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CRISES, CONSEQUENCES AND CHALLENGES  
FOR THE NEW ZEALAND  
ANIMAL PRODUCTION INDUSTRY

V. R. CLARK

Recent political unrest in the Middle East and consequent restriction of oil fuel to countries of the Western world, has drawn attention to the dependence on fossil fuels.

Crises such as that in the Middle East have historically been of short duration, with limited long-term international implications. The rapid increase in dependence on fossil fuels for industry and recreation, together with fuel price and availability, have caused most nations of the Western world to urgently review energy resources. This may be but another phase in the development of resources, but while it lasts it could present problems and challenges, equal to those of other historical events, which have eventually led to the betterment of man's way of life.

Predictions by the U.S.A. Senate Select Committee on energy resources are that America will be short of fossil fuels for ten years and it will be at least fifteen years before replacement sources of energy can be brought into use. Similar situations will pertain to a greater or lesser degree in other developed nations. Although there is variance in time estimates between the views of authorities, there seems general agreement that nuclear, or solar energy, as a fuel source for industry and home use is still a long way off.

One of the industries in developed countries with a heavy involvement in the fuel crisis is agriculture. This is particularly the case with intensively-developed systems of animal production. To achieve high productivity from low-cost modern agricultural systems, there is dependence on a vast input of fossil fuel into the ancillary energy processes of agriculture. Particularly is this so with the manufacture and application of fertilizer.

Warnings of impending difficulties of supply and increased fuel costs have been proffered (McClymont, 1973) along with speculations on the major implications for productivity per man and per unit area in agriculture, and for the relative costs of production of crops, pen-fed animal products and range-fed products. The not improbable result suggested is an increase in the profitability of range-fed animal production.

References to the human population explosion and the protein gap have been too numerous to tabulate, but their frequency emphasizes another international situation, with important consequences for agriculture, in terms of competition for land and demand for agricultural products.

In developed countries the *per capita* consumption of animal protein averages 75 g per head per day. This amount is more than sufficient to meet the physiological requirements for normal growth and health. Generally improving standards of living in these countries are expected to lead to further increases in animal protein consumption, in particular, quality red meats.

In developing countries, animal protein consumption can be as low as 5 g per head per day. The disparity in per-head consumption between the groups of countries might suggest an imbalance of animal numbers favouring the developed countries. The main reason for low animal protein consumption, however, is low livestock productivity, not low livestock numbers. Although the developing countries contain 74% of the world's human population, they contain 58% of the world's agricultural land, 70% of the world cattle population, 63% of the sheep and goats, and 60% of the world pig population (Jasiorowski, 1973). Religious beliefs and food taboos are likely to have long-term suppressant effects on production from livestock. A continuing deficit in animal protein for the maintenance of human health can be expected in the lesser developed countries for some years to come.

It has been predicted (Reid, 1970; Hodgson and Warwick, 1971; McDowell, 1973) that competition between human and domestic animals for foodstuffs, particularly grains, will lead to domestic animals playing a diminishing role in man's food supply.

#### CRISES CREATE DEMAND

From trends in world cereal production and human population growth it could be concluded that products *per capita* from intensively-fed domestic animals could be significantly less by the year 2000.

While the green revolution is credited with success in some areas, there are several countries which were exporters of grains, but which have in recent years become importers. The last 7.7 million ha of the 20.3 ha in the U.S.A. "Land Bank" have recently been released without restriction on fuel or finance to bring the area back into full production. Are facts such as these justifications for the predictions made some years ago?

One may well wonder whether the trend might be accelerating as a result of the recent changes in the U.S.A. grain storage policy, together with drought, floods and crop failures in Australia and the U.S.S.R., and with wars in south-east Asia.

Economic instability and inflation in much of the world, and predictions of land and food shortages, have led to increased activity in land speculation with consequent escalating land prices. These activities suggest encouragement for, or even demand for intensification of land use, some of which will undoubtedly be committed to some form of animal production.

Development of land, whether it be for industrial or agricultural use, encourages urbanization, which in developing countries has been more rapid than general economic development, so that average income levels of city and rural people remain similar. Disposable income tends to be higher in the cities enabling urban dwellers to spend more on meat and less on basic food grains. Such changes are generally accepted as indicative of rising living standards.

