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Author(s): Wilford M. Hess

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Botanical Comparisons 5 *in the Allegory of the Olive Tree*

Wilford M. Hess

*F*rom a botanical point of view, Jacob 5 in the Book of Mormon is one of the most interesting chapters in all scriptures. Not only was the science of horticulture well established in biblical times, but this botanical knowledge was also used by ancient prophets to convey information about the house of Israel. However, the allegory in Jacob 5 is not completely botanically correct. Although in most ways it follows sound botanical principles, a few instances violate these principles. This paper will discuss the botanical principles in Jacob 5, identify those which are violated, and then clarify the allegory according to those principles.

Botanical Principles Behind Jacob 5

The scattering and gathering of Israel is a prominent theme in the scriptures, and is discussed again and again throughout the Book of Mormon. One of the most interesting approaches to the topic is the allegory of the olive tree in Jacob 5. In this chapter, Jacob quotes Zenos, an Old World prophet whom the Nephites knew about from the plates of brass, but whose writings were somehow not included in the Old Testament. Zenos may have used the olive tree in this allegory because of the importance of this plant to the people of his day, or he could have been inspired

Wilford M. Hess is professor of Botany and Range Science at Brigham Young University.

by the Spirit to use the olive tree, as was Lehi, who referred to a portion of the same allegory (1 Nephi 10:12; 15:7, 12, 16).

Olive trees are referred to at least 25 times in the Bible, from Deuteronomy to Revelation. The most interesting reference in the New Testament is in Romans 11, where Paul applies to the converted Gentiles of Rome the allegory of grafting olive tree branches. While many LDS readers see an immediate parallel with Jacob 5, Professor John W. Welch, of the BYU Law School, is preparing a paper which cautions that there are many significant differences between them and only a few similarities. He also notes that there is no reference to the olive tree in the Book of Mormon after Jacob's. This suggests that the olive tree was referred to only from its Old World scriptural setting and that after this time, between 550 and 480 BC, the plant was probably unfamiliar to the New World communities.

The olive tree (*olea*) has been one of the most widely grown indigenous plants of the Mediterranean basin (Zohary 56-57). It was spread throughout the Mediterranean countries by the Phoenicians, Greeks, and Romans, and for millennia has been the principal source of edible oil for the people of this area. Recent research has made us more keenly aware of the nutritional qualities of olive oil (Manousis and Moore 11). In addition to being part of a daily diet, olive oil "was used in holy ointments . . . , and for anointing the sick, for lighting . . . , and as a solvent of various spices, incenses and aromatics" (Zohary 56). Since early biblical times and the early history of mankind, the olive leaf has symbolized peace and has heralded new life and hope. A dove brought Noah a freshly plucked olive leaf (Gen 8:11) to show that the Flood had receded.

Although the scriptures frequently refer to plants, they are generally mentioned only incidentally, and sometimes even incorrectly. It has been shown that the many references to lilies should probably be to the iris, and the Isaiah 35:1 reference to the desert's blossoming as a rose is probably to a bulb (Narcissus?) rather than a rose (Klein 301-03; Balick 28). Sometimes word meanings have changed, such as in the KJV use of "corn" for

what today means wheat or grain. However, it appears to be difficult to confuse the olive tree with any other plant, so the olive has likely been identified and translated correctly.

Although an ancient plant, the olive has changed little through time. The genus *olea* "contains about 35 species distributed widely from Africa to New Zealand" (Simmonds 219), but only the species *olea europaea* produces fruit eaten by man (Manousis and Moore 7). This species has many different strains. There are sixty different strains just in Italy. "Two botanical varieties [of this species] are usually recognized" (Simmonds 219); one is cultivated and the other is wild. It is believed that this wild form may have escaped from cultivation rather than being "ancestral to the cultivars" presently used. Also, the cultivated hybrid appears to have originated from another variety of wild olive plants in the eastern Mediterranean mountains, and at least one parent has probably become extinct (Simmonds 219). Apparently the cultivated and wild forms were both present in very ancient times. Olives were cultivated on the island of Crete as early as 3000 BC (Manousis and Moore 7). The antiquity of the hybrid has been demonstrated "by the great diversity of kernel types found . . . and dated to the fourth millennium BC" (Simmonds 219).

