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demand for some of its products. Social benefits thus appear higher than the social cost of subsidy.

CONCLUSION

A subsidy on gypsum for land reclamation plays a significant role in increasing production, income and employment and in reducing income inequalities among farmers. As the gestation period is very short, a subsidy on gypsum motivates the producers to exploit the full potential of barren and uncultivated salt affected lands in both short and long run. The land reclamation programme with a subsidy on gypsum is lucrative for society. The programme can be justified also because it contributes to food production, rural employment and accelerates demand for farm and non-farm inputs. Another feature of the reclamation programme is that it narrows income inequalities and helps to attain the goal of social justice.

RATIONALE OF FODDER SUBSIDY: THE CASE OF KOLLENGODE DAIRY ECONOMY (KERALA)

T. P. Gangadharan and S. L. Kumbhare*

The goal of self-sufficiency in dairy production can be realised best through an improvement in physical and institutional infrastructure. However, because such programmes entail massive investments and long gestation periods, there is a temptation for governments to adopt short run policies, such as supporting product prices and subsidising dairy farm inputs. Kerala, like many other States, is faced with the urgent task of vitalising its dairy economy. The State is severely deficient in fodder resources. The tiny land holdings, vulnerability to nature's havoc and weak farm economic power are problems endemic to the dairy system of the State. As a measure to rehabilitate the dairy sector and to popularise scientific dairy husbandry, fodder subsidy is offered to dairy farmers in Kerala. Staunch criticisms, however, have been and are still being levelled against subsidies in general for various reasons, ranging from poor permeability and misappropriation to the demoralising effect on competitive entrepreneurship. We have some understanding as to how the restraints in land-labour system militate against the efficacy of subsidy schemes. This paper seeks to illustrate how the fodder subsidy is sensitive to the volatile labour market as well as to other specialities of the Kerala economy.

THE SCHEME AND DATA

Fodder subsidy scheme (FSS) offered by the Department of Dairy Development, Government of Kerala has been introduced in selected districts under

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the administrative and technical control of respective Assistant Director of Dairy Development. Under this scheme, dairy farmers, preferably those owning less than five acres, will be provided subsidy for raising perennial guinea fodder in proportion to the area earmarked for the purpose. The subsidy is disbursed in three stages: in the first year Rs. 350 per acre (half in the form of fertilizer) and Rs. 100 per acre in each of the second and third years.

For the present study, a sample of 34 milk producer households was drawn randomly from the Kollengode block of Palghat district, where FSS has been in operation since early 1981. Eighteen among them were receiving fodder subsidy of varying amount (depending upon the area allocated) and the rest were non-recipients of FSS. Broad range of data was collected from them by survey method, once during April 1981—when FSS was being implemented—and later during March 1982.

AN OVERVIEW OF SAMPLE MILK PRODUCERS

A comparison of the profiles of subsidy receiving target milk producer (TMP) and the non-target generalist milk producer (GMP) households was attempted to gain insight into the distinctiveness, if any, in respect of resource base and management. A cursory examination of the estimates derived during the second round of data collection (Table I) fails to highlight the suitability of FSS in the study area. The differences in the estimates were, except the strength of nondescript milch cows, statistically insignificant; further, TMP households seem unable to push themselves into the dairy production front. One is, thus, led to conclude, at least tentatively, that mis-identification of the target group and misappropriation might prevail in the study area. For instance, the nondescript cow-based production strategy among TMP households testifies that FSS has not improved dairy production possibilities in the target group. In addition, the reported lactation yields and period in milk connote that animal management by TMP households was in no way impressive, let alone spectacular. The higher expenditure incurred by them on green fodder (value imputed for the home-grown) might, at the outset, appear significant, but this has not improved their milk production sub-

TABLE I—PROFILE OF SAMPLE HOUSEHOLDS

							TMP	GMP
1.	Land area owned (acres)	..	..	..	..	..	2.690	3.160
2.	Milch bovine strength							
	(a) Nondescript cattle	..	..	..	..	..	1.056	0.563
	(b) Cross-bred cattle	..	..	..	..	..	0.444	0.500
	(c) Buffaloes	..	..	..	..	..	0.833	1.188
3.	Lactation months	..	..	..	..	..	15.200	16.900
4.	Lactation yield (litre)	..	..	..	..	..	546	538
5.	Monthly fodder expenses per milch bovine (Rs.)	..	..	..	..	..	7.36	6.83

stantially. This can be attributed to a relatively heavy reliance on non-descript cows known for their poor efficiency of conversion of feed into milk.¹

Equally striking is the observation that the subsidy sought was as low as Rs. 170 per household in the year under reference. This shows, apart from severe pressure on land (as in other parts of the State), the confined choices within which TMP households had to operate. In all likelihood, given the compulsions to grow subsistence crops and to a certain extent cash crops as well, the requirement of land for FSS could be met only by using marginal and, possibly, inferior land considered unsuitable for crop culture. A scrutiny of land records of TMP households indicated that 59 per cent of the area earmarked for FSS was barren and virtually uncultivable land. This act on the part of TMP households to qualify for the scheme has resulted in poor fodder yield, adequate manuring notwithstanding. The reported average fodder yield was only 55.79 quintals per acre which was about 34 per cent less than the potential yields.²