Increasing human populations, coupled with improving standards of living in most countries and protein intake below the levels accepted as minimal for a large proportion of the world's population, suggest expanding world markets for food. Diminishing reserves and increased prices for fossil fuels could be expected to place restrictions on the production of synthetic fibres by the petro-chemical industries, hopefully creating increased demand for natural fibres. The various crises appear to confirm that in the long term there will be substantial markets on a global scale for animal products whether they are to be consumed, worn, or walked upon.

The energy crisis, competition for grain, inflation and escalating land prices are conflicting factors in terms of developing agricultural policies. Increasing costs of less readily available sources of energy, and grains, could be expected to militate against intensive systems of animal production, while escalating land prices might be an encouragement for intensification. Where farm land is in direct competition with industry or urbanization the latter may be true, but in many countries large tracts of land suitable for grazing are involved in land transfer and development programmes.

In the future, man's main source of animal protein other than fish might well be the products from ruminants grazing 64% of the world's agricultural land classified as non-arable. Assuming this to be correct, viable livestock industries appear

destined to become more dependent on grass, forages, and by-products.

#### FROM CRISIS TO CHALLENGE

As a country whose animal production is based on grassland, New Zealand should be less affected in quantitative production by the vicissitudes of our time than those countries whose animal industries are more closely associated with intensive systems of producing and finishing animals for markets.

The fuel crisis will have direct effects on the profitability of New Zealand animal production by further increasing the costs of all commodities required by the farmer to produce marketable products. Indirect effects could be reduced availability of insecticides and anthelmintics which have become accepted as standard requirements for efficient animal production, and numerous increases in transport and processing costs, while inflation will inevitably result in increasing labour costs and bank rates, and a diminishing value of capital for development.

Where does New Zealand animal production stand in this world of increasing embarrassment to human endeavour?

New Zealand is highly regarded for the expertise of its farmers in obtaining satisfactory production from ruminants in a basically pastoral farming system. Now, more than ever, an escalating cost structure and inflation will emphasize that the efficiency with which that production is obtained leaves much room for improvement, particularly in the efficiency of pasture harvesting through grazing, and in the efficiency of individual animals on average farms as convertors of grass to animal products.

Farmers are meeting continuing and increased pressures from urban development and from emotional and medical demand for changes in some animal products. Regulations and controls imposed to protect the environment and to control pollution, and requirements for higher standards of hygiene, impose additional costs. Increased competition from industry, intensive agriculture, recreation and tourism all present challenges to traditional animal production.

In New Zealand, animal production has been based traditionally on a comparatively rather narrow range of species and breeds producing a narrow range of products for human use. Human demand has now brought about a diversity of animals involved in the production of a range of commodities of increasing complexity. Not only is the number of breeds

increasing but new species are being used to produce food for man. Deer, goats, rabbits, to say nothing of an array of bird life, are now destined to find their way to the gourmets of our species.

After a century of dealing with a few dominant breeds of a limited number of species, the average farmer is now faced with such a multiplicity of new breeds as to be confused as to their potential, and as to whether or where to use them. Farming the new breeds will provide a challenge and profit for some, and no doubt problems for many. New breeds require assessment of ability to reproduce, and to produce in our grassland environment to the standard demanded by markets. Some traits have been introduced with which our grassland farmers may not have had to contend in the past. Apart from presenting physical difficulties, some of the new breeds differ in temperament and behaviour from the more familiar ones and, as such, may require a different husbandry approach to obtain best results.

#### CHANGING ATTITUDES TO ANIMAL PRODUCTION

Not only are the animals changing, but also the people who farm them. In sympathy with a world trend, there is an increasing number of "entrepreneurs" entering farming in New Zealand. These are people who have been successful in the commercial world, but who are non-traditional in farming terms and are prepared to apply business management techniques to production from the land. While the business approach may be justified in intensive agriculture, the same may not be completely true in animal production, particularly in enterprises involving animals at grazing. Without good stockmanship or shepherding ability, the best results may often not be obtained. There seems little doubt that, as farming units become larger and the ratio of men to sheep becomes wider, shepherds are being replaced by men who merely look after sheep! "Easy-care" sheep have become a necessity to offset reduced labour input, but may also tend to be replacing shepherding finesse and an understanding of animal behaviour.