"The olive tree is more easily propagated than other fruit trees" (Manousis and Moore 8), and it is known for its longevity and capacity for regeneration by suckering from the rootstock. Cultivated trees seldom exceed 30 feet in height and are generally kept much smaller by frequent pruning. As in the days of Zenos, it is still standard procedure to graft desired varieties or cultivars onto wild olive trees that grow naturally on hillsides, or to grow seedling stocks and graft them in nurseries. In modern practice wild branches are not grafted into tame trees, and there are differences of opinion as to whether it was ever done. There is no horticultural advantage in doing this, since wild roots are normally more desirable than tame roots because they are heartier and more disease resistant. Cuttings are also widely used for olive tree propagation. These cuttings consist of branches, several

inches in diameter and up to five or six feet long, planted in the ground. Stem or trunk pieces with bark can also be used for propagation. The archaeological record shows these practices go back to very ancient times. The scriptural record is generally confined to major and specific events which happened since Adam and Eve came out of the garden. Except for the creation accounts, there are only rare glimpses into very early events¹ which were important for the domestication process.

It is likely that olive trees were domesticated very early. Domesticated plant origins and plant distribution patterns have been worked out from the archaeological record and from the examination of the genetic makeup of the different forms of the plant. These procedures can also be used to help trace plant origin.

When the archaeological record is examined, it is evident that plant domestication took a very long time, and many domesticated plants rely upon man for reproduction because they are so different from their original wild forms. Domestication (tame trees) results from selection of desirable genetic characteristics, and these genetically variant plants rely upon man for maximization of production. As wild plants have been continuously tended by countless generations of people, successive selection of desirable genetic characteristics has helped to insure better production of the respective plant products. As this process has occurred, the highly selected plants have required more intensive agricultural practices to insure yield of the improved product. In many instances, highly domesticated plants fail to survive if not tended and nurtured by man. For example, maize plants produce relatively large numbers of seeds encased in husks. If an ear falls to the ground and if there is sufficient moisture for germination of the seeds, many seeds will germinate, but very few will mature

¹ One reference to things happening much earlier than previously thought is in Helaman 8:18, where Mormon summarized the words of Nephi, son of Helaman, and stated that "Abraham not only knew of these things, but there were many before the days of Abraham who were called by the order of God; yea, even after the order of his Son; and this that it should be shown unto the people, a great many thousand years before his coming, that even redemption should come unto them."

and produce seeds the next season because there will be a clump of plants all competing for nutrients in a small spot of soil. Thus if man does not tend these domesticated plants, they will perish and not be available for his use. On the other hand, non-domesticated (wild) plants are well-adapted genetically to survive without man's intervention. As an example, teosinte, a wild relative of maize, has a few loosely connected seeds which are not enclosed in husks. These seeds fall to the earth singly, and they easily produce plants for the next season of growth without man's intervention.

The benefits of domesticating plants, however, far outweigh the detriments. Olive trees are now being grown in areas in Israel where it was previously too dry to grow them. In fact, by use of genetic engineering procedures, olive trees can now come into production in almost half the time when root production is stimulated by a microorganism (Strobel, et al 2581). In the past, olive trees would not bear during their first fifteen years, and then often bear only every other year. Now with careful selection of root stock, irrigation, and cultivation, it is possible to get a crop when the trees are only three to four years old, and they will bear almost the same every year.

The biblical horticulturalists certainly had a knowledge of many very important biological principles like propagation and domestication. This ancient knowledge could be the subject of an extensive study. Joseph Smith probably had little knowledge of olive trees in New York, as they will not grow in the northeastern United States. When he translated the plates, he may have wondered about the plant and the botanical principles referred to in the allegory. It is also likely that Jacob in the land of Nephi did not know about olive trees and relied entirely upon the words of Zenos for this knowledge. "Olive" and "grafting" are not referred to again in the Book of Mormon after Jacob 5, as noted above. The botanical emphasis in other allegories changes to "seeds" and "sprouting" (Alma 32:28, 43).

