

Abstract

A. Preface

In the Roman and Byzantine Period (the period of the Second Temple, the Mishnah and the Talmud) agriculture in the Land of Israel played a central role in the local economy, culture and religion. The study of agriculture in the past has many facets: halakhic, cultural, sociological and folkloristic. This study focuses mainly on the agricultural and economic aspects of groves in the Land of Israel. Groves were an important part of the agriculture sector, sometimes amounting to two thirds of all agricultural lands, as reflected in a statement by Rabbi Yohanan, a resident of Tiberias: "Your property shall be divided in thirds: a third for grain, a third for olives, and a third for grapes (Bava Metzia, 107a). These provided and constituted the overwhelming majority of all commercial production. In the Land of Israel agriculture used to be the way of life for all sectors of the population; agricultural concepts were as clear to farmers as they were to the Tannaim and Amoraim who sat in the study hall, but who also had a connection to practical agricultural matters.

B. The goals of this study

1. To identify the main grove trees in the Land of Israel during the Roman and Byzantine Period.
2. To identify and describe the work in the groves (from the preparation of the soil to the harvest).
3. An attempt to assess the level of knowledge and the agriculture culture, compared to the level of involvement in this subject today, and in comparison to the level of knowledge of the Greek and Roman farmers during that period.
4. To propose measures to determine the degree of importance of fruit trees during this period.

C. The research environment and sources

This study addresses the branches of grove agriculture in the Land of Israel, Greece and Rome (plus a partial survey of Babylon and Egypt). The period of this study covers agricultural knowledge over approximately 800 years - the period of

the Second Temple, the Mishnah and the Talmud (100 B.C.E. - 700 C.E.). The common thread throughout this period of upheaval and change is ostensibly the continuous rule of Rome and the Greek and Roman cultures. Books such as the works of Josephus Flavius or the Books of the Maccabees, despite their tendentious or commissioned nature, provide us with a significant quantity of high quality information to write a fluent historical narrative. This was not the case, however, with respect to descriptions of the agriculture in Israel, which was a purely marginal subject for them.

The expansive Rabbinic literature does not present us with a clear, continuous picture of agriculture in Israel. The agricultural details in these sources were usually of no conceptual importance, and were only technical details or legal examples. This factor adds to the credibility of such details, on the one hand, but makes it more difficult to collect them and understand them, on the other. Hence an important stage of this dissertation was the study, understanding and collection of these sources. After the sources were meticulously sorted, they provided a fuller, broader picture of grove agriculture in the Land of Israel during this period. This study also refers to Babylonian sources, as dates were grown in Babylon before they were cultivated in the Land of Israel, and it was possible to compare the various farming methods. The conclusions of this study are based on the assumption that most of the Baraitot (addenda to the Mishnah) in the Babylonian Talmud originated in the Land of Israel and contain much of the doctrine of the Palestinian Amoraim, including agricultural traditions and facts.

There is copious Latin and Greek agricultural literature, including the 20-volume *Geoponica* and works by historians such as Theophrastus, Cato, Pliny, Athenaios, Varro, Columella and Dioscorides. These authors lived from the Second Temple Period onward, and described the agriculture in their country and elsewhere. The climatic, agrarian and agricultural conditions in their writings were obviously different than in the Land of Israel. Still, there are many similarities, especially in the work methods in the groves that are the subject of this study. One common misconception that must be countered is that traditional Arab agriculture is the same as or a continuation of ancient Jewish agriculture reflected in Talmudic sources - they are more different than alike.

D. Contribution to research

This study deals with five fruits: olives, dates, figs, pomegranates and almonds, and indirectly also grapes. These fruits were not chosen randomly. Rather, the goal of this study is to examine a variety of fruits, some of which were staple foods during this period, while others were supplementary foods, in order to present a broad study of the groves in the Land of Israel during the period of the Second Temple, the Mishnah and the Talmud.

Several aspects of this study differ from its predecessors (mainly those by Yehuda Felix and Immánuel Lów, which were milestones and pillars of research in this subject): It does not address only the findings from the various sources, using them to paint a picture, but rather examines this subject from the perspective of modern research, both in its assessment of the facts and the order of the chapters that modern research offers contemporary farmers (as an agricultural encyclopedia). This study includes a systematic comparison of chapters in modern research and the information presented by the various sources (Rabbinic, classical literature and traditional farming), and tests it using modern scientific methods. This study systematically examines the information on each grove fruit, in minute detail, from the preparation of the soil for the grove, to the harvest. A methodical comparison was conducted between the sources from the Land of Israel - Rabbinic and archaeological - and the Greek and Latin literary sources, in an attempt to assess the level of the various branches of grove agriculture in the Land of Israel, relative to their counterparts in Greece and Rome during that period.