Improving standards, modern teaching methods, and community requirements for education have so influenced courses offered at schools that few boys receive instruction in agriculture. Instead, they receive courses in biology, mathematics, sciences and trade skills to a high level. All young people today are better equipped intellectually and are more likely to question information than was the case twenty years ago. Young men going into farming are no exception.

Introduction of new breeds of livestock may well bring about some changes in animal production, but in my view the greatest and most rapid changes could be associated with the introduction of a kind of people new to the farming vocation. The better-educated young men, who through the phenomenon of aging must eventually take over land, together with the entrepreneurs, will be the new "breed" of farmer.

These "new" farmers, who will be better equipped to reason technically, will be able to apply programmed management procedures to new ventures, and be willing to invest capital to achieve results. One problem these people may have will be the lack of technical data necessary to programme their proposed enterprise successfully. Too often have we seen moves made into new farming enterprises, and into intensive systems in particular, before sound basic data have been available on such vital aspects as feed input costs, labour charges, feed conversion efficiency by stock, reactions in animal behaviour, sound marketing prospects and so on.

It could be argued that "where there's a will there's a way", and that there will always be innovators who lead the way. However, while such people are invaluable in the total structure of farming, they comprise only a small percentage of all producers.

Despite this influx of "new" farmers, it is inevitable that it is the "average farmer" who produces the bulk of our products and it is he who requires assistance and stimulus. Present high prices for animal products are masking the fact that the average sheep farmer in particular is in a recession in terms of actual production. Low prices of two years ago, followed by drought, had the effect of reducing sheep numbers. With further droughts and snow in some areas, recent wool weights and lambing percentages have been the lowest recorded for many years.

The high prices should act as a stimulus to the farmer to increase production—but will they?

McArthur (1963) suggests that, since a farmer is a member of the animal kingdom, a biological principle operates which makes him satisfied with a high income, not inclined to challenge; only when prices fall does he rechallenge himself and farm more efficiently to maintain living standards. I suspect that this suggestion is well-founded.

Market instability leads to a "wait-and-see", or "chasing-after", instead of a "preparing-for" farming policy with the use of inevitable short-term expediency measures which ignore or restrict research findings and extension services. Over the years, staggering price increases or decreases for meat and

wool have occurred without being foreshadowed to the slightest degree by the farmer, or maybe by anyone else! Statements have been presented, after the event, to explain changes which have taken place in market over- or under-supply, and in price fluctuations. Volumes of data have been collected on past occurrences but as yet little has emanated in the form of positive and reliable direction for the farming sector. It is likely that unpredictable political factors seriously cloud the issues, but, if FAO can present so much useful information on a world basis, surely it is not asking too much of local marketing economists for more useful definitions of marketing prospects for New Zealand farm produce.

#### THE CHALLENGES MUST BE MET

For New Zealand to maintain its current high standard of living, overseas earnings from the sale of farm products must be maintained at relatively high levels.

Although there is evidence of increasing overseas earnings from tourism, which at present is being curtailed by fuel supply, and from forest products, which certainly have bargaining value for fuel supplies, in the years ahead animal products from pastoral farming systems will remain the principal earner, with meat being of greatest importance in the foreseeable future.

Unfortunately, while the improvements which can be achieved in production from animals are generally slow, increases in costs can and have been rapid. It is time that, while product prices and net profitability remain high, increasing costs were absorbed to some extent. However, this results in a new and higher level of production costs being accepted without much relativity to actual production. Animal production then becomes increasingly vulnerable to recessions in prices. This presents a situation which should be a cause of concern among those who have the knowledge to help restructure production from average herds and flocks. There is a great need to improve individual efficiency of stock to increase output per animal, as at least one means of reducing the maintenance costs of producing units.

The approaches can be either long term through breeding and selection or short term through husbandry. For the long-term approach, for example, Group Breeding Scheme methods require further appraisal. Application of recorded production in selection programmes should be encouraged, and acceptable technical methods to implement them provided forthwith. Clear and definitive statements of industry requirements would be helpful in making decisions at farm level.

