

The calendars in the Bible

This document replaces the document *The calendars in the Bible* from 2011, because there-in were unfortunately some small errors.

The Bible uses not one calendar, but three calendars. This is because the people of Israel was lured to pagan calendar use in the course of time. The time units which these calendars used, and when and how these calendars functioned, is discussed below.

The day

The day (Heb. *yôm*) is determined by the course of the sun (Gn.1:14; Ps.19:5-7). The Bible knows two basic days. The day from sunrise to sunrise and the day from sunset to sunset. This last day is the original calendar day and is used in all three calendars (Gn.1:1-5; Ex. 12:1-42 and cf. Dt.16:1 and Nm.33:3). See for more information about days the document *Days and years*.

The month

The month is determined by the course of the moon (Gn.1:14). There are two Hebrew words for month. The word *yerah* (also means moon) and the word *hōdeš* (also means new moon). In all three calendars is made use of a month that begins with or about new moon (cf. Nm. 28:11-14 and 1Sm.20:5,18,24, 27,34; 1Kg.6:38; 8:2). At first the months were only designated numerically, but in the course of time the people of Israel began to take over the month names of other peoples. The month names which are used nowadays come from a time when Israel was dominated by Babylonia. The names of the months are:

- 1.Nisan {is the Canaanite month *Abib*, which refers to 'nearly ripe ears' of barley. See Ex.9:31 (AKJV) where Abib is translated with 'in the ear', and Lv.2:14 (AKJV) where Abib is translated with 'green ears of corn'; Abib is according to Joe.2:23 and So.2:11 also the month of the latter rains at the end of the winter}
- 2.Iyar {is the Canaanite month *Ziv*}
- 3.Sivan
- 4.Tammuz
- 5.Ab
- 6.Elul
- 7.Tishri {is the Canaanite month *Ethanim*}
- 8.Chesvan {is the Canaanite month *Bul*. Bul means rain and refers to the early rains in this month (Jr.5:24)}
- 9.Kislev
- 10.Tebeth
- 11.Shebat
- 12.Adar

The year

Like the day the year (Heb. *šānā*) is determined by the course of the sun (Gn.1:14). The Bible knows two basic years. The year from spring equinox to spring equinox and the year from autumn equinox to autumn equinox. In all three calendars the calendar year is fixed by the spring equinox, although the calendar year in the third calendar does not start around the spring equinox, but around the autumn equinox. See for more information about years the document *Days and years*.

The spring and autumnal equinox

The spring equinox is mentioned in the Bible the return of the year (2Sm.11:1; 1Kg.20:20,26; 1Kr.20:1; 2Kr.36:10). And the autumnal equinox is called the passing away of the year (Ex. 34:22). With the spring equinox, the summer begins, and with the autumnal equinox the winter begins (Gn.1:14; 8:22; Ps.74:17; Zc.14:8). The equinoxes were determined with the help of a vertical object (gnomon). The shadow of this object showed the days on which the sun crossed the equator (the equinox), because only on the days of the equinoxes the end of the shadow of the vertical object traces an exact east-west path on the level ground. This method made it possible to determine the day of the equinox within 1 day from the true day of the equinox. The knowledge of this is apparent from the Egyptian pyramids, because most pyramids are orientated east-west.

<http://faculty.physics.tamu.edu/krisciunas/gnomon.html>

<http://www.usno.navy.mil/USNO/astronomical-applications/astronomical-information-center/equinoxes>

The first calendar

The first and oldest calendar is fully aligned with the nature order given by God in creation (Gn.1:14). This is, for instance, evidenced by the fact that this calendar takes into account the difference in length between summer and winter. Among the people of Israel the calendar continued to function until the 7th century before Christ. Dating according to this calendar can be found in Genesis, Exodus, Leviticus, Numbers, Deuteronomy, Joshua, 1 Kings and 2 Chronicles.

The first seven months each had 30 days.