An important sector that was not covered in this study is the vineyards. The Rabbinic sources that deal with vines and grapes are far more numerous than the sources that mention any of the other fruit trees in groves in the Land of Israel during the period of this study. The scope of the Greek and Latin sources that deal with vineyards and winemaking is phenomenal relative to the literature on all the other fruit. The grape industry was among the most important, if not the most important of all the branches of grove agriculture. The reason this study does not delve into information on grapes is mainly quantitative, for fear that the preoccupation with all the details of that industry would not only enrich and add girth to the entire study, but would be insufficient to provide a broader and more

inclusive perspective of the composition and level of grove agriculture in the Land of Israel during the period of this study. The need to preserve the size of this work therefore prevented the detailed study of grapes.

E. The main conclusions of this study

The chapter on olives - There is considerable information on olive growing in the Rabbinic sources and the Greek and Latin sources. Olive oil, the most important product from the olives, was a basic component in the diet and life of the inhabitants of Land of Israel. The Rabbinic sources mention 15-16 varieties of olives growing in Israel, similar to the number mentioned in the Greek and Latin sources. Twelve of the olive species in Israel were oil-producing varieties, while only four of the Roman ones were. Fourteen of the olive varieties in the Land of Israel produced high quality olives (size, flavor, look and percentage of oil), and about half the varieties ripened earlier than the Greek and Roman varieties, which produced much less oil. The edible varieties of olives were much more common in Greece and Rome, as were the types of foods prepared from them. The harvest in Israel was in late summer and early autumn, while in Greece and Rome, olives were harvested later (perhaps this affected the quality of the olives). The olive industry was a major and important industry to the economies of Land of Israel, Greece and Rome.

The chapter on figs - here, too, Rabbinic literature from Land of Israel provides substantial information on the cultivation of figs (the Babylonian sources provide little information). The Greek and Latin sources contain more details than the Rabbinic sources (although the details in the Rabbinic literature on the caprifigation and harvesting of figs are more precise). Fig trees were common throughout most parts of the Land of Israel, both in private gardens and in the fields. There were also farmers who grew figs in commercial groves. The fruit was eaten fresh and dried and was an important supplement to the local diet. Rabbinic literature mentions 9 varieties of figs, while Greek and Latin sources name 26 varieties (perhaps an indication of their greater importance). The figs grown in the Land of Israel were smaller than their cousins in Asia Minor, Greece and Rome. Revenues from this industry were not high, indicating that it was less important than the olive industry.

The chapter on pomegranates - There is partial information on pomegranate cultivation in the Rabbinic sources, while the Greek and Latin sources provide much more detailed information, some of which is based on copied knowledge and on unfounded folklore (information concerning the measure of the quality of the fruit is more copious in Rabbinic literature). Two or three good-quality varieties of pomegranates are mentioned in the Rabbinic sources - similar to the number in the Roman sources. In ancient times most varieties of pomegranates were not good (sour, tanniny, with tough seeds, etc.). Pomegranate trees were much more common throughout the country beside houses and in fruit gardens (although not as a commercial fruit). The higher quality pomegranate groves were in the Nablus region and the warmer valleys, near sources of flowing water. The Greek and Latin sources provide various impressive methods for preserving the fruit for long periods and the diverse uses of this fruit. Revenues from the pomegranate industry were not substantial, indicating that it was of minor importance to the economy of Land of Israel, Greece and Rome.

The chapter on almonds - There is partial information on almond cultivation in the Rabbinic sources, while the Greek and Latin sources provide much more detailed information on the various stages of growth. The hot summer climate in the Land of Israel is more suited to growing almonds than the climates of Greece and Rome, as the nuts ripen and are harvested in late summer in Israel, and later in the year in Rome. Almond trees were common throughout the Land of Israel, but there were few groves. The Rabbinic sources name one variety of almonds, but Greek and Latin literature does not mention even one. Most almond varieties in ancient times had very tough skins. Almonds were used in various foods, but were a dessert food, not a main one. Commercial revenues from almonds were marginal, as was its importance to the economy of the Land of Israel, Greece and Rome.

