEA, State Revenue/Irrigation Departments, etc. Data available from these agencies are discussed in the estimation of inputs at current prices.

Estimates at Current Prices

Outturn of agricultural crops

3.17 **Classification:** For purposes of evaluation 74 agricultural crops/crop groups, including by-products are considered. These are divided into four broad categories viz., (i) 45 items of principal crops, (ii) 10 items of minor crops, (iii) 11 items of miscellaneous and unspecified crop groups, and (iv) 8 items of other products and by-products. The principal crops can further be disaggregated into groups viz., cereals, pulses, oilseeds, sugars, fibres, drugs & narcotics, condiments & spices, fruits & vegetables and other crops. The list of crops under each of these groups is given in Appendix 3.1.

3.18 **Outturn of principal crops:** The estimates of area and outturn of principal crops at state level are regularly obtained from the DESAg publication "Area and Production of Principal Crops in India". However, in the case of sugarcane, outturn excluding the quantity converted into gur by the cane growers is taken and gur is evaluated separately.

3.19 **Minor crops:** The estimates of area and outturn of minor crops viz., cashewnut, indigo and papaya are also published annually in the same publication of DESAg but with a time lag of one year. The estimates for the current year are therefore, obtained by projecting previous years' estimates on the basis of past trend and are revised subsequently when the data become available. For mango, citrus fruits and grapes, in the absence of current outturn estimates

from any source, the same are prepared using (i) the yield rates available from the reports of the DMI and the State Agricultural Departments and (ii) the area figures taken from the LUS. The production of coffee, rubber and opium are obtained from Coffee Board, Rubber Board and Central Bureau of Narcotics respectively. In the case of tea the estimates of output available from Tea Board relate to production of processed tea instead of raw tea leaves. Since processing is the activity outside the scope of agriculture, the output of raw tea leaves alone is to be taken into account in the agriculture sector and this is being taken to be equal to the input of raw tea leaf in the tea processing industry. Data on total quantity of raw tea leaf together with its value are obtained from the ASI. However, in the absence of the ASI results the production of tea leaves has been estimated as 4.44 times of the processed tea. This norm of 4.44 has been estimated by the Tea Board on the basis of Techno-Economic Surveys.

3.20 Miscellaneous and unspecified crops: For miscellaneous crops and unspecified crop groups, direct outturn estimates are not available. The estimates of output for these crops are obtained by applying an appropriate average value of yield per hectare to the total area under these crops as discussed in paragraph 3.38.

3.21 No direct estimates of output of fodder and grass fed to livestock are available. However, the NSSO Report No. 65 'Tables with Notes on Animal Husbandry' gives all India estimates on consumption and prices of fodder as well as grass for the year 1955-56. The bench mark estimates of production of fodder are moved forward on the basis of area under fodder crops and of grass on the basis of the combined area under permanent pasture land, miscellaneous tree crops, culturable wastes, fallow lands and net areas sown (using the appropriate weights for different types of areas). Fodder and grass are evaluated at producer prices received from DES.

3.22 Since conversion of sugarcane into gur is an activity undertaken by the agriculturist, the total sugarcane production is divided into two parts viz., sugarcane utilised as such and the sugarcane converted to gur. While the former is evaluated at sugarcane prices, the latter is evaluated at corresponding gur prices. Estimates of gur production are not directly available. As such the estimates are built up using information on quantity of sugarcane used for various purposes. The information on utilisation of sugarcane for seed, chewing, juice making etc., is gathered from the state Agricultural Departments, DMI and the CCS. The quantity of sugarcane crushed by the factories for the manufacture of crystal sugar is obtained from the Directorate of Sugar & Vanaspati, Ministry of Agriculture. The consumption of sugarcane for the production of khandsari, bura etc., is estimated separately for the registered and unregistered establishments from the ASI and NSSO respectively. Out of the total sugarcane, the quantity of sugarcane left over after allowing for the above uses is assumed to be converted into gur. The conversion rates from sugarcane to gur are taken from the production estimates of sugarcane in terms of gur, released by the DESAg. Bagasse obtained as a by-product during conversion of sugarcane into gur is estimated as 45 per cent of the sugarcane used for gur production and further it is assumed that 95 per cent of bagasse is used as fuel for indigenous production of gur and the balance 5 per cent, which works out to 2.25 per cent of the quantity of sugarcane used for gur production only is considered for evaluation in agriculture.

3.23 By-products: In the process of cultivation of crops and their processing by indigenous methods, several by-products are also produced. However, for the estimation of GVA only those by-products which are readily identifiable and have some definite economic value are considered. The value estimates of these by-products are based on the results of CCS. The value per unit area of the by-products available from the CCS have been directly utilised for arriving at the value of output.

Output of livestock and livestock products

3.24 **Classification:** For purpose of estimation of value of output, the livestock products are divided into 7 broad groups viz., (i) milk, (ii) meat group, (iii) eggs, (iv) wool and hair, (v) dung, (vi) silk worm cocoons and honey, and (vii) increment in livestock. The list of products under each of these groups is given in the appendix 3.1.

3.25 **Milk group:** The milk group comprises of milk consumed or sold in fluid form, ghee, butter and lassi produced by the producer households. It has been observed, during discussions with the DES that the quantity of milk used for conversion into ghee, butter and lassi by the producer households was quite minimal and the products converted are consumed mostly by the households themselves. Moreover, reliable price statistics are not available in respect of ghee, butter and lassi. Thus the evaluation of milk has been done as though it is consumed and sold in the fluid form itself. The milk production estimates released by the Ministry of Agriculture are used for working out the value of output.