From Gn.7:11 and 24, and Gn.8:3 and 4, it appears that the months two to six each had 30 days. Indirectly it appears from Biblical and extra-Biblical data that the same applies for month one and seven (see the document *The chronology of the Bible*).

The months eight to eleven each had 29 days, and the twelfth month had, depending on the first visibility of the moon, 28 or 29 days.

Since the lunar year is about 354.36 days, the months seven to eleven must each have had 29 days. The second part of the calendar year was therefore shorter than the first part, as in the natural year. Because the interval between the spring equinox and the autumnal equinox is about 185½ day (summer), and between the autumnal equinox and the spring equinox about 179¾ day (winter).

The first day of the first month was the beginning of the calendar year, and was determined by the first visibility of the moon.

In this manner, the months of each calendar year were kept close to the course of the moon cycles. The first day of each month is called the new moon, even if, by the slightly too long months of 30 days, the first visibility of the moon had taken place somewhat earlier (1Sm.20: 5,18,24,27,34).

The fifteenth day of the first month had to fall on, or as short as possible before, the spring equinox.

This directive made sure that the autumnal equinox usually fell after, or sometimes during, the Feast of Ingathering (see note below document). That this is according to Scripture appears from the following verses:

- Lv.25:9-10 «Then you shall cause the trumpet of the Jubilee to sound on the tenth day of the seventh month; on the Day of Atonement you shall make the trumpet to sound throughout all your land. And you shall consecrate the fiftieth year, and proclaim liberty throughout all the land to all its inhabitants. It shall be a Jubilee for you; and each of you shall return to his possession, and each of you shall return to his family.» [The coming of a Jubilee Year had to be announced on the tenth of the seventh month]
- Ex.23:16 «and **the Feast of Ingathering in** (b^e) **the end of the year**, when (b^e) you have gathered in the fruit of your labors from the field.» [lit. **in the going out of the year**]
- Dt.16:13 «You shall observe the Feast of Tabernacles seven days, when (b^e) you have gathered from your threshing floor and from your winepress.»
- Jr.8:20 «The harvest is past, the summer is ended, and we are not saved!»
- Lv.23:39 «Also on (b^e) the fifteenth day of the seventh month, when (b^e) you have gathered in the fruit of the land, you shall keep the feast of the LORD for seven days; on (b^e) the first day there shall be a sabbath-rest, and on (b^e) the eighth day a sabbath-rest.»
- Ex.34:22 «And you shall observe the Feast of Weeks, of the firstfruits of wheat harvest, and **the Feast of Ingathering at the year's end.**» [lit. **at the passing away (tekufat) of the year.** There is no Hebrew preposition attached to *tekufat* here. But since *tekufat of the year* is a time modifier, the preposition is implied.]
- Dt.31:10-11 «And Moses commanded them, saying: "**At the end of every seven years, at** (b^e) **the appointed time in the year of release, at** (b^e) **the Feast of Tabernacles**, when (b^e) all Israel comes to appear before the LORD your God in (b^e) the place which He chooses, you shall read this law before all Israel in (b^e) their hearing."»

*The Hebrew preposition b^e is usually translated with *in, on, at, with, or as*.

In order to keep the fifteenth day of the first month on the spring equinox, or as short as possible before, a month of 29 days was inserted between the eleventh and twelfth month.

Since the solar year (~365.24 days) is about 11 days longer than the lunar year (~354.36 days), the equinoxes shift forward for about 11 days a year in the calendar. This means that an additional month was needed approximately once every three years.

The second calendar

In the 6th century before Christ the Bible uses a calendar which differs in two aspects from the first calendar. This second calendar continued to function until about the 4th century be-

fore Christ. Dating according to this calendar can be found in Jeremiah, 2Kings, Daniel, Ezekiel, Haggai, Zechariah, Ezra, Nehemiah, and Esther (see the documents *The Persian Empire (490/'89 - 331/'30 B.C.)* and *The chronology of the Bible*).

The months had alternating 30 and 29 days.