If the olive tree had survived the journey with Lehi and his party, it probably would have been referred to by Book of

Mormon prophets who were not quoting older scripture. Possibly the Nephites and Lamanites did not commonly graft fruits, as was done with olive trees in the Old World; there is no evidence in their writings that they did. Lehi and his group either did not try to bring olive trees, or they brought cuttings which did not survive the desert wanderings and sea voyage. They probably did not bring olive seeds, as it was not the custom to use seeds for the propagation of olive trees.

It is reasonable to suppose that both Joseph Smith and Jacob received their knowledge of olive cultivation entirely from Old World sources. In the following section, I will compare Jacob's scriptural examples of botanical knowledge of olive cultivation to present-day scientific knowledge.

Examples of Botanical Knowledge in Jacob 5

A vineyard benefits from being nourished (vv 3, 4, 5, 11, 20, 22, 23, 25, 27, 28, 31, 34, 47, 58, 63, 71, 75, 76) which in some instances includes being dunged (vv 47, 64, 76) to provide plant nutrition. It is still common practice to use dung, including human dung, in most of the world, although commercial fertilizers are more commonly used in industrialized nations.

A vineyard will decay (vv 3, 4). Limbs can become infested (dead tissue) and/or infected (living tissue) with parasitic and saprophytic microorganisms and insects; thus burning infected limbs is desirable to prevent the spread of pestilence. It also keeps the ground open and uncumbered (vv 9, 44, 49, 66). Burning reduces inoculum of parasitic organisms. Although it is resistant to a number of pests, there are more than 200 insects and known fungal diseases that "attack the olive tree and its fruit. Other pests are bacteria, lichens, yeasts, nematodes, spiders, birds, and mammals," which cause estimated world losses of \$500 million per year (Manousis and Moore 9).

The principle of pruning contributes to the health of the tree and improves production of fruit (vv 4, 5, 11, 27). Pruning produces a proper amount of foliage and permits sufficient light

to strike the branches and maximize fruit production. Fruit production is not maximized if trees are allowed to grow without care. They become too bushy.

Proper care will cause young and tender branches to form (vv 4, 6). This principle is still used extensively today. When growing tips, plants produce biohormones which are translocated to lateral buds and branches conveying the biosignals which prevent or limit their growth. Thus, when main branch tips are cut, lateral branches grow.

Branches can be removed and grafted onto other olive trees (vv 8, 9, 10, 17, 18, 30, 34, 52, 54, 55, 56, 57, 60, 63, 64, 65, 67, 68) *or can be planted to start new trees* (vv 23, 24, 25, 43). As was mentioned above, the olive tree is among the easiest of trees to propagate, and it is very easily grafted. This principle is still extensively used today. Propagation by seeds results in too much genetic variation. With cuttings, however, each new vegetatively propagated tree will be genetically identical to the branch from which it came.

The amount of root needs to be balanced with the amount of foliage (vv 37, 48, 65, 66). When good branches are allowed to become too thick, the developing fruit will be of poor quality. If there is too much foliage surface area, the roots cannot supply enough nutrients and water to them for maximal rates of photosynthesis. When there is too much top growth and not enough nutrients from roots, the top dies back. When there is not enough photosynthesis in the foliage to nourish the roots, they die back. The products of photosynthesis nourish the roots and the roots provide nutrients from the soil to insure cell growth in the whole plant. Because of grafting, the foliage of a particular tree may be either from domesticated plants or wild relatives. Graft materials and recipient plants have to be closely related for grafts to take.

Fruit can be wild (bad or evil) or domesticated (good) (vv 17, 18, 20, 25, 26, 27, 30, 32, 33, 35, 36, 37, 38, 39, 40, 42, 45, 46, 52, 54, 60, 61, 65, 77). Likely, the bad fruit was small-seeded and bitter (low quality) and was from non-domesticated (wild) plants. The good fruit was large-seeded and palatable (high

quality) and was from plants which had been genetically selected for a long period of time to accumulate the desirable genetic characteristics.

Land for growing trees can be poor (evil) or good (vv 21-23, 25, 43), but proper nourishment in either case can produce good fruit. Tame fruit grown on trees which have not been tended may be much smaller than normal, and wild fruit grown on trees that have been tended will be larger than normal. However, good fruit (in the sense of tame versus wild) can come only from tame tissue. Both types of fruit will be larger with proper care, but the wild will never be as large as the tame if both are tended equally under the same cultural conditions.