3.26 **Meat group:** Meat group comprises of meat (including edible offals & glands and poultry meat), meat products (fats, heads, legs, etc.) and by-products comprising hides (cattle and buffalo hides), skins (goat and sheep skin) and other products like guts, blood, bones, horns, hoofs etc. Though, the Ministry of Agriculture has not yet started regular release of meat production estimates, they have collected the information on meat yield rates (excluding poultry meat production) and number of animals slaughtered from the State Animal Husbandry Departments and estimated the meat production of each category of animals viz., cattle, buffalo, sheep, goat and pigs for the year 1982-83. These estimates have been supplied to CSO before the approval of the TCD. For other years, the meat production estimates are therefore, directly compiled by the CSO from the data received from the State Animal Husbandry Departments. Seventeen State Animal Husbandry Departments have reported the data on number of slaughtered animals and production of meat for the various years. For the defaulting States the meat production estimates are prepared by moving the 1982-83 estimates with the number of slaughtered animals which in turn are estimated with the help of livestock population. The estimates of other meat products and by-products are based on the number of slaughtered animals & fallen animals wherever applicable and the corresponding yield rates. The basic data relating to yield rates of edible offals, glands, fats and other by-products (viz., guts, oesophagus, tail stumps, useless meat and blood) are culled out from the DMI report "Marketing of Animal Fats and Certain Important By-products in India", 1961. The yield rates of bones, horns and hoofs per animal are taken from the relevant DMI reports for 1957 and 1961 respectively. The outturn estimates are worked out for each category of animals by applying the state-wise average yield rates on the estimated annual number of slaughtered animals. Hides and skins are obtained from (i) animals slaughtered for production of meat and (ii) animals fallen due to natural death. Estimates of the number of animals fallen as given in the relevant marketing report (DMI, 1961) are projected to later years on the basis of the movement in the estimated population of animals.

3.27 **Eggs & poultry meat:** As mentioned in paragraph 3.12 above, the production of egg is estimated from the data collected through ISS, the estimates of poultry meat are prepared using the information on utilisation of eggs and chickens survived. These data are collected through ISS in some of the states. IASRI and some of the State Animal Husbandry Departments have also conducted poultry surveys and collected these data. The IASRI surveys relate to Andhra Pradesh, Punjab and Bihar (1966-67); Gujarat (1963-64); Madhya Pradesh (1968-69); Kerala, Karnataka, Rajasthan and Tamilnadu (1965-66) and West Bengal (1962-63). Poultry meat is estimated in terms of number of adult fowls and chickens slaughtered. Poultry meat production equals 50 per cent of the total adult fowls plus chickens & ducklings killed. The latter is worked out as estimated number of chickens during the year plus chickens survived (based on paper by Murthy & others, 1972) during the year plus 50 per cent of adult fowls minus estimated number of total fowls of the following year.

3.28 Wool & hair: The estimates of wool production have already been discussed at paragraph 3.12. The estimates of goat hair and pig bristles are prepared on the basis of information on yield per animal given in the relevant marketing reports (DMI 1961 and 1962 respectively). As regards camel hair, unpublished information furnished by the DMI for the year 1958-59 is used. The bench mark estimates of hair & bristles are carried forward using relevant category of population.

3.29 Dung: The estimates of production of dung are prepared on the basis of information on population and evacuation rates supplied by the Animal Husbandry Division, Ministry of Agriculture. The evacuation rates and population estimates are based on the ISS. In 1984-85 dung production estimates were available for 11 states. For the remaining states, the rates pertaining to the adjoining states alongwith the annual estimated animal population have been used for arriving at the dung production estimates. Dung is used as manure as well as fuel. The utilisation rates of dung for (i) dung used as manure and (ii) dung used as fuel have also been supplied by the Ministry of Agriculture.

3.30 Silk worm cocoons and honey: The annual outturn estimates of silk worm cocoons by types (viz., mulberry, tasar, ericot and muga) and honey are obtained from Central Silk Board and KVIC respectively on a regular basis.

3.31 Increment in stock: The annual net increase in the population in each state is estimated separately for each category of livestock on the basis of the projected population.

Evaluation of Output

3.32 Conceptually the farm-output needs to be evaluated at a price which measures, as accurately as possible, the income which accrues to the producer. For this purpose either the average price of a commodity at the point of production or at the first point of sale by the producer could be used. The price at the point of production is the average wholesale price at which the commodity is disposed off by the producer at the village site during the specified peak marketing period, i.e., the period immediately following the harvesting of a crop wherein the bulk of the produce is disposed off. Ideally the portion of the produce which is disposed off during a specified marketing period, at the farm site itself should be evaluated at farm harvest prices and that which is disposed off in the primary markets should be evaluated at the wholesale prices prevailing in the primary markets with due adjustments for market charges and transport expenses wherever necessary. The markets where bulk of the arrivals are from primary producers are termed primary markets.

