CHAPTER -3

The Comprehensive Scheme for Cost of Cultivation and Production

The Initial Comprehensive Scheme

In view of the observation made by the Agriculture Prices Commission, the Govt. of Indiainitiated the Comprehensive Scheme for Studying Cost of Cultivation/Production of Principal Crops in 1970-71 which was recommended by the Standing Technical Committee on indices of input Costs. The[1] technical details of the scheme were finalized by the Indian Agriculture Statistics Research Institute (IASRI) at the instance of the Committee. During the first year the scheme was initiated in the states of the Punjab, Haryana, Madhya Pradesh and Rajasthan, and it was subsequently extended to Andhra Pradesh, Assam, Bihar, Gujarat, Himachal Pradesh, Karnataka, Kerala, Maharashtra, Orissa, Tamilnadu, Uttar Pradesh and West Bengal, thus covering all major States.

The scheme was for collection of representative data on inputs and output in physical as well as monetary terms, and estimation of cost of cultivation per hectare and cost of production per quintal of principal crops on a continuing basis.

With the passage of time this comprehensive scheme was reviewed twice by the expert committees headed by Dr.S.R.Sen (1979) and Prof. Hanumantha.Rao (1990). The focus of the reviews and modification has been on the sampling design and method of evaluation of various inputs. The details of their reviews and the current state of comprehensive scheme that follows have been taken from “Cost of Cultivation and Farm Income” by A.Sen and M.S.Bhatia (2004), Academic Foundation, New Delhi, Ministry of Agriculture (Govt. of India).

Sampling Design

The sampling design of the study consisted of three stages stratified random sampling with tensil as first stage sampling unit, a cluster of villages as the second stage sampling unit and an operational holding in the cluster as the third and ultimate stage sampling unit. For the purpose of drawing in the sample for this study, each State was divided into a number of zones

[1]Sen, A. and M.S, Bhatia (2004), Cost of Cultivation and Farm Income, Academic *Press.*

depending on the cropping pattern soil type, rainfall irrigation etc. The zones demarcated for the initial study were retained for all subsequent studies.

Current State of Comprehensive Scheme

Sampling Design

The design of scheme is currently three-stage stratified random sampling with tehsils as the first stage unit, village/cluster of villages as the second stage unit, and holding as the third and ultimate stage unit. Initially each state is demarcated in to homogeneous agro-climatic zones based on cropping pattern, soil type, rainfall which have been retained so farther primary sampling units are selected in each zones (stratum) with probability proportional to the area under the selected crops and with replacement. If the nucleus village/cluster of village has 200 and more holding, then holding are selected only from this village, but if number of total holdings are selected in the nucleus village is less than 200,then second and third villages, are added following the same procedure as adopted in 1970. In each selected village/cluster, all the operational holdings are enumerated and classified in to five size classes, the class limits being fixed uniformly for all villages/clusters. Then two holdings are selected from each size class does not contain even two holdings, more holdings are selected from the adjacent classes to make up the deficit.

Crop Coverage

With the change in design from single to crop-complex approach, the crops currently included for study comprises the following:

Cereals- Paddy, Jowar(sorghum),Bajra,Maize,Ragi,Wheat and Barley.

Pulses –Gram,Arhar (Tur), Urad, Moong, Masoor.

Fibres –Cotton, Jute.

Oilseeds –Groundnut,Rapeseed&Mustard, Soyabean, Sunflower, Seasamum.

Miscellaneous-Sugarcane, Potato, Onion, Tapioca and Ginger

Special study-V.F.C Tobacco in Andhra Pradesh, Coconut & Pepper in Kerala (being under implementation)

The coverage of crops in each state varies depending upon the cropping pattern and relative importance of the crop either in all –India or for the State economy. For each crop generally those States which account maximum area till it cover almost 85 per cent of total area under the crop are selected.

