The Soil - Fulcrum of Agriculture

By H. L. Walster[1]

Agriculture is a teeter-totter plank upon which farm production moves to and fro. The teeter-totter plank, representing the whole of the farming operation, rests upon a fulcrum, the soil—the natural home of the seed. The whole productive economy rests upon this fulcrum.

Soil and seed require water, food, and care. Without these three essentials there can be no production. Water for crops may come from rain, or be moved to where needed by irrigation. Water for livestock comes from surface or subsurface supplies. Food for crops, or more precisely, food material comes from the air and the soil. Food for livestock comes from the products of the soil.

Soil and seed, water and food, must be handled with care, in short, must be conserved. Soil conservation, seed conservation, water conservation, and food (or feed) conservation are equally important in both crop and livestock production.

The great fulcrum upon which agriculture rests is anchored by three foundation stones laid by man. They are science and engineering, education and management. Through science and engineering new facts, new ideas, new principles, new materials, and new machines are discovered or invented. These techniques are suitably taught at the several levels of education and finally put to practical use in the management of land, crops, soils, labor, and capital.

Agriculture is not a science in itself. In fact, it is an old art, a way of life which has learned to use practically all of the sciences, especially the broad fields of the social and economic sciences, of engineering science, and of the life sciences particularly as they relate to crop and livestock production.

At one end of the teeter-totter plank is cash-crop farming—at the other end livestock farming. In between the two, and closer to the fulcrum, is mixed farming. Any slight disturbance, economic or physical, at either end of the plank can easily get the economy out of balance. The individual farm which occupies a position closer to the middle suffers less of a swing either up or down when some disturbance adversely affects either cash crop or livestock farming. The cash crop must be adapted to the area, improved by breeding, produced efficiently, and protected against damage. Adaptation, breeding, production and protection are the constant concern of the crop producer. Particular crops, and indeed varieties of a particular crop, are selected because they are adapted to the length of the growing season, to the light and heat units received during the growing season, and to the physical and chemical characteristics of the soil.

[1]Retired. Former Director of Experiment Station and Dean, College of Agriculture.

Well-tested production methods insure the use of most favorable dates, rates, and methods of seeding (depth, spacing, etc.), timely and efficient harvesting methods, as well as cleaning, grading, and storage practices suited to the demands of the market.

During the production of the crop certain risks are involved. Here crop insurance, whether against hail or other insurable injury, has its place. Insecticides and fungicides will be used to control pests. Crops in storage will be protected against the weather or attack by pests. Crop drying and processing and building ventilation are factors in crop protection.

Crop improvement through breeding is the constant goal of the plant breeder. The search for new uses for old crops, and for new crops suitable for agricultural or industrial use, continues.

Livestock production involves the same four factors as in cash cropping, namely adaptation, production, protection, and breeding. The kind of livestock and the breed selected must be adapted to climate and to the type of feed and forage the soil can be expected to produce. The livestock producer is concerned with the length and climate of the growing season, for that determines the type of pasture and forage crops upon which he may depend. The livestock producer is concerned with the hours of sunshine for that affects the artificial lighting he must provide for his poultry, as well as the type of windows he puts in his buildings. The livestock producer is concerned with the temperature swings his livestock is likely to experience for they affect his housing and feeding practices. Weather is his constant concern with respect to harvesting and storing of his feed and forages.

Livestock feeding is fast becoming a science as well as an art. As an ancient art the old injunction, "The eye of the master fattens the beast," was a useful guide. Today, with a growing fund of knowledge about nutrition, the old ideas about balancing a ration have become infinitely more complex. Today the feeder must concern himself with the many different vitamins, the different proteins, the different amino acids, the different hormones, and the several minerals. The feeder must still be able to handle his beasts. He must be a fit companion of the dumb brutes who are his daily care. No amount of teaching or science will make a successful livestock man out of a man who dislikes handling livestock. Love of livestock comes with daily contact with them—the 4-H livestock boy or girl and the F. F. A. high school student get a right start.

Protection of livestock, boiled down to its simplest essentials is the exercise of humane principles and practices. Livestock, meaning cattle, sheep, goats, swine, horses, and all kinds of domesticated fowls are not wild animals and birds. They are not permitted to seek for themselves. They are dependent upon their owner for protection against abuse, for protection against the inclemencies of the weather, and for protection against disease, insect pests, parasites, vermin of all kinds, and from predatory wild animals and birds.