3.33 In the case of relatively developed states where the producers have capacity to hold back a substantial portion of their produce and dispose it off at higher prices during the off-season, the use of prices prevailing during the peak marketing period may result in serious under-estimation of the income accruing to the agriculture sector. In such cases, ideally, there should be a system of using the weighted average of the season and off-season prices for evaluation purposes. It may be observed that the farm harvest prices are collected on a regular basis only in the case of 12 States and 2 UTs. The data for other states are collected only from a few selected centres. Moreover a reassessment of the current condition indicates that the bulk of the transactions actually takes place during the peak marketing period rather than during the harvest period, there being a time lag of 1 to 2 months between the two periods. Due to these considerations, crop-wise average wholesale prices prevailing in the primary markets during the peak marketing periods are being used for evaluating crop outputs at the state level. The peak marketing periods of important principal crops are given in Table 3.2. The wholesale prices are collected by the agricultural produce marketing committees, State Agricultural Departments or by the DES under the market intelligence scheme of DESAg. For averaging the weekly wholesale prices available from the selected primary markets, the following procedure is adopted:

- (i) Arithmetic averaging of the prices at the various centres within a district is done to get the weekly district prices.
- (ii) Average price for a district is worked out as the arithmetic average over the "peak marketing period" of weekly prices obtained at (i) above.
- (iii) State average price is obtained as a weighted average of the district-wise prices derived at (ii) above, weights being the district-wise production of the corresponding crops.

The average prices are used alongwith the production estimates available from DESAg for obtaining the value of output. In the absence of current price for any crop in a state, the trend observed in the prices of the crop in the adjoining state is used to estimate the current price. The portion of the production retained by the producer for self consumption, seed, livestock feed etc., is evaluated at the average prices arrived at above. However, the quantity procured by the central and state government agencies is evaluated at procurement prices obtained from the Ministry of Food and Civil Supplies.

3.34 For some principal crops and most of the minor crops, the corresponding district level production and prices are generally not available. The source material and the methodology followed in such cases are discussed in subsequent paragraphs.

3.35 For small millets, the average price is taken as 75 per cent of the weighted average prices of jowar, bajra, barley, maize and ragi. This relationship between the prices of small millets and cereal crops has been observed from the price situation available in the case of Madhya Pradesh and Uttar Pradesh which are the principal producing states for small millets and where detailed price data for most of the crops falling under this group are available. The average price for 'other pulses' is taken as 85 per cent of the weighted average prices of arhar, urad, moong, masoor and horsegram on the basis of data on production and prices available for Bihar and Madhya Pradesh States.

3.36 For crops like banana, mango, citrus fruits and grapes no production data at the district level are available. Therefore, a simple average of the district prices is taken as the state average price. In the case of arecanut, wholesale prices obtained from the Directorate of Arecanut & Spices Development are deflated by 20 per cent to obtain the producer price of raw arecanut.

3.37 For opium, prices paid to the growers are obtained from the Central Bureau of Narcotics. For raw rubber, the price of sheet rubber prevailing in the Kottayam market of Kerala is used after deflating the same by 28 per cent on the basis of information contained in the Plantation Enquiry Commission Report on Rubber. This allowance is towards the processing charges which are involved in the production of sheet rubber.

3.38 As mentioned earlier, for unspecified crop groups, the estimates of outturn are not available. The value of output of unspecified crop groups are obtained by applying an appropriate average value of yield per hectare to the total estimated area under each of these crop groups. The average value of yield per hectare for each unspecified crop group is arrived at from the weighted average value of yield per hectare of crops contained in that group. For example the average value of yield per hectare of 'other cereals' (other than small millets) is worked out as the weighted average value of yield per hectare of jowar, barley, bajra, maize and ragi.

3.39 The value of by-products is estimated directly from the results of the CCS. For bagasse, the average state-wise ex-factory prices available from ASI for the years 1978-79 and 1983-84 are used. These prices are adjusted for later years on the basis of movement in the index of firewood prices.

3.40 The prices of livestock and livestock products are obtained from the same source as those for agricultural commodities. Wherever possible, special returns are obtained from DESs to ensure a reasonable coverage of state-wise prices of important livestock/livestock products. The state-wise prices are worked out as the simple arithmetic average of all available price observations. As in the case of agriculture, if, in any year price of a product is not available for a given state, the price trend/actual price prevailing in an adjoining state is adopted. Since these wholesale prices relate mostly to urban centres, these are adjusted to conform to the rural prices using the urban/rural price differentials.

Inputs

3.41 For arriving at the GVA from agriculture and livestock sector, necessary deductions are made from the value of output for intermediate consumption. The various items that are considered as items of intermediate consumption i.e., inputs in this sector are (i) seed, (ii) manure-chemical fertilisers and organic and inorganic manure (iii) livestock feed, (iv) irrigation charges (payable to the government), (v) market charges, (vi) electricity, (vii) pesticides and insecticides, (viii) diesel oil and (ix) current repairs & maintenance of fixed assets and other operational costs.

3.42 **Seed:** Data on seed rates (quantity per hectare) are available from the CCS organised by the DESAg as well as from the State Agricultural Departments for principal crops and some minor crops. These data are supplemented wherever necessary by data contained in the relevant Marketing Reports and other sources. Prices used for the evaluation of output are used to arrive at the value of seed used as input.

3.43 **Manure:** The manure consists of dung (organic) manure and inorganic manure viz., chemical fertilisers. No separate estimates of consumption of organic manure are prepared except that of dung manure. It is assumed that the output of dung of the animal husbandry is used as input in the agriculture sector. The estimates of consumption of chemical fertilisers are based on the material-wise distribution of chemical fertilisers to States by the Central Fertiliser Pool, Indian Potash Ltd., and the domestic manufacturers. Pool distributes imported nitrogenous and complex fertilisers and domestic manufacturers market the indigenous material. These data do not include the stocks with the traders. Hence, there is an implied assumption that the consumption of chemical fertilisers in a particular year is equivalent to the quantity distributed. The consumption of chemical fertilisers is evaluated at retail prices available from the same source.

