OLD WORLD GRAINS IN THE AGRICULTURE OF BOOK-OF-MORMON PEOPLES

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Abstract: The agriculture of the ancient peoples of the Near East is examined for traits which could be expected to reappear in the New World as a result of colonization of this hemisphere by the peoples of the Book of Mormon.

Ever since the beginning of mankind edible seeds of plants have been an important part of his food supply. At first man simply gathered what seeds he could find growing wild. Eventually, after thousands of years, man learned to sow and cultivate some of these plants. The most important of the plants that he learned to cultivate were the cereals. These include wheat, barley, rye, oats, spelt, millet, rice, and sorghum.

In this paper I should like first to look briefly at the beginnings of agriculture, particularly of the cereals, and to follow their development in the Old World down to the time of the last Book of Mormon migration. Then I should like to explore their possible importance to Book of Mormon peoples.

Just where or how wild wheat and barley were first cultivated we do not know. But the first truly agricultural tools appear in the Natufian culture found on Mt. Carmel in Palestine. These are sickles. Albright also says that they had stone picks for hoeing small plots to grow grain. (Albright 1954:59.) To date no one has found a sample of the grain they raised, although it probably was wild wheat and barley. This seems to be as close to the beginnings of agriculture as we have discovered to date. The Natufian culture is understood to date from about 6000 to 8000 B.C.

From the Natufian sites near the western end of the Fertile Crescent, which is also the homeland of several wild cereals, one can move eastward to other sites associated with the beginnings of agriculture. Such a site is Jarmo. At Jarmo, an early open-village site, which dates to around 5500 B.C., two wheats and a barley had been found and identified by Helbaek. The wheats are Triticum dioccoides, and T. monococcum or emmer and einkorn wheat respectively. The barley was a two-row variety, Hordeum distichum. (Braidwood 1952:28.)

Perhaps now is the time to stop and introduce some technical material about the cereals. While there are literally thousands of varieties of wheat, they all fall into three groups. The first group is the einkorns, Triticum aegilopoides, and T. monococcum. This group has only seven

chromosomes. It had a wide distribution in ancient times from northern Europe into the Middle East. It was never an important grain, as it is a low yielder.

The second group is the emmers and durums--T. diococoides (wild emmer), T. diococcum, and T. durum--with fourteen chromosomes. This was the important wheat group during the beginnings of agriculture. Emmer T. diococcum, for example, was the major species cultivated in Egypt before the Christian era and one of the principal species in southern Europe until Roman times.

The third group, the bread wheats, T. vulage, have twenty-one chromosomes. This wheat seems to be a cross between wild emmer, T. diococcoides, and a wild grass Aegilops cylindrica or ovata, or wild einkorn. (Curwen and Hatt 1961:22.) This species is late in appearing in man's fields, the first occurrence being between 3000 and 3500 B.C. It soon became important in northern Europe and Asia. It is the hard wheat we now use for bread-making. Wild einkorn and emmer still grow in Palestine, Syria, and other neighboring areas. (Curwen and Hatt 1961: 21.)

Barley is the other important ancient cereal. Again we find several different varieties. There are two-row and six-row barleys. These are further divided into dense-eared and lax-eared, hulled and naked species. The two-row barleys were the first to be cultivated, but the six-row barleys had become important in some areas by 5000 B.C. (Helbaek 1960:107.) Barley is a very hardy plant under cultivation. It will crowd wheat out in a very few years if mixed seeds are planted from successive crops. Wild barley in the Near East grows all over the place. It grows in the mountains, in the forests, on the coastal plains, and along the borders of the desert. One finds it along the wadis, in the shade of rocky outcrops, in semi-desert areas, and as a weed in fields of every conceivable cultivated crop. Barley was the crop of the ancient poor. It yielded better than wheat and was less favored by the rich for food, and therefore often cost only half as much.

There are other cereals such as oats, a weed in most ancient wheat and barley fields, which did not become a crop in its own right until about 500 B.C. or later. Rye, an especially winter-hardy grain, grows wild in Turkey and Afghanistan but was apparently never cultivated in Mesopotamia or Palestine. Instead it spread northward into Europe. Spelt, according to Jasny (1942:759) and Helbaek (1960:105), is similar to naked club wheat and was grown only in Europe and not in the Near East. Broomcorn millet, Panicum miliaceum, was first cultivated in China, then spread westward until it reached Europe. (Curwen & Hatt 1961:49, Helbaek 1960:112.) Sorghum is a grain which appears to have had its origin in Africa. It was cultivated in Egypt by about 2200 B.C.

and very likely in Palestine before the time of Lehi's departure.

As we are suggesting that some of the above grains may have been carried to the New World by two groups of people we call the Jaredites and the Lehites, a review of the environmental requirement of these plants is also in order.

Wheat, which is grown on more acres than any other crop, is also adaptable to a wide range of soils and climates. It is grown extensively throughout the world, except in the tropics. In general, the main wheat belt lies between latitudes of 30 degrees to 55 degrees in the North Temperate Zone and 25 degrees to 40 degrees in the South Temperate Zone, where the annual rainfall averages between twelve and forty-five inches. This is the general rule, but wheat has been grown in wetter areas where there is a sufficient dry period when it can reach maturity and be harvested. It is also grown in drier areas where the rain falls during the time it is growing. If these conditions are met, then wheat can be grown in areas with as few as four inches or as many as sixty to eighty inches of annual rainfall.