Items of Cost

Cost (out of pocket expenses) and imputed cost of owned inputs. The items of cost covered under these two heads are-

A. Paid out Items of Cost

1. Hired Labour

(i) Human

(ii) Animal

(iii) Machinery

2. Maintenance Expenses

(i) Owned Animal

(ii) Owned Machinery

3. Material inputs

(i) Seed (both home grown and purchased)

(ii) Fertilisers

(iii) Manure (owned and purchased)

(iv) Pesticides, and

(v) Irrigation

4. Depreciation on

(i) Implements

(ii) Farm buildings

5. Land revenue

6. Interest on borrowing

7. Rent paid for leased-inland.

Imputed Items of Cost

1. Value of family labour
2. Managerial input of the farm
3. Rent of owned land
4. Interest on owned fixed capital.

Imputation procedures

Some of inputs in farm production are supplied from the family sources itself. The procedure adopted for estimating the imputed value of these items of input under the comprehensive scheme is currently as under:

(1) Family labour: charged normally at the ongoing actual wage rate for casual labour. However, if market rate is lower than statutory wage rate, a separate calculation is provide to value family labour on the basis of statutory wage rate or actual market rate, whichever is higher.

(2) Owned animal labour: Own bullock/ animal labour are valued on the basis of its cost of maintenance, which include (a) cost of green and dry folder. (b) Cost of feed/ concentrates, (c) cost of drugs, salt etc. (d) depreciation on animals and cattle sheds. (e) cost on labour for upkeep of animals, and (f) other miscellaneous expenses, if any.

(3) Owned machinery: This is charged on the basis of cost of maintenance of farm machinery which include diesel, electricity lubricants, depreciation, repairs, interest and other charges,if,any.

(4) Implements: Cost of implements includes basically the deprecation and charged on account of minor repairs.

(5) Home grown seed: is charged at the prevailing market prices in the village at the time of sowing.

(6) Farm yard manure: is evaluated at rates prevailing in the village.

(7) Rent of owned land: As per decision of the government the rental value is estimated on the basis of prevailing rents in the village for identical type of land or as reported by the

sample farmers, subject to any ceiling on fair rents under the land legislation of the state concerned.

(8) Interest on working capital: Interest on working capital both owned and borrowed is charged at the rate of 12.5 percent annum for half of the period of crop.

(9) Interest on owned fixed capital: It is being charged on the present value of fixed assets at the rate of 10 percent per annum.

(10) Kind payment: Payments for some of inputs by the farmers is made in kind. All kind payments are evaluated at prices prevalent in the village at the time that such payment is made.

Allocation of joint costs

The expenditure incurred on, or imputed, for some of the items of cost relate to the farm as a whole or for a number of crop enterprises. Such joint costs are maintenance of farm animal labour (bullocks), deprecation on implements and machinery, maintenance cost of farm machinery like tractor, tube-well, land rent, revenue, interest on owned fixed capital etc. All such costs are allocated amongst different crop enterprises. The procedure used for allocation of these joints costs is as follows:

(1) Bullock labour cost: Per hour cost of maintenance of bullock labour is estimated taking totals net cost of maintenance and number of total pair bullock hours used on the farm. The cost on individual crop enterprises is allocated taking into consideration the number of bullock pair hours used in that crop and per hour cost of maintenance.

(2) Deprecation on implements: Usually most of implements like plough, harrow, etc are bullocks drawn and their use is linked with the use of bullock in different crops.

(3) Cost of maintenance of machinery like tractor etc. is allocated amongst different crops according to proportionate use of machine hour in individual crop in relation to total hours used.

(4) Land rent/ revenue: Total rent/ revenue is allocated amongst different crops according to the area covered in different seasons. However, if crop – mixture is grown on some land/plot, then rent/revenue of that land is allocated according to the area under those mix

crops if known, otherwise joint cost is allocated in proportion to the total value of output contributed by individual crops in the mix.

Apportionment of cost between Main and By-products

Since the acceptance of the special expert committee, the apportionment of total cost of cultivation between main product and by-product is done in proportion to their contribution to the total value of output.

Cost Concepts

The comprehensive scheme adopted the same cost concepts as were being following by the farm management studies. These included four major cost concepts of cost $A_{1,}$ Cost A_2, Cost B, and C. However, after the review of the scheme by the special expert committee in 1980,cost estimates began to be generated according to the six major concepts of Cost A1,Cost A_2,Cost B_1, Cost B_2, Cost C_1 and Cost C_2.After the recommendation by the expert committee for review of methodology of cost of production of crops, when some new items of cost were include, then two additional concepts of cost were suggested to be generated viz Cost C_2* and Cost C_3.The first relates to cost of human labour if evaluated at statutory minimum wages (when this is higher than actual wage rates) and the second relates to the inclusion of cost on managerial input. The cost estimates are therefore now generated according to eight major cost concepts:

Cost A_1 – Which Includes

(1) Value of hired human labour
(2) Value of hired bullock labour
(3) Value of owned bullock labour
(4) Value of owned machine labour
(5) Value machinery charges
(6) Value of seed (both farm produced and purchased)

(7) Value of insecticides and pesticides

(8) Value of manure (owned and purchased)

(9) Value of fertilize

Irrigation charges

Depreciation on impotents and farm buildings

Land Revenue, cesses other taxes

Interest on working capital

Miscellaneous expenses (artisans etc.)