3.44 **Livestock feed:** The feed consumption of animals used for cultivation activities as well as production of livestock and livestock products, is considered as input. Livestock feed comprises of (i) roughages; (ii) concentrates including salt, medicines and other miscellaneous feed. Roughages include cane trash, grass, fodder, stalks, straw etc., while concentrates are made up of oil cakes, crushed pulses, grains, grams, rice bran, husk, oil seeds, gur etc.

3.45 As regards roughages, the entire production of fodder, cane trash and grass and 95 per cent of production of stalks and straws in the agriculture sector are considered to be consumed by entire livestock population. An adjustment is made for the consumption of these items by animals which are not used in agriculture sector viz., bullocks, horses, camels etc., mainly used for transportation purposes. The relevant proportions of consumption are obtained on the basis of a study made by Prof. D.R.Gadgil to express the consumption of different categories of animals in terms of consumption by cattle. Stalks and straws and cane trash are the by-products of the corresponding food grain crops and sugarcane.

3.46 The estimates of concentrates fed to livestock are largely based on the feed rates collected under the 30th Round of NSSO, 1975-76. The NSS Report No. 281 "Some Aspects of Production of Livestock Products and Related Characteristics", 30th round, 1975-76

provides state-wise estimates of quantity of concentrates consumed per day per cow & buffalo in milk for the year 1975-76. From the NSS Report No. 288 "A Note on Some Characteristics of Household Dairy Enterprises", 30th round, 1975-76, it has been possible to obtain state-wise estimates of the quantity and hence the percentage of the different components of concentrates fed to cattle and buffaloes in milk. The NSSO results referred to provide relatively recent information for a substantial part of the livestock sector. These data used in conjunction with the relative consumption rates of other categories of cattle and buffaloes as provided by the results of the studies/surveys undertaken by IASRI/State Animal Husbandry Departments make it possible to estimate the rates of consumption of concentrates fed to all the categories of bovines used for cultivation and livestock purposes for the year 1975-76. The NSS Report No. 288 also provides data on value of different components of concentrates for the year 1975-76. The information on value and quantity provided by this report is used to estimate corresponding prices. The corresponding prices for the subsequent years are obtained with the help of movement of prices of the relevant agricultural crops.

3.47 Other animals like goats, sheep, pigs etc., account for only a very little percentage of the total concentrates fed to livestock. The consumption of concentrates fed to goats and sheep are estimated from the IASRI study "Cost of Production of Sheep and Wool in Himachal Pradesh". From this report it is possible to derive the annual consumption of concentrates for goats and sheep. These norms are assumed for all states in the absence of any other data. Concentrates consumed by goats and sheep for the current year are estimated by projecting the bench mark estimates on the basis of the number of animals interpolated/extrapolated from the ILCs. The total consumption of concentrates is then split up into different components according to the details available in the above IASRI study. The evaluation is done in the same manner as discussed in para 3.46. For later years, the prices are moved with the help of changes in the prices of the relevant agricultural crops. In the case of pigs no survey results are available and in the absence of such data, the overall average value of consumption relating to goats and sheep is assumed.

3.48 Poultry feed is estimated from the consumption norms derived from the data available from studies/surveys of egg production and poultry practices carried out in Gujarat, Maharashtra, Punjab and Uttar Pradesh viz., "Sample survey to estimate egg production of Gujarat, 1971-72", "Report on the Integrated Sample Survey for egg production and poultry keeping practices, 1971-72", "Estimation of cost of production of poultry and eggs, Hoshiarpur District (Punjab)", and "Report on poultry and egg production for 1972 for U.P.". The concentrates in the case of poultry include grains and ready-made feed. The overall consumption norm based on the surveys referred to above is being used for all other states. The total consumption of concentrates is estimated by using the estimated number of poultry from the ILCs. The quantity thus estimated is split-up into grains and ready-made feed on the basis of the above said reports. The quantity of grains are evaluated at prices used in the estimation of value of output and the value of ready-made feed is moved to later years using the Economic Advisers' (EA's) Wholesale Price Index.

3.49 **Irrigation charges:** Annual data on irrigation charges payable to the government in lieu of water supplied to the farmers from government owned canals and other means of irrigation are received from the DESS' which are collected by them from the respective irrigation departments. The items on which information is being collected are (i) sale of water for irrigation purposes, (ii) irrigation cess, (iii) local cess on water charges, (iv) betterment levy, and (v) other items. Response from the states is quite encouraging. However, if a state fails to provide this information, estimates based on the budgetary analysis are substituted which include other receipts also which do not form part of the irrigation charges viz., sale of water for domestic purposes, sale of water for other purposes, sale proceeds from canal plantation, navigation etc.

3.50 **Market charges:** The estimates of market charges are prepared separately for agriculture and livestock production. Data on market charges for various commodities by

location of markets in the districts are received from DESAg. The estimates of market charges are based on the data available for all the states except that of Jammu & Kashmir, Himachal Pradesh, Nagaland, Sikkim, Manipur and Tripura. The steps involved in this exercise are as follows:

- (i) For each commodity the market charges are worked out for a district by taking a simple mean of the charges prevailing in the various markets.
- (ii) For each commodity, the weighted average for the state is worked out using the district level production of the relevant commodity as the weight.
- (iii) Market charges for each commodity at the national level are worked out using the statewide value of output of the commodity as weights. This exercise is carried out for all important commodities.
- (iv) The commodity-wise market charges are combined and a composite ratio is arrived at for all commodities using the value of production as the weights.

