Agriculture may be defined as man's effort to increase the rate at which plants and, through plants, animals fix solar energy in forms convenient for his use. Although the energy resources of the sun appear infinite, finite mineral and fossil fuel resources are used in agriculture to make solar energy available for man. The levels of their use are now so large that the overall energy balance of fossil fuels used in relation to the energy value of farm produce is negative in many branches of intensive agriculture.

Because fossil fuels are limited in supply and are becoming increasingly expensive, it is necessary to understand how they may be used most effectively in food production systems.

To identify and quantify the present uses of fossil fuels in dairy production, 50 randomly selected non-irrigated dairy farms in south-eastern Victoria were surveyed and the average energy input-output ratio for each was calculated. Detailed studies of the fertilizer and compounded feeds industries have also been undertaken, so that reliable energy values for the fossil fuel inputs in the manufacture of fertilizers and compounded feeds can be calculated.

Analysis of the survey data shows that the two major energy inputs on dairy farms are fertilizers and compounded feeds. Some 50 to 60 times the energy used directly on the farm, in the form of automotive distillate, petrol and electricity, is required to manufacture the fertilizers being applied on these dairy farms.

Energy input-output ratios of 0.3 and 0.7 for dairy production in England, have been calculated by Leach (1974) and White (1975) respectively. These ratios for overseas production were based on national statistics. For Victorian dairy farming, energy input-output ratios based on individual farm information, were considerably lower.