Cost A_2 = Cost A_1+ Rent paid for leased-inland

Cost B_1 = Cost A_1 +Interest on value of owned fixed capital assets (excluding land)

Cost B_2 = Cost B_1 + Rental value of owned land (net of land revenue) and rent paid for leased –in land.

Cost C_1 = Cost B_1+ Imputed value of family labour

Cost C_2 = Cost B_2 + Imputed value of family labour

Cost C_2*= Cost C_2 + Additional value of human labour based on use of higher wage rate in consideration of statutory minimum wage rate.(This is an intermediate concept).

Cost C_3 = Cost C_2* + 10 per cent of costC_2* to account for managerial input of the farmer)

Persisting Weaknesses of the Existing Scheme

Despite perceptible improvements following review by special expert committee and expert committee in the implementation of the comprehensive scheme in terms of crop coverage, sampling design, as well as the methodology for evaluation and imputation of costs, the scheme continues to come in for criticism. This is partly because o non – implementation of some of the recommendations of the review committees, and partly because some of the recommendation were modified by the government before implementation. Some of the important issues regarding items of cost and their methodology of evaluation which continue to be debated are:

Rental value of owned land

Rental value of owned land accounts for 25-30 percent of total cost of cultivation. Its appropriate valuation has significant bearing on unit cost of production of cropes and hence on price policy. Often two alternative approaches/methods are discussed for valuation of services of land:

(a) Interest on the value of the land
(b) Prevailing contract rent for similar land which is the value paid for the services of land in the market. The relative merits of the two approaches were discussed by the review committee. These committee favored the second approach, since absence of adequate transaction in the land market make it difficult to make objective assessment of value of land and also because prevailing land rents are more accurate reflection of the opportunity cost.
(c) Interest on Fixed Capital

At present the rate of interest on fixed capital is calculated at 10 percent per annum applied on the present value of the capital stock. This rate was fixed earlier at the prevailing debenture rates. This rate is ever low compared to the rates prevailing now, charged by institutional lenders and fails to reflect the fact that a significant part of credit still financed by the private lenders whose rate of interest is much higher.

Interest on Working Capital

Presently, interest on working capital is charged at the rate of 12.5 percent for half of period of crop. An in the case of the rate of interest on fixed capital, this is outdated and the review committees' recommendation to compute the interest on working capital by taking a weighted average rate based on short term loans taken by the sample farmers has not been implemented. The committee had suggested computation for each crop separately of a weighted average period, taking as weight the value of inputs actually used during different months by the sample farmers

Valuation of Human Labour

The valuation of human laour has been the most controversial issue in the estimation of cost of production of crops. The initial practice was to charge hired labour, both attached and

casual, at the rate actually paid to them whereas family labour was evaluated at the rate paid to the attached labour.The expert committee for review of methodology of cost production of crops made a relatively minor changed when it suggested that although hired labour should continue to statutory minimum wages. But while implementing the recommendation of the second expert committee, Government decided to value all human labour at statutory minimum wage rate or the actual wage rate whichever is higher, thus, negating the observation on this matter by the two review committees. The present reporting system still reports cost C_2 only using actual wage paid, making the adjustment for minimum wages separately in cost C_2*. This allows analytical separation.

Management as an item of Cost

Both the review committee agreed to inclusion of management as an item of cost, but limited this to actual payment to managers and imputation on actual time spent by the farm family on management. But noting practical difficulties in such time disposition studies to separate management and other function of family labour, the second expert committee had recommended a norm, i.e. to account for management input of the farmer, a separate cost (Cost C_3) be computed, increasing cost C_2 by 10 percent of actual paid out cost. When government accepted this recommendation in 1990, it decided to take managerial cost as 10 percent of the total cost (Cost C_2) rather than of paid out cost (A_2), thus, almost doubling this cost. Since there was no justification for this, the commission for Agriculture Cost and Prices (CACP) has consistently expressed its reservation on the use of such artificially raised costs of production for minimum support price policy.