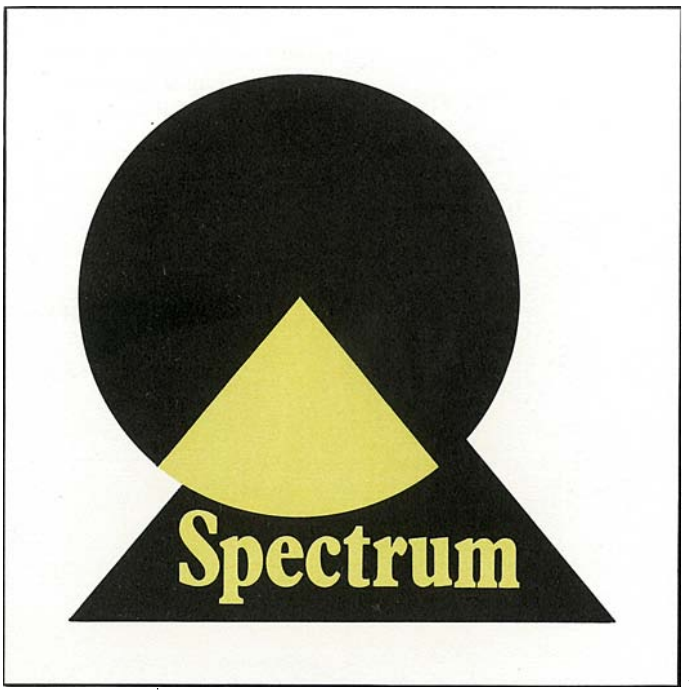


Energy and food supply

With future supplies of cheap energy anything but assured, finding ways to reduce the amounts we need is becoming increasingly important. Two CSIRO scientists in Canberra, Dr Roger Gifford of the Division of Plant Industry and Dr Dick Millington of the Division of Land Use Research, recently examined energy use in food production and distribution and looked at some possible ways to cut it back.

First they estimated the total fuel energy used in making food available in Australia. This turned out to be something like five to seven times the nutritional energy obtained from the food. Only 10–15% of this total is used by farmers and their suppliers, so farms produce more energy than they use. The rest goes into transport, storage, cooking, and all the other processes involved in getting food from the farm to the table. Virtually all comes from non-renewable fossil fuels.

The scientists suggest that significant energy economies could be achieved in food distribution, storage, and cooking. However, they limited their examination of the possibilities to farming activities.

One way to reduce fuel use would be to adopt cropping techniques that don't require so much tilling of the soil. Scientists at the Division of Plant Industry's experiment station near Canberra are looking at some possible techniques, but so far the prospects for big energy savings under Australian conditions don't look bright.

