

## ENERGY RESOURCES AND THE ANIMAL AND FEED INDUSTRIES

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SUMMARY

Key factors in the energy supply-cost situation in relation to agriculture are reviewed and implications for costs and markets considered. It is concluded that while predictions are hazardous, increased prices of grains, increased supplies and reduced markets for red meats, and so reduced markets for pig and poultry meats and so for the feed industry are possible outcomes. Increased integration of grain production and intensive animal production may increase the demand for supplements for grain formulated to reduce potential deleterious effects of excreta on the soil and crops.

## INTRODUCTION

This paper discusses the potential effect of the future energy supply and cost situation on agriculture, and on the animal industries in particular, and so on the feed industry.

## THE ENERGY SUPPLY-COST SITUATION

The key factors as they are likely to affect Australian agriculture are these:

- liquid fuels are and for the foreseeable future will be irreplaceable for long distance heavy road transport, long distance travel and tractors, and so will continue to be the main energy need in agriculture.

the only foreseeable economic and quantitatively important sources of liquid fuels are oil, natural gas, coal, shale and plant matter.

the sources of oil and natural gas are rapidly depleting, and a fall in potential rate of supply below the potential demand is inevitable-in at most the next decade; and civil strife, political action or rational economic decisions by the major oil producers which control a large part of the known oil reserves could precipitate a major gap between supply and demand at any time; most major producers have in fact said that they will not continue to increase supply to meet demand, but will reduce it to conserve their oil as a better investment for the future than cash or investments held in the developed world.

present Australian oil production is meeting some 70% of local demand, but unless there are major new oil discoveries in Australia, and the possibilities of this are not regarded as high, this proportion is expected to fall below 35% by 1990 and to continue to decline; that is, unless by 1990 Australia progressively provides alternative fuels for some 65% or more of its oil it will be likely to be increasingly dependent on imported oil at a time when

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potential world production is declining and suppliers will be restricting output.

the potential rates of supply of liquid fuels from coal and shale will be restricted by the vast amounts of capital required, uncertain economics of the processes, availability of water and environmental considerations; and it is not expected that these sources will make any major contribution to the liquid fuel problem until the late 1990s at the earliest.

production of liquid fuels from plant matter 'will be restricted by availability of land of sufficient quality for expansion of cropping and the uncertain economics and environmental effects of using straw or other plant residues for liquid fuel production.'

costs of oil will continue to rise as oil resources are depleted.

liquid fuels may be produced from coal, shale and plant matter at a lower cost than projected prices of oil, but the limitations on the rate of supply of liquid fuels from these sources will probably not prevent world oil price rises: and the higher the price goes the less oil is likely to be produced; also restricted rates of supply of both oil and alternative fuels in relation to the demand for liquid fuel will mean that oil prices will not put a ceiling on prices which can be asked for alternative fuels, and vice versa; i.e. it will 'from here on in' be a sellers market for liquid fuels.

on-farm production of ethanol from fermentation of starch crops (roots and grains) and sugar crops (sugar cane and sugar and fodder beet) is unproven as a practical and economic activity; production of vegetable oils could be a more convenient on-farm source of energy for diesel engines if farmers wish to ensure supplies; however on-farm stockpiling of fuel will for the foreseeable future be a more economic form of insurance.

#### IMPLICATIONS FOR COSTS AND MARKETS FOR AGRICULTURE

The net effect of the future energy situation on agriculture will depend on a wide range of interacting factors.

fuel costs are less than 4 per cent of total costs of most agricultural production, but before recent price rises they accounted for about 843%. of cash costs, the highest being for grain production; they are also a higher proportion of costs than for all other industries except road transport. . .

adaptation in agriculture to increasing fuel costs, such as lighter personal transport and reduced tillage will reduce the impact of fuel price rises on costs but the remaining effects on costs of production and transport of inputs and products mean that fuel costs must be an increasingly significant factor in costs, 'especially on farms distant from railhead.

the effect of mineral and coal exports and oil imports on Australia's balance of payments, and so on the value of the Australian dollar (i.e. on the price of foreign currencies) and so on prices received by producers for agricultural exports will probably be more important

in determining profits for export industries than the direct effects of increased fuel costs,

increased oil and coal prices-for countries importing both energy and food may cause them to protect or further protect their own agriculture against imported foods (as most can produce more food, at a cost, but may not be able to produce liquid fuels) and so reduce export markets for Australian agriculture.

any substantial diversion of grain to alcohol or land use for crops for production of fuels is likely to increase grain prices.

oil and gas price rises are likely to have a significantly greater effect on the cost of nitrogenous fertilizer than superphosphate; coupled with growing recognition of the effects of cropping without a pasture phase on soil structure and fertility this will be likely to lead to increased legume pastures and so increased sheep and cattle production, and decreased grain production and so possibly higher grain prices.

higher road transport costs of grain and fertilizers may stimulate integration of intensive animal production and crop production, the excreta being used to replace fertilizers.

#### IMPLICATIONS FOR THE FEED INDUSTRY

. Predicting the net impact of the above complex of factors on the feed industries is hazardous. However no dramatic immediate impacts seem likely. Possible long term trends are that the price of grain may increase, and so the costs of pig and poultry production increase relative to red meats and the export market for and so prices of red meats may decline. Both factors would depress the demand for poultry and pig meats and so affect the feed industry..

The possible trend to integration of pig and poultry production with grain production could result in an increased demand for protein-mineral-vitamin supplements for mixing with grain or for free choice feeding, and for formulating supplements to minimize potential deleterious effects of the excreta on the soil and crops.

#### REFERENCES

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