If the foliage of an otherwise healthy tree is removed or reduced, the roots may perish (vv 8, 18, 34, 36, 54, 60, 65, 66). When branches are grafted, the new foliage can carry on photosynthesis and supply the necessary carbohydrates to nourish the roots.

Examples of Interpretations that Seem to Violate Botanical Rules

Wild Branches Can Yield Tame Fruit

All of a tree will be genetically identical unless there is a sector of cells, called a chimera, which is of a different genetic makeup than the rest of the branch. A chimera is unusual. A graft can be considered a man-made chimera because its genetics will be different from those of the recipient plant. Therefore, if a wild olive branch is grafted onto a tame olive tree, that branch and all of its growth will retain the same genetics; it will remain wild and will produce only wild or small-seeded, bitter fruit (fruit of low quality), although the size may increase due to better nutrition. That branch will never have the genetic potential of the branches from domesticated trees. Conversely, if a tame branch is grafted onto a wild tree, that branch will produce only genetically tame large-seeded good fruit (fruit of high quality) unless the root stock

is diseased or less efficient in either photosynthesis or water and mineral uptake. This principle is used extensively in horticulture today. However, with proper nourishment and care, both wild and tame branches will have fruits which are larger than fruits on unattended trees. Conversely, both wild and tame branches will have fruits which are smaller than normal when water and nutrients are limited factors. A drought will result in a restriction of fruit development.

Likely Zenos knew that wild trees would not produce the same quality of fruit that tame trees would produce with the same amount of tending. However, the quality of carefully tended wild fruit may have been better than the quality of tame fruit which was completely neglected. Most domesticated plants are genetically adapted to give maximum production with careful tending, and it is likely that the quality of the fruit is very poor without tending. When both domesticated (tame) and non-domesticated (wild) plants are properly tended, the domesticated plants will always produce superior fruit. It is common in Utah and adjoining states to see apple trees growing along roadsides or on ditch banks. These plants may be products of the sexual reproduction of domesticated plants which have become "wild" and are normally genetically inferior to plants grown in orchards. The fruits are normally small and of poor quality. Even in abandoned orchards, where the plants are genetically superior, neglected trees normally have undersized fruit of very poor quality.

Even if the wild fruit were similar in size and palatability to the tame fruit, the susceptibility or resistance to infection by parasitic fungi, bacteria, or insects could make the fruit good or bad. It would then be desirable to prune and burn the infected branches to reduce the inoculum potential of the pathogen or pathogens. If this approach is used, the allegory more nearly follows the principles of biology we are familiar with today to describe good and bad fruit, but not wild and tame fruit.

Good Plants Can Emerge from Poor Soil

A desirable rate of growth cannot be obtained from either tame or wild plants on poor soil, even with a lot of tending and digging. Soil has exchange capacity, or the ability to retain ions for plant nutrition. The amount is related to the size of the soil particle. Sand has no exchange capacity while clay has high exchange capacity. On the other hand, sand is well aerated while clay is too poorly aerated for good plant growth. Of course, a sandy loam is ideal. With an equal amount of effort, the growth in good soil will be far superior to growth in poor soil. However, by adding organic matter (dung) and by taking sufficient care, it is possible to get relatively good growth in poor soil, particularly since organic matter helps to retain moisture and also has a high exchange capacity. However, the careful tending of the plant will not cause a change in the genetic characteristics of a branch or tree.

Clarification of the Allegory

Zenos' allegory is easier to understand if the imagery and interpretation are clarified. Symbolically, the tame tree is the house of Israel (Jacob 5:3), the wild tree is the Gentiles, the roots of the tree can be interpreted as the blood of Israel among the Gentiles, and grafting refers to "com[ing] to the knowledge of the true Messiah" (1 Nephi 10:14). The vineyard is probably the world, the master of the vineyard is interpreted as Jesus Christ and the servants are prophets and missionaries. When the Gentiles accept the gospel, they become "new creatures" fully capable of producing fruit as large and delightful as the Israelites. Conversely, when the Israelites become wild or are "overcome" by the wild roots, they have no more potential to produce large fruits of marvelous quality than do the Gentiles. Thus, the allegory violates a botanical principle to teach a spiritual truth. Regardless, this is one of the important messages of the allegory.