The percentage of market charges to the value of output thus obtained is assumed to remain constant over the years until it is revised. Market charges in respect of meat are estimated on the basis of MR on meat (1955) where the charges per animal are available.

3.51 Electricity: Data on electricity consumed for agricultural purposes and its corresponding price per unit are obtained from the CEA on an annual basis at state level.

3.52 Pesticides and insecticides: Estimates of consumption of pesticides and insecticides both in terms of quantity and value are available upto the year 1982-83 at national level from the PAI. For later years only the consumption in quantitative terms is made available, therefore the current value of consumption is estimated by using the 1982-83 price adjusted for change in EA's index of wholesale prices. The all India estimate, which is distributed amongst states using the state-wise distribution of pesticides (in terms of technical grade), is available on an annual basis from the Directorate of plant protection and quarantine, Ministry of Agriculture.

3.53 Diesel oil: The consumption of diesel oil is estimated from the number of tractors and diesel engines in use and per unit consumption of diesel oil. The data on the number of tractors used in agriculture are obtained from the DES and the number of diesel engines estimated through the ILC. The norms of consumption of diesel oil per tractor/diesel engine are based on the information collected from the schedules of CCS. The consumption norms were also available through the studies conducted by the Indian Institute of Petroleum (1976), but the CCS data have been preferred to, as the same include also the value of consumption of lubricating oil and grease etc., and are available annually.

3.54 Repairs and maintenance and operational costs: Fixed assets employed in this sector for the purpose of production can be classified into (i) agricultural implements, machinery and transport equipments, (ii) farm houses, barns (grain golas) and cattle sheds, (iii) orchards and plantations, (iv) bunding and other land means, (v) wells, (vi) other irrigation resources etc. The estimates of expenditure on current repairs and maintenance for all these categories except for agricultural implements and machinery have been prepared both for rural and urban areas for the year 1981-82 using the data from AIDIS. The expenditure so obtained has been moved to the preceding and subsequent years by the index of cost of rural/urban 'other construction works', prepared specially for this purpose for getting the estimates at current prices. In the case of agricultural machinery and implements, the point estimate on expenditure on repairs and maintenance for the year 1981-82, obtained from AIDIS, has been

moved backward and forward with the help of value of products and by-products of this group (NIC-350).

3.55 The operational costs of livestock products cover current expenditure on production of milk, hides & skins, eggs & poultry, wool & hair, honey and silk worm cocoons. Based on the limited data available on such expenditure, operational costs of production of these products are estimated at the rate of 0.25 per cent of corresponding value of output.

Gross value added

3.56 The estimates of GVA are arrived at by deducting the total value of intermediate consumption from the value of output of this sector and then adding to it the GVA from government irrigation system. The GVA from the operation of government irrigation systems is obtained by income approach method i.e. by taking the sum of compensation of employees, operating surplus gross of provision for CFC, the details of which are available from the Central and State Government budgets. Tables 3.3 to 3.5 give the value of output from agriculture, the value of output from livestock and the GVA from the sector as a whole respectively.

Estimates at Constant Prices

3.57 For estimation of value added at constant prices, the double deflation method is used wherein various items of output and input are estimated at the base year prices. In a given year, the base year price data viz., the state average price, value of yield per unit of area etc., are used wherever applicable and a method similar to that at current prices is followed to obtain the value of output at constant prices.

3.58 In the case of inputs where quantity data are available, these are evaluated at base year prices. In the case of pesticides and insecticides for which only value estimates are available, the constant price estimates are arrived at by deflating the current price estimates using the index number of wholesale prices of pesticides. The estimates of irrigation charges at the constant price are obtained by projecting the base year estimates by the trend in area irrigated by government sources. However, the base year estimates are obtained by using the average of the triennium ending 1981-82. This has been done because there were violent fluctuations in the estimates at current prices due to (i) the government policy of remission in years of drought and (ii) tardy collection or large recoveries of arrears in particular year etc. In the case of operation of irrigation system, area under irrigation by government canals has been used as an indicator to carry forward the component of the wages and salaries of the staff of the base year to obtain the corresponding estimates at constant prices. For other components of value added, the current price estimates are adopted without adjustment.

Quality and limitations of Data base

3.59 Periodic estimates of 45 principal crops are issued by the DESAg in the form of Final Forecast, which are available 4-5 months after the close of the agriculture year. Alongwith final forecast figures, revised estimates for the preceding year are also published. However, for some of the crops in some states, final forecast figures are repeated by DESAg due to non-availability of revised estimates. In the case of minor crops like indigo, opium, cashewnut etc., the outturn estimates are based on traditional methods and are, therefore, questionable. No forecast estimates are issued in respect of these crops. Some of the states have initiated a Scheme for 'Crop Estimation Surveys on Fruits and Vegetables and Minor Crops'. This scheme is likely to improve the production statistics of these crops. For unspecified crops like 'other oilseeds', 'other cereals', 'other fruits and vegetables' and 'other condiments and spices' etc., only area figures are available on an annual basis. The value of output of these crop groups are, therefore, estimated on the basis of area and output of related major crops/crop

groups. DESAg supplies the LUS with a time lag of 2 to 3 years. The estimates for these crop groups are, therefore, comparatively less reliable. The estimates of production of plantation crops like tea, coffee, cardamom, and rubber are directly obtained from the respective Boards on an annual basis. These are estimated by the Boards on the basis of the returns received from the growers. The output of raw tea leaf is taken to be equivalent to input of raw tea in the manufacturing industries.