The chapter on dates - Rabbinic literature offers considerable information on the cultivation of dates, as do the Greek and Latin sources. Dates were not grown commercially in Rome. Farmers in the Land of Israel had extensive knowledge of date cultivation, and had impressive agricultural achievements. Varieties of dates were developed specifically for drying and some varieties of dates were exceptionally large and heavy. Some of the fruit was exported to European

countries. The various sources indicate that 17 varieties of dates were grown in Land of Israel, out of a total of 41 species that were known during that period. The date industry was one of the important industries in the Land of Israel economy, and the average price charged for a kilogram of dates was 6 times the price for figs.

F. Measures for determining the ranking of the fruit

This study used several measures to determine the importance of each fruit in the Land of Israel in the past, listed here in order of their relevance: the quality of information in the Greek and Latin sources and the Rabbinic sources; whether the fruit was a staple food; the number of species; good, regular income from the fruit; the preservability of the fruit; the climate and the harvest season; the uses of the fruit; the distribution of the trees. These measures can be applied to other fruits. The fruits, in order of their importance based on these measures, are: grapes, olives, dates, figs, pomegranates and almonds.

G. The level of coverage in Rabbinic literature as a research tool

One of the conclusions offered in this study is that the level of coverage in Rabbinic sources - the number of mentions (in separate issues), can serve as a measure for examining the importance of a fruit (a kind of preliminary survey). This study does not presume that Rabbinic literature can be used as the sole tool for checking the identity and importance of the fruit, but can be used as a source for a preliminary assessment of a fruit's status. This source can be used as an auxiliary tool, but not as the only one (until proved otherwise) for determining the importance and ranking of a fruit.

H. The quality of the information in the sources

Rabbinic sources - in general, less information was found in the Rabbinic sources concerning each fruit (apart from dates) than in the Greek and Latin sources. When comparing the quantity of the information to the quality of the agricultural knowledge obtained concerning the cultivation of each fruit, there is no correlation between the two types of sources. In other words, the quantity of information derived from the Rabbinic sources concerning each fruit on its own, is

not representative of the body of knowledge that existed in the Land of Israel during that period. This can be explained by the simple fact that the Rabbinic sources are not agricultural information books. Rather, the information is scattered among many sources. Drawing conclusions from the Rabbinic sources requires in-depth study and an understanding of both the subject and the general context of each source. Thus only a compilation of all the relevant agricultural information found in Rabbinic literature (concerning the various fruits), can indicate the level of knowledge of each fruit that was grown by farmers in the Land of Israel during that period.

The Greek and Latin sources - the information available from the Greek and Latin sources is more copious, more detailed and more varied than that in the Rabbinic sources. The Greek and Roman authors collected all the agricultural knowledge they could find at the time, arranged it for each fruit, and added their own insights. The information in these sources must be examined closely, particularly for what is missing. Sometimes excess verbiage covers up a lack of important cultivation details, which the authors sometimes tended to fill in with agricultural folklore that was common at that time.

I. The level of agricultural knowledge.

An examination of the level of agricultural knowledge in Greece and Rome reveals broader, fuller, and more accurate information on fruits that were grown commercially on a large scale in those countries (grapes, olives and figs), and the agricultural yields of these crops was commensurate with this knowledge. This important knowledge was apparently transferred and learned in the neighboring countries. The information on fruits that were not grown commercially in Greece and Rome (dates, almonds and even pomegranates), is not complete. Often it was culled from older sources, and there was evidence that its practical application was not understood, and the results were similarly commensurate. An assessment of the Greek and Roman sources reveals that the more information there was on a fruit and its cultivation, the greater the importance and agricultural success of that fruit.

As noted, agriculture in the Land of Israel provided a livelihood for most of its inhabitants, and this is an indication of good agricultural yields in the past. There is less agricultural information in Rabbinic literature, and it is scattered and hidden between the lines of the texts. The gathering of this information and its presentation as a single body of knowledge reveals that on the whole it is very accurate, with few folkloristic additions. While there is obviously no comparing the level of knowledge then and now, the quality of the information, the stages of processing and cultivation, are quite comparable to common practices today, and in some instances are even superior (such as the tilling of the soil, fertilizing, terracing and varieties of fruits). These agricultural methods could even be used to advance agriculture today, in the context of “the actions of the fathers are a sign for the children.”