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The modern world is so full of scientific wonders that we often forget to look back in history and recognize landmarks that were just as significant as the discovery of the transistor, penicillin, or the laser beam. The history of our present day food is a prime example of a phenomenon that is considered to be too mundane to be taken seriously. Yet, thousands of years ago man made a scientific discovery concerning food that made possible the growth of settlements that became our cities. The discovery of agriculture was made some 10,000 years ago, and some of our present problems of food supplies are unquestionably attributable to it and the "agricultural evolution" that followed. By looking backward into history we can begin to appreciate the problems we have created by ourselves. In doing so, it is reassuring to recognize possible ways in which the current difficulties of providing sufficient food for the world population can be overcome.

When man emerged as the most successful primate that has evolved to date, his diet differed little from that of other omnivorous apes and monkeys. He ate a very wide variety of animal and vegetable foods. The former included small animals (and larger ones when he learned to hunt) insects, fish, reptiles, birds, grubs, and shellfish. The latter included nuts, fruits, seeds, leaves, buds, roots, shoots, barks, tubers, rhizomes, and corms from hundreds of different plant species. Some of the most significant contributions to the protein and energy content of his diet came from seeds of grasses and other wild plants. The archeological record and studies of contemporary aborigines shows that man was able to survive and even thrive on such a diet derived entirely from hunting and gathering.

After 8,000 B.C. agriculture was discovered when primitive man selected certain grasses that could be planted and cultivated. These grasses (now known as barley, wheat, rice, oats, and corn) permitted man to become sedentary. Undoubtedly, this was a great step forward in development, but the implications of this specialization need to be considered. As farming became more complex it left less time for hunting and gathering and the variety of food sources in the diet declined. This has important significance from the point of view of nutrition and the penalties of this are felt even to the present day. More important from the point of view of food availability, the adoption of agriculture and the cultivation of single crops resulted in a disturbance of local ecosystems so that many plant foods formerly consumed

by man were driven from the agricultural scene. Some of the wild plants were so successful that they threatened the cultivated crops. They became known as *weeds* and special techniques of cultivation and more recently chemical control were developed to stop their threat. If we examine the nutritive value of these plants (and they include a large number that grow wild in many parts of the United States and the rest of the world) it can be seen that nutritionally they have much to commend (Table 1). Some like pigweed,which belongs to the spinach (Amaranth) family and the *Chenopodia* such as lamb's quarter, are particularly valuable. Whereas the common tendency is to think of them as being used as vegetables, in reality the seeds are much more useful since they are excellent sources of protein of reasonably good quality. They are also good sources of energy and some of them may be classed as cereals since they also contain starch.

Table 1

Comparative Nutritional Value of Selected Seeds*

Common Name	Botanical Name	Protein (gm)	Carbohydrate (gm)	Fat (gm)	Energy (cals)
Foxtail	*Setaria spp.*	10.5	83.2	3.2	380
Lamb's quarter	*Chenopodium album*	17.5	57.1	7.6	475
Pigweed	*Amaranthus spp.*	17.7	56.8	10.5	478
Purslane	*Portulaca ssp.*	*17.6*	*63.2*	*2.4*	*296*
Smartweed	*Polygonum pennsylvanicum*	10.5	62.3	2.3	416
Corn	*Zea mays*	16.4	86.8	5.0	422

*100 gm sample at zero per cent moisture.

Source: Indigenous Foods Laboratory, University of Michigan and F.A.O.

Fortunately, the botanical record has preserved the names of wild plants. What is distressing is that with the passage of time, knowledge is being lost on their use. They become stigmatized because they are often associated with the diets of disadvantaged peoples and this behavior is accelerating their loss from human cultures. There is no denying that wild plants have a real potential in helping to solve the world's food supplies. If the same expertise that was applied to the selection of hybrid corn and other cereals could be applied to wild plants, it is possible that a new and very productive food resource would become available.

Wild food resources are not restricted to the arable parts of the world, however, many grow well in adverse climates and their success in such situations is well known. For example, mesquite and the seed from the cardon cactus thrive in desert areas where they continue to be used as foods by natives. Other plants, although aquatic, are nevertheless edible, and they are even considered a curse because they block irrigation canals and waterways.

Western man's ethnocentricity and his failure to look back in history is compounding our present problems because not only are we failing to recognize potential food sources, but we are also failing to learn from our past mistakes in agriculture. Re-education is needed and surely a start would be gaining the interest of school children in the food resources of the fields, forests, hedgerows, and even vacant housing lots from Alaska to New Mexico.

References

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The Plant Kingdom: A New Energy Source

Besides being an energy source for themselves, plants are the ultimate energy source for all other forms of life. In addition, plants have also served as an energy source in fossil fuels such as coal. The NSF has recently approved a $250,000 grant to study photosynthesis as a possible alternative energy source. Hydrogen and oxygen, produced by green plants utilizing solar energy, might possibly be used as a fuel by recombining the elements in a fuel cell, thereby generating electrical power via the heat released. The grant was made to Dr. Anthony San Pietrom, Chairman of the Plant Sciences at Indiana University.

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Milkweeds

Recent studies indicate that seedlings of some plants, when subjected to aqueous extracts of milkweed leaves, have their growth inhibited. Is this true of all seedlings or just some species of seedlings? What is the agent involved? Could proper concentrations of it regulate the growth rate of lawns?

Reference: Rasmussen, J. A. and F. A. Einhellig. 1975. Noncompetitive effects of common milkweed, *Asclepias syriaca* L., on germation and growth of grain sorghum. *American Midland Naturalist* 94(2): 478-483.