3.60 Wholesale prices prevailing in the primary markets averaged over the peak marketing period are used for evaluating the production. These prices are usually collected by Agricultural Produce Market Committees and the State Agriculture Departments. Weekly and center-wise price data are also available with the DESAg. The weekly wholesale price data collected by DESAg/State Governments under Market Intelligence Scheme cover all important mandis in rural and urban areas. The prices collected by the DESAg become available with time lag of about 1-2 months only while the data on prices collected by the state governments become available with a time lag of about 1-2 years. The prices cover almost all crops which form about 95 per cent of the total output and are considered to be reliable.

3.61 The farm output should conceptually be evaluated at prices which accrue to the producer at the first point of transaction. In practice, however, this is not possible as the producer disposes the product at different stages. The more important of these are (i) sales at village farm site, (ii) sales at nearby and distant markets at different points of time, and (iii) retentions for consumption and other uses like seed, feed etc., in the producer households. The ideal way would be to evaluate transactions at each stage of disposal, at the corresponding price but little information is available to make this possible. Studies, however, show that the disposal of product by producer households is largely in the primary markets during peak marketing periods. Evaluation of output at state average prices worked out as weighted average of district level prices during peak marketing period is, therefore, considered to be the most appropriate under the present circumstances.

3.62 Results of ILC, 1982 provide age-wise and sex-wise population at the district level for different categories of animals. For the first time, census has provided information according to different breeds of animals. The estimates of main products viz., milk, egg and wool are obtained from Ministry of Agriculture. These estimates are based on yield rates as well as population evolved through ISS, scientifically planned sample surveys, conducted by the State Animal Husbandry Departments. These surveys are conducted in an objective manner and provide reliable estimates of yield rates. Production of meat of different categories of animals are prepared using the data obtained from the State Animal Husbandry Departments. These estimates suffer from inherent limitations. Surveys conducted by IASRI and State Governments and the trade enquiries of the DMI form the main source of data for yield rates of other livestock products. The IASRI surveys were conducted in an objective manner and provide sufficiently reliable estimates of yield rates though these refer to different time periods in different studies. Estimates of yield rates of some of other livestock products like other meat products, hair, pig bristles, bones etc., are generally obtained from DMI. Although DMI enquiries lack comprehensiveness and objectivity, these estimates are used in the absence of better alternatives.

3.63 The estimates of the value of inputs are prepared by using the various sources like CCS, FAI, NSSO, IASRI, DES, DESAg, CEA, PAI, State Animal Husbandry Departments and AIDIS. The estimates of seed, diesel oil and by-products of agriculture crops are based on the results of the CCS. CCS data are based on 9000 agriculture holdings. The results of such studies may be representative for all India but using the same at state level may not be justified. In the case of chemical fertilisers, it is assumed that whatever is distributed by the pool and non-pool agencies is consumed. This assumption may not be true but in the absence of any data on stocks there seems to be no other alternative. The concentrates used in the livestock feed are estimated from the NSSO survey results of the 30th round. These results pertain to the year 1975-76 and may not be relevant for the later years. In respect of fodder and grass

the estimates of livestock feed are based on the NSSO report which pertains to 1955-56. The data on consumption of organic manure are not available and so the output of dung manure in animal husbandry sector is taken as input of agriculture sector. AIDIS form the main source of information for preparing estimates of repairs and maintenance charges. These surveys are, however, conducted once every ten years and the preparation of annual estimates is naturally handicapped due to the non-availability of satisfactory annual indicators.

3.64 The estimates of hunting, trapping and game propagation are found to be insignificant with the available data. Hunting and trapping is a banned activity, therefore, reliable data are not available on the same.

Appendix 3.1 : List of Agricultural crops and Live stock products

Categories (1)	items (2)
A. Agricultural crops	
I. Principal crops	
1. Cereals	Paddy, wheat, jowar, bajra, barley, maize, ragi and small millets
2. Pulses	Gram, moong, arhar, horse-gram, masoor, urad and other pulses
3. Oilseeds	Linseed, sesamum, groundnut, rapeseed & mustard, castor, coconut, safflower, niger seed, soyabean, and sunflower.
4. Sugars	Sugarcane
5. Fibres	Kapas, jute, sunhemp, mesta
6. Drugs & Narcotics	Tobacco
7. Condiments & Spices	Cardamom, dry chillies, garlic, black pepper, dry ginger, turmeric, coriander and arecanut
8. Fruits & Vegetables	Banana, potato, sweet potato, tapioca, and onion
9. Other crops	Guar seed
II. Minor crops	Cashewnut, indigo, papaya, tea, coffee, rubber, opium, mango, citrus, fruits and grapes
III. Miscellaneous and unspecified crop groups	Other cereals, other oilseeds, other sugars, other fibres, other dyes and tanning materials, other drugs and narcotics, other condiments and spices, other fruits & vegetables, fodder, miscellaneous food crops and miscellaneous non-food and grass crops.
IV. Other products & by-products	The remaining products and by-products like gur (indigenous production only); baggase, and by-products of crops like stalks and straw; cotton, jute and arhar sticks and cane trash
B. Livestock products	
I. Milk	Milk
II. Meat group	
1. Meat	Beef, mutton, pork, poultry meat
2. Meat products	Fats, heads & legs
3. By-products	Hides, skins, guts, blood, bones, horns, hoofs, tail-stump, useless meat, and oesaphagus
III. Eggs	Eggs
IV. Wool & hair	
1. Wool	Sheep wool
2. Hair & bristles	Goat hair, camel hair & pig bristles
V. Dung	Dung fuel and dung manure
VI. Silk worm cocoons & honey	Silk worm cocoons & honey
VII. Increment in stock	Increment in livestock of all categories of animals