The first month had 30 days, the second month 29 days, the third month 30 days, and so on. This change is probably the result of the Assyrian influence in the 7th century before Christ (see the document *Esarhaddon reigned from 634/'33 to 622/'21 B.C.*).

The twelfth month had 29 or 30 days, depending on the first visibility of the moon.

The third calendar

After the conquests of the Macedonian Alexander the Great in the second half of the 4th century before Christ the second calendar changed in some aspects. This third calendar continued to function at least until the 2nd century after Christ. Datings according to this calendar can be found in 1 and 2 Maccabees, in *Wars* of Flavius Josephus, and indirectly by references to feasts in Matthew, Mark, Luke, John, Acts, and 1Corinthe (see the *document The chronology of the Bible*).

The first day of the seventh month was the beginning of the calendar year, and was determined by the first visibility of the moon.

The fifteenth day of the first month had to fall on, or as short as possible after, the spring equinox.

The result of this was that the Feast of Ingathering (Tabernacles) usually fell completely after the autumnal equinox.

The twelfth month always had 29 days and the sixth month had 29 or 30 days, depending on the first visibility of the moon.

Other changes, such as the exceptional days that we come across in the calendar of the people of Israel today, have been introduced later.

Note

The ideal year was 1444/'43 B.C., the year of the exodus, because the spring equinox then fell on the first day of Unleavened Bread (15/1), and the autumnal equinox on the sixth day of the Feast of Ingathering. So the fifteenth day of the first month fell in that year on the last possible day (see data below). And see also the data for several years from our time for the location Jerusalem (31°46'N/35°14'E), and also the year 958/'57 B.C., the year when the temple was completed and the fifteenth day of the first month fell on the earliest possible day (29 days before the spring equinox).

	<u>15/1</u>	<u>spring-eq.</u>	<u>21/7</u>	<u>autumnal eq.</u>
1444/'43 B.C.	2/3 April	2/3 April	5/6 Oct.	4/5 Oct.
1443/'42 B.C.	23/24 March	2/3 April	25/26 Sept.	5/6 Oct.
958/'57 B.C.	1/2 March	30/31 March	3/4 Sept.	2/3 Oct.
2018/'19 A.D.	3/4 March	20/21 March	5/6 Sept.	22/23 Sept.
2019/'20 A.D.	20/21 Febr.	20/21 March	25/26 Aug.	22/23 Sept.
2020/'21 A.D.	10/11 March	19/20 March	12/13 Sept.	21/22 Sept.
2021/'22 A.D.	27/28 Febr.	19/20 March	1/2 Sept.	22/23 Sept.
2022/'23 A.D.	17/18 March	19/20 March	19/20 Sept	22/23 Sept.

first visib. moon 19-3-1444 B.C.//d r/s 1:32h//phase 3.4%//age 25:58h (1/1 was 19/20 March, day 2)

first visib. moon 09-3-1443 B.C.//d r/s 1:51h//phase 4.8%//age 37:10h (1/1 was 9/10 March, day 1)

first visib. moon 15-2-0958 B.C.//d r/s 1:33h//phase 3.4%//age 28:33h (1/1 was 15/16 Febr., day 3)

first visib. moon 17-2-2018 A.D.//d r/s 1:31h//phase 3.1%//age 42:20h (1/1 is 17/18 Febr., day 1)

first visib. moon 06-2-2019 A.D.//d r/s 1:25h//phase 2.8%//age 42:12h (1/1 is 6/7 Febr., day 5)

first visib. moon 25-2-2020 A.D.//d r/s 1:38h//phase 3.8%//age 48:00h (1/1 is 25/26 Febr., day 4)

first visib. moon 13-2-2021 A.D.//d r/s 1:39h//phase 3.8%//age 44:17h (1/1 is 13/14 Febr., day 1)

first visib. moon 03-3-2022 A.D.//d r/s 1:39h//phase 3.8%//age 44:17h (1/1 is 3/4 March, day 6)