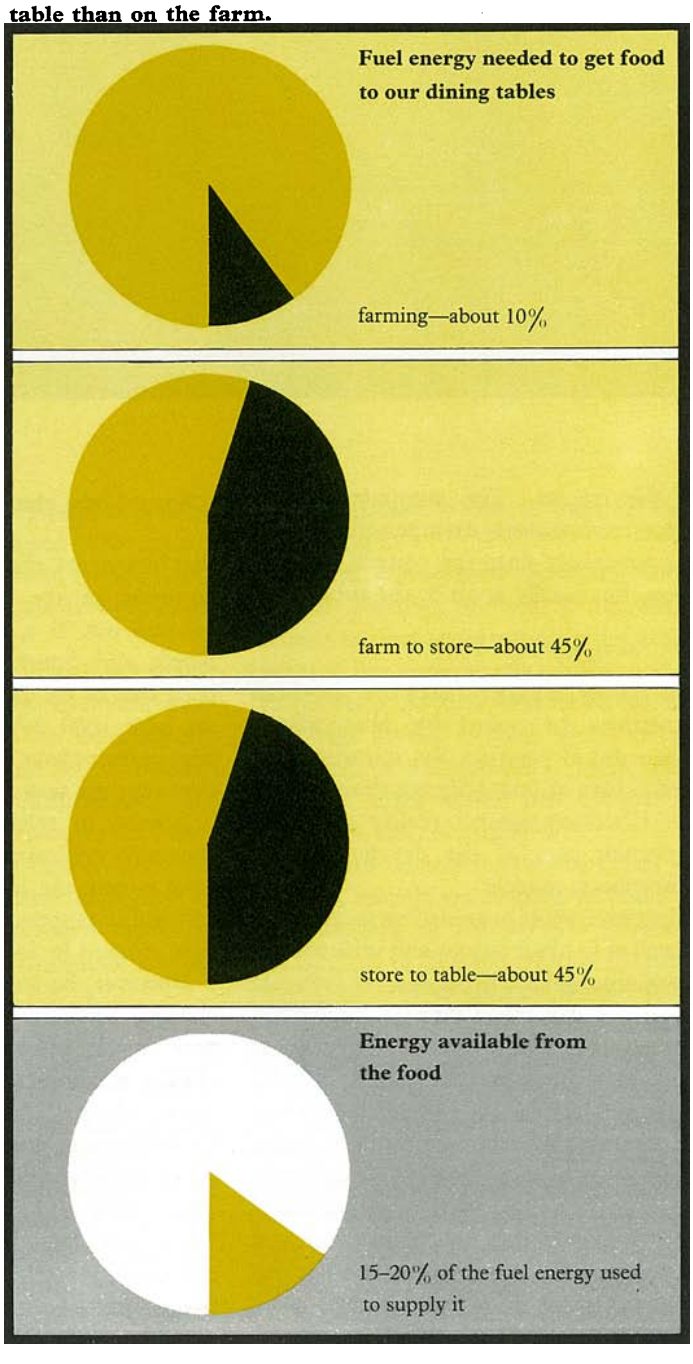
Another way would be to stop feeding cereal crops to meat-producing animals—to use the crops only for human food. The animals would be fattened only on pasture. A great deal of food energy is lost when animals convert their feed to meat, and more than 10% of the grain harvested in Australia is now used as stock feed. Dr Gifford and Dr Millington estimate that, if the area now under cereals was used only to produce crops for people, the food energy output would rise by almost 10% without much change in total fuel use on farms.

A third method—and the one that the scientists believe offers the greatest scope for fuel savings in Australian agriculture—is harvesting fuel on the farm. Dr Gifford and Dr Millington suggest that much of the land now left fallow in any year could be used for growing plants specifically for fuel production. If the fuel crop was not closely related to the food crop, use of the land in this way should normally not interfere with the disease control now achieved by resting the land.

Another, and bigger, potential fuel source is the unused parts of food plants —wheat stalks and so on. Usually it is not vital to plough these into the soil to maintain fertility, because the widespread planting of legume-based pasture in rotation with crops adds organic matter to the soil.

Plant material can be quite easily converted into liquid or gaseous fuel. The scientists calculate that half of Australia's food crop residues, plus some fuel crop material, could produce enough fuel to run all Australia's farms and agricultural supply industries. They estimate that the amount of fuel crop needed, with the residue, would not be enough to appreciably alter the yield

Much more fuel is used getting food from the farm to the table than on the farm.



of food crops.

Studies of the energy used to supply food have also been carried out in the United States, and a comparison indicates that food production and distribution there use more energy per unit of food energy at every stage. The greatest difference is on the farm; America's farms produce about eight times as much food as Australia's, but they use twenty times as much energy from fossil fuels to do it. This is despite the fact that U.S.A. has more than eight times as much land suitable for improvement as Australia.

The scientists suggest that the main reason for the difference is the larger use in U.S.A. of grains to feed cattle, hogs, and chickens in intensive-feeding systems. A general conclusion, based on their study and other work, is that food energy output doesn't rise proportionally with increased energy input on the farm.

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