TABLE 3.1 : Percentage of area and production of principal crops covered by crop-cutting experiments, 1980-81 and 1985-86 - all-India

Crop	1980-81		1985-86	
	Area	Production	Area	Production
(1)	(2)	(3)	(4)	(5)
Foodgrains				
Rice	97.1	96.3	97.9	98.1
Jowar	99.6	99.6	99.7	99.7
Bajra	99.7	99.3	99.6	99.5
Maize	94.8	95.9	95.2	95.1
Ragi	86.0	91.6	86.9	91.3
Small millets	58.9	50.8	58.6	49.0
Wheat	99.5	99.6	99.6	99.7
Barley	98.4	99.1	98.1	99.0
Cereals				
Gram	97.9	98.7	98.5	99.1
Tur	84.2	86.1	83.8	83.4
Other kharif pulses	20.3	26.9	21.5	28.2
Other rabi pulses	42.4	42.3	44.6	50.7
Pulses	56.6	70.9	59.8	74.6
Foodgrains	89.3	94.9	90.1	96.1
Oilseeds				
Groundnut	93.1	86.1	92.7	86.6
Castorseed	86.4	83.9	87.4	88.7
Sesamum	49.4	44.9	96.0	92.6
Rapeseeds & mustard	42.5	45.1		
Linseed	52.6	47.0	81.9	71.0
Safflower	23.7	24.8	95.1	96.6
Coconut	73.3	74.5	57.7	49.1
Fibres				
Cotton(Lint)	87.8	76.1	99.6	99.6
Jute	98.9	98.9	94.9	93.6
Mesta	50.3	68.1	69.3	61.4
Other Crops				
Sugarcane	91.1	93.3	94.4	94.8
Potato	87.3	90.3	86.6	87.7
Black pepper	96.8	96.8	86.6	87.7
Chillies	35.8	42.4	38.4	55.0
Tobacco	67.8	74.9	78.0	79.1
Tapioca	94.1	96.2	90.5	96.7
Banana	28.2	31.2		
Onion	27.6	31.3	28.7	32.1

Source : "Area and Production of Principal Crops" published annually by DESAg.

TABLE 3.2 : Peak Marketing Period* of principal crops

States	Paddy	Wheat	Jowar	Bajra	Barley	Maize	Gram
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Andhra Pradesh	12-8	2-5	9-3 & 1-5	9-1	4-5	10-5	4-5
Assam	1-4 & 8-10	3-5				8-9	
Bihar	9-1	4-6		11-2	4-6	9-11	4-6
Gujarat	12-2	3-5	10- 12&6	10- 12&6	3-5	9- 11&6	3-5
Haryana	10-12	5-6	12-1	10-12	4-6	10-12	4-6
Himachal Pradesh	10-11	5		11	4-5	10-11	4-5
Jammu & Kashmir	10-1	4-8			5-8	10-12	
Karnataka	12-2 & 5-7	2-4	2-5	10-1		12-1	1-5
Kerala	9-6						12-1
Madhya Pradesh	11-3	3-6	12-4	11-1	4-6	9-11	3-6
Maharashtra	11-1	3-5	12-5	12-1	4-5	11-12	3-4
Manipur	9-3	4-5				9-11	
Meghalaya	5-6 & 8-10 & 12- 3	2-5				9-2	1-5
Orissa	1-6 & 10-11	3-4	12-1	12-1		12-1	3
Punjab	10-1	5-6	10-12	11-1	4-6	10-1	4-6
Rajasthan	11-1	5-6	11-2	11-1	5-7	10-1	4-6
Tamil Nadu	2-4 & 9-12		3-6 & 10-1	2-5 & 7-12		3-4 & 9-10	12-4
Tripura	2-4 & 9-10						
Uttar Pradesh	10-2	5-6	11-1	11-1	4-6	10-12	4-6
West Bengal	9-2	4-5	10-12		4-5	11-12	3-4
A & N Islands	11-3					10-11	
Dadra & Nagar Haveli	12-3						
Delhi	11	5-6	12	11-12	4-5	11	4-5
Goa, Daman & Diu	3-6 & 9-12						
Pondicherry	2-5			6-9			

Continued ..

