

Aviv barley and calendar diversity among Jews in eleventh-century Palestine

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ABSTRACT One of the most salient medieval Qaraite practices was setting the calendar by observation of natural phenomena. While the Rabbanites followed arithmetical schemes, Qaraite set months by sighting the new moon and intercalated years on the basis of the state of ripeness of barley crops (*aviv*). Multiple Qaraite treatises on the *aviv* are preserved, but documentary evidence of empirical intercalation is scarce, making it difficult to learn how it was performed in practice. This article examines two Qaraite calendar chronicles that document barley observations and decisions regarding intercalation in a range of years in the eleventh century. They shed important light on how the Qaraite calendar operated over periods of time and attest to frequent calendar difference within the Qaraite movement and between Qaraite and Rabbanites. The chronicles make it clear that the Qaraite calendar of the period was not a monolithic system counterposed to that of the Rabbanites.

ONE OF THE MOST SALIENT PRACTICES that distinguished medieval Qaraite Jews from the mainstream Rabbanites was setting the calendar by the observation of natural phenomena. Unlike the Rabbanites, who followed a mathematical scheme for setting the calendar, Qaraite fixed beginnings of months by observing the new crescent and determined whether to intercalate the year on the basis of the state of barley crops.¹

The Qaraite empirical intercalation was grounded in the biblical commandment to celebrate Passover in ‘the month of *aviv*’ (Deut. 16:1), which

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1. Z. Ankori, *Karaite in Byzantium: The Formative Years, 970–1100* (New York: Columbia University Press, 1959), pp. 292–3; D.J. Lasker, ‘Calendar and Calendar Disputes’, in *Encyclopedia of Jews in the Islamic World* (accessed 31 March 2020); M. Rustow, *Heresy and the Politics of Community: The Jews of the Fatimid Caliphate* (New York: Cornell University Press, 2008), pp. 57–61.

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is the month when crops reach a particular state called *aviv*. In the Bible the term *aviv* is specifically collocated with barley and described as a progressed stage in its growth, when it can be ruined by hail and parched with fire (Exod. 9:31, Lev. 2:14). The basic Qaraite intercalation procedure was simple: barley fields were examined twelve months after the beginning of the previous Nisan. If barley in the correct stage of ripening was found, that month was declared the first month of the year and Passover could be celebrated. If barley was not sufficiently ripe, the year was intercalated by adding an additional thirteenth month. This procedure involved many parameters that could not be established unambiguously on the basis of the biblical text. What exact stage in the ripening of barley should one look for? When and where should barley in the correct stage be found? How much barley should be present in order to celebrate Passover?

Multiple opinions on how to intercalate the year by observing barley crops are recorded in medieval Qaraite sources, such as books of commandments, Bible commentaries and polemical treatises on the calendar.² This diversity is noted already by al-Qirḡisānī in tenth-century Iraq:

One says about the *aviv* that it is the tender grain. Another does not begin the month of *aviv* till ripe grain is found in the entire Land of Israel. Yet another begins it when one plot of land is ready for harvest. Yet another will do that [declare the month of *aviv*] on a few handfuls of ears only.³

If used in practice, these different systems of intercalation would have produced incompatible results and must have led to groups within the Qaraite movement sometimes celebrating Passover and the rest of the festivals a month apart.

Few medieval Qaraite calendars and barley observation records have so far been identified. Oxford, Bodleian Heb. b. 11.10 is a letter about the *aviv* sent from Jerusalem to a Qaraite leader in Fustat, probably in 1044.⁴

2. For example, al-Qirḡisānī, *Book of Lights and Watchtowers* vii.16–21 (L. Nemoy, *Kitāb al-Anwār wal-Marāqib* [New York: Alexander Kohut Memorial Foundation, 1939–43], vol. 4, pp. 833–50); books of commandments by Israel b. Daniel, Yefet b. 'Eli, Sahl b. Maṣliḥ, Levi b. Yefet; Yūsuf al-Baṣīr, *Kitāb al-Istibṣār*, book 4; an anonymous intra-Qaraite polemic on the *aviv*; Bible commentaries by Yefet b. 'Eli, Yūsuf ibn Nūh, etc. The bulk of this literature is still unedited. Brief references to some books of commandments in the context of *aviv* are found in Ankori, *Karaites in Byzantium*, pp. 322–3; M. Gil, *A History of Palestine, 634–1099* (in Hebrew; Tel Aviv: Tel Aviv University Press, 1983), vol. 1, secs. 928–9.