BEARING OF DAIRY ENTREPRENEURSHIP AND RISK ON SUBSIDY

Risk aversion plays an important role in farmer behaviour; farmers are willing to grow high risk crops only if they get higher pay-off in expected returns. The literature on agricultural development advocates profit optimizing hypothesis and contains only passing comments on risk consideration. Moreover, the comments are generally qualitative, and are largely based upon introspection. Attitudes towards risk are, nevertheless, major determinants of the rate of adoption of new technology among farmers.

The popularisation of guinea fodder needed newer techniques unfamiliar to the local producers. As such, they may be viewed by the farmers as risky. Provision of fodder subsidy in this context could be an instrument to offset uncertainty in the farmers' expectations on production rates and returns.

Risk is introduced in our analysis as a subjective attitude towards expected returns or increases in cost of feed in milk production. Such an assumption is probably not always valid, but we believe that it has some intuitive appeal, and it can be as well defended as the assumption that persons can assess the utility of an action by some weighting procedure which takes risk and expected gains into account. The greatest value of such analysis is that it concentrates attention on the risk taken rather than on possible gains. This procedure yields reasonable results in a wide class of decision problems.

The individual milk producer enrolled in FSS was asked to assign probability values to three mutually exclusive events, *viz.*, no drought, mild drought and severe drought. The hypothesis was that the amount and distribution of rainfall during a year, by and large, decides the vegetative growth and output of fodder crop, quite apart from actuating the fertilizer productivity. The respondents were further asked to choose among the

1. For supporting evidence, see T. P. Gangadharan: Studies in Feed-Milk Relationships in Cattle in Kerala, Ph.D. Thesis submitted to Punjab University, Chandigarh, 1978 (unpublished).

2. Personal communication with the Fodder Development Officer, Kerala Livestock Development and Milk Marketing Board, Dhoni Unit, Palghat.

alternative estimates of increases in the cost of feed in milk production (CFMP) under the assumed events. The increase in CFMP was treated as a variable which would take on different values depending upon which event might occur. The gross expected pay-off was estimated by weighing, the weights being the probabilities of the events that could occur. The course of action followed by the entrepreneur is conditional not only by the nature of his expectations but also by the surrounding entrepreneurial framework. Consequently, two additional variables were introduced: one, the dairy persistency, and the other, a dummy variable, representing bovine constitution in the household. Dairy persistency assesses how protracted is the productive span of a milch animal during her intercalving period and, given the bovine genetic ability, higher level of dairy persistency is synonymous with quality husbandry practices.

The functional translation of the relationship of these variables with the subsidy amount is expressed in the following exponential model estimated through the method of classical least squares.

$$\begin{array}{rcc}
 \begin{array}{c} -0.0555 \\ (0.4659) \end{array} & \begin{array}{c} -0.8699 \\ (0.2066) \end{array} & \begin{array}{c} -0.0168 \\ (0.0125) \end{array} \text{ (D.EG)} \\
 \text{SLM} = 69.8432 \text{ EG} & \text{DP} & \text{c} \\
 & & R^2 = 0.61, n = 18
 \end{array}$$

where SLM = subsidy acquired per lactation month³ in rupees,

EG = expected increase in CFMP, deflated by lactation months in rupees,

DP = dairy persistency (lactation months per milch bovine),

D = dummy variable for bovine constitution, (D = 1 for households with cross-bred cows and D = 0, otherwise).

We have restricted ourselves to slope dummy with the belief that the cost of feed in milk production and consequently the expected gains in subsidy acquisition would vary with differing bovine composition. While the functional relation on the whole was statistically acceptable, only the coefficient attached to dairy persistency, with negative sign, turned out to be significant. This suggests that a dairy farm with bovines of extended milking period, thereby exhibiting excellence in entrepreneurial skill, would settle for lesser amount of fodder subsidy. Several explanations are possible. Firstly and most importantly, the extremely low productivity and profitability of fodder raising (in scattered parcels of infertile land) might hardly motivate any enthusiasm from the managerially elite class.⁴ Secondly, the producer and

3. By lactation months is meant the period in months an animal is in milk. Suppose in a particular household, one cow has been in milk for 6 months and another for 9 months, the reported lactation months are 15. The merit in this procedure is that it simultaneously takes into account the number of bovines in milk and their productive span during the inter-calving period.

There are compelling reasons for the sweeping use of lactation months in the specification of the variable. Firstly, it is seen that the statistical requirement of variability cannot be met with original variables unless transformed by some means. Secondly, the imminent heteroscedasticity problem has to be eliminated. Thirdly, the production endeavours of a milk producer are best directed in stretching the lactation months to the maximum extent.