Barley is another grain which is cultivated in the temperate zones. It has about the same climatic adaptability as wheat. Also, it can be grown in soils too salty for wheat.

Oats are grown in most of the temperate regions and are adapted to cool, moist climates. Millet, on the other hand, is grown in semi-arid areas. Grain sorghums can stand more heat and drought than any of the others. It grows in hot semi-arid and humid regions.

From Jarmo times on, in the Near East, wheats were grown in more and more areas and their types improved. Occasionally, a new crop was added in a given area. If you are wondering how the archaeologist finds out what plants were being grown, the answer is simple. He finds charred grains and the imprints of grain in clay bricks and in pottery. This evidence is then turned over to the botanist, who compares the remains with modern types.

In order to determine what grains might be found in the New World as a result of the migrations recorded in the Book of Mormon, one should first know what was available in the Old World. First let us consider the Jaredite migration. This group left an area which we shall assume covers all of Mesopotamia and traveled northward and westward across Europe before building barges to carry themselves to the New World. The time of this exodus would likely be between 3000 and 2800 B.C. Because of the date of their departure and the area covered en route, these people could have brought with them all the major types of wheat: einkorn, emmer, durum and bread wheat. Both the two-row and the

six-row barleys may also be included, along with oats. Broomcorn millet is another grain that was available. (Helbaek 1960:112.) (In light of our present knowledge it seems unlikely that the Jaredites would or could have brought rice, spelt, rye, sorghum or club wheat with them.) All these crops would grow on the Central Plateau of Mexico but not too well if at all on the coastal plains. In a wild state only barley and oats would be likely to survive. The wheats would not reproduce more than two or three generations without cultivation.

Now for a look at what the followers of Lehi could have brought with them to the Americas in the way of grains: They left Jerusalem in 597 B.C. and journeyed southward and across the Arabian peninsula before setting sail for the New World. This group could also have brought all the major types of wheat with them: einkorn, emmer, durum, bread wheat, and club wheat. Other grains might have been millet, sorghum, and oats. Grains which they would not likely have brought are spelt, rye, and rice.

The Old World plants which they might have brought with them, with the exception of sorghum, would not survive long on a wet coast. This means that the Lehi settlers must have landed on a dry coast that had sufficient rainfall for the growing of grain, or the landing must have been near a highland area where Old World grains would grow. Of the grains that Lehi might have brought with him, barley and oats were the most likely to survive in a wild state.

We have now identified the grains which the Book of Mormon peoples could have brought with them. It is now time to examine the context of the Book to see what it has to say about agriculture and more particularly the grains. The action verbs, to plant, reap, and sow, are generally used in a metaphoric sense. Grain is mentioned for both the Jaredite and Lehite periods. In the book of Ether there are three references to grain, and two to tilling and to tilling tools.

The most significant reference to agriculture in the Book of Mormon is Mosiah 9:9, "And we began to till the ground, yea, even with all manner of seeds, with seeds of corn, and of wheat, and of barley, and with neas, and with sheum, and with seeds of all manner of fruits. . . ." Here we have a list of crops being grown in the land Lehi-Nephi about 200 B.C. We know that this city is located in some highland area, as one must go down to reach Zarahemla. I think one can safely assume that the crops are listed in the order of their importance. In the same chapter, verse 14, corn is again mentioned, only this time alone. In Mosiah 7: 22 there is another reference to corn, barley and "all our grain." And in Alma 11:7 a measure of barley is mentioned as being equal to a senum of silver or a senine of gold.

I should interpret these references to grain to mean that corn or

maize was the most important food crop of the Book of Mormon peoples and that barley was second, followed by wheat, neas, and sheum. The identity of the latter two crops is not known at the present time.

We know that Book of Mormon peoples brought Old World cereals with them, and for the Lehi group we know that these grains survived at least as late as 121 B.C. The present question is, can these cereal grains now be grown in the Mesoamerican area? Today wheat is grown in Mexico, Guatemala, Honduras and El Salvador. Barley and oats are grown in Mexico and Guatemala. Sorghum is raised in Guatemala, Mexico, El Salvador, and Honduras.

To the best of my present knowledge, wheat is grown only on the Central Plateau of Mexico, although it is not unlikely that it could also be grown in the highlands of Chiapas. In Guatemala it is grown in the highlands around Guatemala City, and in Honduras in the highlands around Tegucigalpa and Comayagua. I assume that it is also grown in the highlands of El Salvador.

This supports my theory that these Old World grains, with the possible exception of sorghum, could only have been grown in the highlands, and that shortly after their arrival in the Promised Land both the Jaredites and Lehites adopted corn (maize) as an important food crop. I should even go so far as to say that corn was the staple food crop in all the lands occupied by Book of Mormon peoples, but that in highland areas wheat and barley were significant secondary crops. If this is the case, then one method of identifying highland Book of Mormon cities such as Lehi-Nephi might be to find evidence of ancient cultivation of wheat and barley and possibly other Old World grains.