An outline of the major events related to the tree follows. The verses are from Jacob 5 and the house of Israel comparisons in italics are the interpretations given by Nyman (24-36).²

1. The olive tree “grew, and waxed old, and began to decay” (v 3).

“The house of Israel was in Egypt, because of the famine in Canaan” (25).

2. It was tended, and young tender branches grew (vv 5-6).

The new generation of Israelites were allowed to enter Canaan after their parents had been detained in the wilderness for forty years. Also God took the Melchizedek Priesthood from the Israelites and left “the lesser or Aaronic Priesthood” (26).

3. The main top began to perish so the tame branches were replaced with wild ones to preserve the roots (vv 6-7, 10-11).

The Melchizedek Priesthood was taken away and the Gentiles (wild branches) were grafted in; ie, the Assyrian and Babylonian conquests (26).

4. Young and tender branches were placed in the nethermost part of the vineyard to preserve the natural branches (v 13). They were planted in different places (v 14).

“These are the ten tribes (about 721 BC), the Jews (about 607 BC), and the Lamanites (about 600 BC).” This ends the first period from about 1800 to 400 BC (27).

5. “A long time passed away” (v 15).

About 400 BC to about AD 30 (27).

6. On the main tree the wild branches brought forth tame fruit. Without these branches the tree would have perished (v 18).

² A recent book which presents a brief and concise discussion of the allegory is Monte S. Nyman’s *An Ensign to All People*. Although obviously there are other interpretations for some of the aspects of the allegory, Nyman’s interpretation is very close to my own.

This is during the ministry of Jesus (AD 30-34) when the Gentiles bore good fruit; for instance, the Samaritan woman at Jacob's well (28).

7. The first natural branch which was hidden in the nethermost part of the vineyard brought forth much good fruit (v 20). It was on the poorest spot in the vineyard (vv 21-22).

"The ten and a half tribes [were] taken into Assyria and then led further into the north" (28).

8. The second branch was planted in ground that was even poorer but brought forth much good fruit (v 23).

The Jews (29).

9. The third branch was planted in a good spot of ground and a part brought forth tame fruit and a part brought forth wild fruit (v 25).

The Nephites and Lamanites (29).

10. All of the fruit of the vineyard was nourished (v 28).

This is probably "the period between AD 34 and 36, when all were converted to the Lord (4 Nephi 1-2)" (29).

11. A long time passed away (v 29).

The Apostasy to the Restoration (29).

12. The main tree whose natural branches were replaced with wild branches had "all sorts of fruit" (v 30). It brought forth much fruit, but none of it was good (v 32). The roots of the tree were still good (vv 34-36).

The Gentiles who had been grafted into the house of Israel had many different religions (fruit), but none were true. "The blood of Israel" (roots) was, however, "scattered among the Gentiles" (30).

13. The three natural branches in the nethermost parts of the vineyard had also become corrupt (v 39). The wild fruit of the third branch “had overcome that part of the tree which brought forth good fruit” (v 40), even though it was planted in ground which was choice above all other (v 43). Thus, all of the trees of the vineyard had become corrupted although they once brought forth good fruit (v 42).

The lost tribes, the Jews, the Nephites, and the Lamanites had all become corrupt. The Lamanites overcame the Nephites even though the Nephites lived in the land choice above all other lands. “Those he had cut down so that he ‘might plant this tree’ (Jacob 5:44) were the Jaredites” (30).

14. The problem was the loftiness of the vineyard. The branches grew faster than the strength of the roots and the branches became corrupted (v 48).

“Apostasy crept in” (31).

15. The branches from the nethermost parts of the vineyard were grafted onto the good roots of the mother tree (v 52) and branches of the mother tree were grafted onto the good root of the branches in the nethermost parts of the vineyard (vv 54-56).

