

Food Before Feed, Fuel, Fun and Bio-products

by Ralph C. Martin

A few years ago, a gutsy prairie woman told stories at a conference to illustrate her success with herbs, fruits and vegetables, in her garden enterprise. The exact numbers escape my poor memory but I do recall the attention she held in the hall as she challenged burly boys with big equipment, several sections of land and daunting debt to beat her profits per acre. No one contradicted her.

She was clearly in the business of food production and some of her audience may also have been growing food crop crops such as lentils, peas, canola and wheat for pasta or bread. However, good farmland is often dedicated to livestock feed, up to one third by some estimates.

Increasingly, crops are also designated for fuel and bio-products. They may displace derivatives from fossil fuels but further research and life cycle assessments are required to understand full impacts. No doubt, demands for fuel and bio-products will elicit reconsideration of how to manage marginal farmland and how to include such crops in rotation, to maintain good farmland.

Some crops are just for fun. The pulp of pumpkins is usually discarded while carving jack-o-lanterns and large acreages of corn are converted to high fructose corn syrup to amuse us with sweetened, flavoured and fizzy water.

It is unlikely that valuable food crops were purposefully grown for entertainment or livestock, a century ago. Traditionally, food had priority and the best land was used to grow it. Nevertheless, most farms also had some fibre and fuel products. If crops intended for food, didn't meet human specifications in a given year, perhaps because of disease or other disruptions, then it became feed for livestock. In turn, food residue from kitchen tables and processing was often fed to pigs and chickens.

Humans cannot derive food value from forage crops such as clover and timothy, but cattle and sheep can convert these special feed plants to meat and milk. Forage plants which

would not otherwise nourish humans serve double duty as: i) feed for livestock to provide high quality protein for people, and ii) soil improvers.

Forage crops improve soil quality with their fine root structure and perennial soil cover. In addition, clover, alfalfa and other legumes collaborate with soil bacteria to take nitrogen from the air and make it available to plants. As a consequence, less nitrogen fertilizer is required for subsequent crops.

Traditional knowledge and precision agriculture can assist us to characterize and map fields for suitable crop and tree species and varieties, in given areas. In this context, crop rotation, manure applications and other best management practices will maintain ecological integrity and include crops for mixed uses, even if we keep our eye on the prize of food.

Prior to the 20th century, meat production was inefficient. For example, chickens formerly ate about 7 kilograms (kg) of grain to produce one kg of meat and now eat less than 2 kg of grain to produce 1 kg of chicken meat. This animal science research delivered a significant benefit. Nevertheless, efforts to improve feed conversion efficiencies will never attain the ratio of 1 kg of meat from 1 kg of grain, even if much of this grain is human food quality. Future research may target similar efficiency, using only feed quality grain and by-products.

Today there is plenty of food and therefore, money to be made from other crop uses. However, it is almost certain, that our 22nd century descendants, like our ancestors prior to the 20th century, will focus on food. Given year to year variability, which may be more pronounced in the future, it will be necessary to seed acres of food crops beyond a calculated need, to prevent shortages. In surplus years, if storage and processing options are maximized, then some surplus food may be fed to livestock.

My argument is not to dissuade people from eating animal products. Moderate consumption of meat, eggs and dairy products is consistent with human health and healthy agro-ecosystems. Manure enhances soil quality and thus food crops too.

Livestock are like a battery for the nutrients and energy of plants which people cannot digest or use right away. Furthermore, crops can be converted by animals to improve food

attributes. Examples are iron and vitamin B12, associated with animal feed assimilation and metabolism.

My argument is that the primary use for good farmland is to grow food crops. Feed, fuel, fun and bio-product uses are secondary to food production, in a system of sustainable farmland management. As population increases, weather gets wobbly and other challenges ensue, policies and markets will increasingly reflect the value of food plants for human consumption. The prairie gardener who impressed me and others, gets that.

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