TABLE 3.2 : Peak Marketing Period* of principal crops
(Concluded)

States	Groundnut	Sugarcane	Cotton	Jute	Tobacco	Dry Chillies	Potato
(1)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Andhra Pradesh	10-6	1-6	2-10		2-6	4-6	1-2
Assam		12-4	2-4	8-11	3-5	12-3	1-4
Bihar		12-3		10-12	4-6	5-6	11-3
Gujarat	10-12 & 6	1-4	2-4		2-4	2-3	2-5
Haryana	10-12	12-3	10-1		6-10	9-1	12-4
Himachal Pradesh	11-12	12-3	9-10			11-2	10-12
Jammu & Kashmir							
Karnataka	9-1 & 5-7	10-6	9-5		1-4	10-4	9-10 & 2-4
Kerala	8-9	11-2	2-3		5-6	4-6	
Madhya Pradesh	10-1	11-4	11-3	11-12	4-6	10-1	4-5 & 10-1
Maharashtra	12-1	1-3	11-2		6-7	11-1	2-4
Manipur						9-10	2
Meghalaya		1-3	12-2	10-12	12-4	10-5	5-9 & 12-1
Mizoram	4-5 & 11-12						
Orissa	1-2	1-3	12-1	11-1	1-2	3	2-3
Punjab	11-1	12-2	11-2		6-7	11-1	12-6
Rajasthan	10-1	11-2	12-1		12-6	11-2	2-3
Tamil Nadu	10-5	10-5	1-4 & 7-11		12-3	9 & 12-4	12-5
Tripura		2-3	12-2	9-12	4-5		
Uttar Pradesh	11-1	11-4	10-12	12-1	4-6	12-2	2-4
West Bengal	1-2	12-3	5-3	9-12	4-5	1-3	2-4
A & N Islands	10-11	2-3					
Delhi		12-3	11-2		6	3	1-2
Goa, Daman & Diu	1-5						
Pondicherry		12-5	6-8				

Note: Figures under each column indicate the serial number of a month of the calendar year. Thus 1-6 indicate January to June.

* - Peak marketing period is defined as the period 3 to 4 weeks post-harvest where bulk of the produce is expected to be brought to market for sale.

TABLE 3.3 : Value of Output from Agriculture(Proper), 1980-81

Rs. Crore

(1)	Item (2)	Value (3)	(1)	Item (2)	Value (3)
1	Cereals	18869	6	Sugars	4008
1.1	Paddy	9688	6.1	Sugarcane	4000
1.2	Wheat	5233	6.2	others	8
1.3	Jowar	1576	7	Drugs & narcotics	1054
1.4	Bajra	707	7.1	Tea	408
1.5	Barley	278	7.2	Coffee	129
1.6	Maize	898	7.3	Tobacco	404
1.7	Ragi	316	7.4	Others	113
1.8	Small millets & Other cereals	173	8	Condiments & Spices	1052
2	Pulses	3184	8.1	Cardamom	55
2.1	Gram	1323	8.2	Chillies	354
2.1	Arhar	597	8.3	Black Pepper	35
2.3	Urd	287	8.4	Dry Ginger	49
2.4	Moong	411	8.5	Turmeric	59
2.5	Masoor	128	8.6	Arecanut	228
2.6	Horse gram	93	8.7	Garlic	49
2.7	Others	345	8.8	Coriander	58
3	Oilseeds	4259	8.9	Others	165
3.1	Linseed	183	9	Fruits & Vegetables	5202
3.2	Sesamum	232	9.1	Banana	428
3.3	Groundnut	1643	9.2	Cashewnut	115
3.4	Rapeseed & Mustard	1082	9.3	Potato	787
3.5	Castor	69	9.4	Sweet Potato	104
3.6	Coconut	726	9.5	Tapioca	201
3.7	Niger seed	51	9.6	Onion	161
3.8	Safflower	117	9.7	Other	3406
3.9	Sunflower	31	10	Other Crops	1730
3.10	Soyabean	103	10.1	Rubber	142
3.11	Others	22	10.2	Guar Seed	162
4	Dyes & Tanning material	1	10.3	Miscellaneous crops	1426
5	Fibres	1903	11	By-products	5016
5.1	Kapas	1647	11.1	Straw & Stalks	4733
5.2	Jute	192	11.2	Others	283
5.3	Sannhemp	11	12	Total Value of Output	46278
5.4	Mesta	51			
5.5	Others	2			

TABLE 3.4 : Value of Output from Livestock, 1980-81

		Rs. Crore
	Item	Value
1	Milk Group	6884
2	Meat Group	1570
2.1	Meat	1227
2.1.1	Beef	178
2.1.2	Mutton	537
2.1.3	Pork	68
2.1.4	Poultry meat	444
2.2	Meat products	93
2.3	By-products	250
2.3.1	Hides	125
2.3.2	Skin	85
2.3.3	Other by-products	40
3	Eggs	351
4	Wool & hair	49
4.1	Wool	39
4.2	Hir & brittles	10
5	Dung	1352
5.1	Dung fuel	673
5.2	Dung manure	679
6	Silk worm cocoons & hoey	136
7	Increment in stock	255
8	Total value of Output	10597

TABLE 3.5 : Value Added from Agriculture and Allied activities, 1980-81

		Rs. Crore
(1)	Item (2)	Value (3)
1	Value of output	56875
1.1	Agriculture	46278
1.2	Livestock	10597
2	Less input	15247
2.1	Seed	1682
2.2	Organic manure	679
2.3	Chemical fertilizers	2308
2.4	Current repairs, maintenance of fixed assets & other operational costs	758
2.5	Feed of livestock	8125
2.6	Irrigation charges	122
2.7	Market charges	601
2.8	Electricity	269
2.9	Pesticides & insecticides	250
2.10	Diesel oil	453
3	Gross value added	42466
3.1	Agriculture & allied activities	41628
3.2	Operation of irrigation system	838