The mother tree is the fulness of the gospel in the latter days established by the house of Israel scattered among the Gentiles. Thus, the branches of this mother tree will then take the gospel to the branches from the nethermost parts of the vineyard or the lost tribes, Jews, and Lamanites. The blood of Israel (roots) is to become the mother tree (31-32).

16. Only the most bitter branches were plucked and the trees of the vineyard were nourished (vv 57-58).

Only the most wicked were removed “until the natural branches could derive nourishment from the natural roots” (32).

17. Servants were called to prepare the way to bring forth natural fruit again (v 61) for the last time (v 62).

Missionaries are being sent out and have been seeking the natural fruit for more than 150 years (32).

18. The servants would graft in the last branches first and the first branches last (v 63).

The last group taken away, Lehi's group, will be the first to be grafted back. The second group will be Judah and the last branch will be the lost tribes (32-33).

19. The servants would clear away the branches which bring forth bitter fruit, but not all at once, so the roots would still have strength (v 65). They would maintain equal root and top growth until the good could overcome the bad. They would cut the bad and cast it into the fire. Thus the branches of the natural tree would be grafted again into the natural tree (vv 67-68), and the bad would be cast away (v 69).

It will be a gradual process, but eventually the Lamanites, Jews, and lost tribes will be "like unto one body" . . . (Jacob 5:74)" (33).

20. The servants came but they were few (v 70). They were told to labor with their might because this was the last time the vineyard would be nourished for the end was nigh at hand (v 71). The natural branches began to grow and thrive exceedingly and the wild branches were cast away. The roots and top were equal in strength (v 73).

Again, the missionaries are the instruments in bringing the natural branches back to the main tree (33).

21. They labored until all of the bad had been cast away and the trees produced natural fruit and "became like unto one body" (v 74). All the fruit was good as it had been in the beginning (v 75).

The tribes of Israel will be united under one shepherd (33).

22. The master said, “for a long time will I lay up of the fruit of my vineyard” (v 76).

The Millennium (33).

23. The master said that when the time came that evil fruit should come into his vineyard he would preserve the good and cast away the bad. “And then cometh the season and the end; and my vineyard will . . . be burned with fire” (v 77).

This is the end of the Millennium when the evil fruit appears again and the righteous are saved and the wicked are burned along with the vineyard. The mission of the house of Israel will be completed and “the temporal existence of the earth will then be completed” (33).

Conclusion

Zenos’ allegory is profound for us because it reinforces in our minds the importance of our mission as members of the house of Israel among the political Gentiles. The olive tree, a very important Old World plant that to many provides life itself, was used in the allegory probably because olive horticulture so closely fit the message to be conveyed. Ephraim is the birthright tribe (Jer 31:9) and is responsible for redeeming the three branches which were planted in the nethermost part of the vineyard—the Nephites and Lamanites, the Jews, and the lost tribes (D&C 133:26-34), as well as all others who qualify themselves for adoption into the house of Israel (Gal 3:26-29; 2 Nephi 26:33; 3 Nephi 30:2). In other words, Ephraim is responsible for bearing the message of the restoration of the gospel to the entire world and for gathering scattered Israel. This responsibility includes extending the blessings of temple work to each of the branches of the house of Israel (D&C 133:26-34).

The servants in Zenos’ allegory are prophets and missionaries. As an extension of the allegory, it appears that members of

the house of Israel among the Gentiles could also act as servants. Although all of the tribes are represented in latter-day patriarchal blessings, a very high percentage of the members of the Church are Ephraimites. Therefore, our responsibilities are profound. The gathering has already begun. The Book of Mormon was written to enlighten all twelve tribes of Israel (Mormon 3:17-21). Even though the greater part of the gathering of Israel will not take place until after the return of Christ and the beginning of the Millennium (3 Nephi 21:23-28), the coming forth of the Book of Mormon is described as the beginning of the gathering of Israel (3 Nephi 21:1-7). When Christ returns, Judah and the ten tribes will finally accept him as their Savior (3 Nephi 21:22-23). Then they will come from the four quarters of the earth and "the remnant of the seed of Jacob, who are scattered abroad upon all the face of the earth" (3 Nephi 5:24), will be gathered and become part of the mother tree (Nyman 31-32).

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