4. This is because the assumption that subsidy does not affect the use of other 'priced' inputs (land, labour and management)—implying zero cross elasticity in input demand functions—is unimaginative.

his family may view subsidy in a moral or ethical sense and attach stigma to such 'free' offers. Finally, since the feeding habits and requirements of superior dairy stock—cross-breeds and buffaloes—are at variance with what is derived from FSS, producers owning quality animals may not, naturally, evince interest in FSS. The trend set by the coefficient of slope dummy—although statistically a bit disputable, but not wholly without meaning—lends support to this reasoning. Another broad indication emerging from the nature of this coefficient is that FSS could at best be a marginal instrument of broadbasing biological dairy farm technology in the study area.

The diverging relation between expected increases in CFMP and the subsidy taken, although inconclusive, hints at a lack of positive linkage between them. On the premise that the range of outcomes or uncertainty increases in direct proportion to the prospects in gains, the contribution of FSS to reduce risk/uncertainty appears to be non-existent in the study area. This seemingly illogical finding could well be explained by the fact that commitment of other scarce resources also to fodder might lead to the erosion of farm equity because of the unrewarding nature of growing of fodder.

LINKAGE BETWEEN SUBSIDY, OFF-FARM LABOUR AND HOME MILK CONSUMPTION

The rational producers' apathy to FSS drives home the fact that their interests in useful application of own resources, principally labour, are not parochial and might extend to off-farm activities. In fact, in the specific instance of Kerala, off-farm income offers much potential for alleviating low farm incomes.⁵ The nature of home labour in time devotion for market and non-market activities in the study area, thus, stimulates one's interest. Following Prochaska and Schrimper, we have abstracted a simplifying model to ascertain principally the influence of labour income (from non-farm work) on the consumption of home-produced milk in the sample households.⁶ To delineate structural differences between TMP and GMP households, an appropriate dummy variable was incorporated.⁷ The following model developed through the classical least squares method gave better fit to the data than other algebraic forms.

$$\text{VHM} = 179.27 - 0.139 \text{ LI} - 0.827 \text{ D} \quad R^2 = 0.77, n = 34$$

(0.013) (3.870)

where VHM = retail value of home-produced milk consumed monthly in rupees,

LI = monthly labour income in rupees,

D = dummy variable, D = 1 for TMP and D = 0, otherwise.

5. For instance, the phenomenal foreign remittance since mid-seventies is chiefly responsible for the boom one sees now in the State's construction and service sectors, which in turn provides off-farm employment.

6. The traditional theory of consumer behaviour is inadequate for the present analysis, since home-produced milk is a non-market commodity that has no explicit price and requires a large time input on the part of the household. See, Fred J. Prochaska and R. A. Schrimper, "Opportunity Cost of Time and Other Socioeconomic Effects on Away-From-Home Food Consumption," *American Journal of Agricultural Economics*, Vol. 55, No. 4, November 1973, pp. 595-603.

7. To minimize bias in measurement, the relevant information was collected consecutively for three months, from January to March 1982, and then averaged out.

On statistical criteria, the whole relation and the coefficient with labour income appear relevant. Although no conclusive evidence could be deduced from the dummy variable, it appears that the assertion that subsidy would be catalytic in improving the home milk consumption habits among TMP households, apart from stimulating market delivery, may not gain support.

Such impression of FSS becomes intelligible when one scans the production framework of TMP households shown elsewhere. The bearing of labour income on home-produced milk consumption is not intriguing, if the opportunity cost of household time in the special context of Kerala is understood. A rise in the market wage rate will induce the household members to seek more hours of market work, restricting thereby the time spent for home production of milk with a large time input. In particular, since the time input for home-produced milk is greater than the time input for market-purchased milk, the price of the former will rise relative to the latter with an increase in market wage rate. That is why small farm operators in the State, now earning substantial amounts of income from off-farm sources, are contented with part-time farming. Further, the ease of entry into farming has been slowly reduced as private capital requirements at farm level have considerably increased.

CONCLUSIONS

Subsidising an unproven and, possibly, economically unsound production technology might prove less than promising. The weakness of FSS is its heavy dependence on land-labour base and hence, its fate in Kerala is doomed at the outset. The scheme should, therefore, be tailor-made to the specific needs and conditions of the region; otherwise, such well-meaning programmes are bound to be misfits, leading to misappropriation of public monies. The promoter agency can better strike at the milk marketing front instead, according cash premium to the milk producers who deliver persistent amount of milk to the local co-operative society. In any case, the prospects of the dairy sector in rural Kerala are rather bleak. One can hardly dissent with the national dairy policy in which Kerala was ignored in Operation Flood-II Programme.

IMPACT OF LOWER INTEREST RATE FINANCE ON ECONOMIC CONDITIONS OF RURAL WEAKER SECTION

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The benefits of giving finance from nationalised banks at subsidised rates of interest have been extended to small and marginal farmers, agricultural labourers and village artisans for productive purposes under the "Differential Interest Rates" scheme of priority lending approach for rural and agricultural

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