In the short term, control and manipulation of animal liveweight, for example, would appear to offer considerable benefits. Sheep farmers have gained much experience with the feeding of grain and roughage, and so could benefit the national flock and export outlets for the coming season if given some incentive to do so. Feeding to increase ewe liveweight in controlled programmes, both pre-mating and the first three weeks during mating, could elevate lamb drops significantly. Accepting that only a proportion of farmers would or could carry out such a programme, the return, at present prices, could equal the expenditure on the Sheep Retention Scheme.

An ever-increasing number of farmers are being equipped to receive, assimilate and integrate basic information into their farming practice. Present-day communications tend, however, to highlight pieces of research, or the success of some new enterprise, without either putting the research into context or giving the reasons for, and costings of, the enterprise. Farmers are becoming familiar with terms and ideas but are left without the full facts. Such a situation calls for close investigation into aspects of primary industry which are presently moving rapidly. Such investigations should be given priority, and expert reports complete with recommendations for herd or flock management made available to farmers.

During recent years there have been murmurings of discontent among innovators (some of the "new" breed) in our most important industry. They believe that information and technical aids have not kept pace sufficiently to allow progress to be made at a satisfactory rate. Such a state of affairs can lead to the formation of dissident groups within an industry. Their case should be heard, assessed, and acted upon with alacrity for they are basically searching for support, to justify the programmes they consider will allow them to make progress.

#### CONCLUSION

With the apparently bright outlook for markets, particularly for meat and dairy produce, the future can be faced with a fair degree of confidence.

Rising costs, both on and off the farm, together with reduced stock numbers and lowered production per animal, do, however, suggest some urgency for a new look in the sheep industry at lowering maintenance costs per ewe and at improving rearing methods. There is no technical reason why the industry should not at least catch up with and maintain the levels set by the Agricultural Production Council. The problems, and in most cases, the answers to them, are known.

Admittedly, traditional farmers are apprehensive of new, progressive techniques, but the better-informed and younger generations are, in increasing numbers, seeking guidance and answers relating to the application of such techniques to animal production.

Farmers who buy advice from consultants and advisers can generally show an annual increase in net income. Many of these increases have been due to improved general farm management, increased topdressing, increased stocking rates, diversification of farm production, budgeting, and financial restructuring. Why cannot the same selling technique be applied to animal production with similar success?

There are few specialist consultants in animal production and the ratio of specialist animal advisers (apart from the dairy industry) to advisers in other disciplines is extremely low in relation to the total value of animal products produced. As more sophisticated techniques of animal production are applied to grazing systems in New Zealand, in an effort to increase net income and profit, closer associations between farmer and adviser or consultant will become necessary. In some countries it has been necessary to press for registration of professional status for animal production specialists, to enable them to function to the full benefit of the farming community.

Throughout the world consultancy services in animal production are being fostered by advisory and lending agencies and government aid schemes. The FAO has recently appointed a liaison officer to the World Association of Animal Production. It is expected that one of the officer's functions will be to work closely with member countries, to draw on available persons recognised as having particular skills required for projects in developing countries. The World Association of Animal Production itself is hopeful of establishing regional workshops, involving member associations, to study and make recommendations on new or problem areas to governments or other agencies.

New Zealand's Prime Minister, obviously recognizing the ability of New Zealanders in animal production, has recently offered aid in the form of animal husbandry advice to some developing countries of the Asian region. A past president of this Society has produced a report on the proposed establishment of an International Centre for Research on the Water Buffalo. The concept and suggested operation of the Centre are advanced, and may be indicative of the type of involvement animal production specialists may have in future.

In this rapidly shrinking world, where the adage "Charity begins at home" seems no longer to apply, urgent thought and action should be given to the increasing requirement for advice and direction to accelerate the application of advancing techniques of animal production *within* New Zealand, as well as meeting the increasing call for assistance to developing agriculture.

## REFERENCES

- Hodgson, R. E.; Warwick, I. J., 1971: *U.S. Yearbook of Agriculture*.  
Jasiorowski, H. A., 1973: *Proc. III World Conf. Anim. Prod.* G(b)-1.  
McArthur, A. T. G., 1963: *Proc. N.Z. Inst. Agric. Sci.*, 9: 201.  
McClymont, G. L., 1973: *Proc. III World Conf. Anim. Prod.*, G(b)-1.  
McDowell, R. E., 1973: *Proc. III World Conf. Anim. Prod.* 5-22.  
Reid, J. T., 1970: *Proc. Cornell Nutr. Conf.*