1.0. Introduction

In the dairy industry, milk production and reproduction are the most important economic factors. These factors are influenced greatly by the animal's nutritional status. It is therefore important to judge the animals' nutritional status accurately. In many nutritional studies and under practical farm conditions, changes in weight and milk production are used as indicators of nutrient inadequacy and other metabolic disfunctions. These are often inadequate as a measure of response in that, by the time a change in milk production and/or body weight is noted, the negative effect of the imbalance has already made an economic impact. Since most physiological processes in the animal body involve transport of metabolites by the blood, metabolites should be helpful in detecting changes in types or rate of biochemical processes related to growth or productivity. The value of this information would be determined by the relationship of concentrations of blood constituents to pool size and turnover rate of the metabolites determined (Bowden, 1971).

Genetic improvement in dairy cattle has markedly increased milk yield. The increase in production has been associated with a decrease in fertility (Butler and Smith 1989). Because cows respond to negative energy balance by different combinations of increased feed intake and mobilization of body reserves, neither change in body weight nor milk production are sensitive enough to predict the impact of negative energy balance early enough (Butler and Smith, 1989).

The use of blood metabolites is not a new concept. It started in 1950 (Rowlands, 1980). In the sixties, automated analytical equipment was developed, making the analysis of blood metabolites a routine technique used to assess the metabolic status of an animal. In 1978 Payne put together a group of metabolites into a single package called the "Compton Metabolic Profile Test".

The development of the "Compton Metabolic Profile Test" coincided with an increased intensification of livestock production and with a greater effort being made by the farmer to produce maximum output with minimum costs. This increased output puts strain on the metabolism of the animal, which leads to increased risk of metabolic imbalances. The

"Compton Metabolic Profile Test" was designed to monitor the metabolic health of cows in dairy herds in relation to management, nutrition, milk production, disease and to aid in the diagnosis of metabolic disorders. It does this by comparing the average concentration of blood constituents of a group of cows to the mean concentrations and ranges of the blood constituents taken from cows in many herds. The test was designed to sample cows in three categories, namely: up to 70 days postpartum; up to 150 days postpartum and non-lactating cows.

The blood constituents normally analyzed are: packed cell volume (PCV), hemoglobin, glucose, urea nitrogen, albumin, total protein, calcium, sodium, magnesium, copper and iron. Later, free fatty acids and cholesterol were added to the blood profile because of their relationship to energy status (Ingraham and Kappel, 1988). In 1980, Rowlands introduced the blood profile. This is defined as a set of or a combination of blood metabolites analyzed together in one test. The choice of metabolites depends on factors such as relevance to the problem under investigation, cost, ease of analysis, and stability of the sample in relation to the time in transit between farm and laboratory.

Profiles of blood metabolites have been used widely to identify problem herds and to indicate diertary causes of low production or disease. Concentration of metabolites are of almost no practical use for individual cows due to the fact that there are so many things influencing the blood metabolite concentration, such as diet, environment, time of day, physiological state.

The hand held glucometer was used so as to determine if it is possible to do blood tests on the farm and thereby get immediate results which can help the farmer make the necessary changes immediately. This will then help keep the economic losses at a minimum by halting the various metabolic disorders before they can lead to economic losses. The hand held meter is easy to use and the results are obtained rapidly and it is not very expensive.