3. Al-Qirḡisānī, *Book of Lights and Watchtowers* i.19.2 (Nemoy, *Kitāb al-Anwār*, vol. 1, pp. 60–61).

4. Gil, *A History of Palestine*, vol. 2, pp. 540–43 (doc. 301).

T-S 12.147 is a copy of an official document regarding the state of barley fields in Gaza in March 1052 compiled by a delegation of twelve Qaraites.⁵ T-S 12.646v and T-S AS 157.74v, from a Qaraite book of court records, describe the state of crops on a number of fields, and are datable to the first half of the eleventh century.⁶ Meanwhile, ENA 4010.35, ENA 4196.15, T-S K2.107r and T-S NS J 609r preserve a Qaraite calendar roster for 1047/8 and 1049–51 CE.⁷ These are important witnesses of the Qaraite empirical calendar. However, they document either the state of fields (observation reports) or decisions about intercalation (the roster) and do not establish correspondences between observed states of crops and calendrical decisions. Moreover, most of the documents cover single years only. These documents are of limited use for learning how empirical intercalation was performed in practice and for studying calendar diversity.

Recently two manuscripts have come to light that document events related to intercalation as it was performed by Palestinian Qaraites in the nine years between 1019 and 1028 CE. These manuscripts have three important features: they cover a range of consecutive years; they record information on inspecting barley fields together with decisions regarding intercalation made on the basis of the observed state of crops; and they refer to calendar decisions of different Qaraite groups. As such these calendar chronicles shed important light on how the Qaraite calendar operated over periods of time.

In this article I present an edition and English translation of the fragments, followed by an analysis of their contents and a discussion of intra-Qaraite and Qaraite–Rabbanite calendar diversity as it plays out in the chronicles. My analysis demonstrates that various incompatible opinions discussed in theoretical works on the *aviv* were followed in practice. This led to practical calendar diversity among Qaraites on a scale that makes it unjustified to regard the Qaraite calendar as a monolithic calendar counterposed to that of the Rabbanites.

5. Ibid., pp. 543–5 (doc. 302).

6. For T-S 12.646 see S.D. Goitein, *A Mediterranean Society: The Jewish Communities of the Arab World as Portrayed in the Documents of the Cairo Geniza*, vol. 4 (Berkeley CA: University of California Press, 1967–93), p. 418 n. 363. T-S AS 157.74 is another fragment from the same original manuscript.

7. M. Gil, *The Tustarīs: The Family and the Sect* (in Hebrew; Tel Aviv: Tel Aviv University Press, 1981), pp. 86–94.

Manuscripts

Russian National Library (RNL) Evr Arab I 1151 is a collation of information on the seeking of the *aviv* and decisions made on its basis in the years 413–18 אה (April 1022–February 1028 CE). The fragment consists of two consecutive leaves, now separate, which must have originally constituted the central bifolio of a quire. It is copied in a late eleventh–twelfth-century Oriental handwriting. T-S AS 158.147 is a very similar record for the years 410–12 אה (May 1019–April 1022) and another unidentifiable year. The fragment consists of one leaf with a stub and is in a late-twelfth–thirteenth-century Oriental handwriting. Both manuscripts are in Judaeo-Arabic.

Text and translation

T-S AS 158.147, verso

.....ען ז קפיזא אב
 מנהא אכצ'ר דג[ז] ⁸.....
 אלבאלג מן אלחקל יסתח[צד] בעד איא[ס]ד.....
 ראס אלשהר ולם יוגד [י]קארב הדא אלחקל וכבס
 אלקראיין ועיד אלשיך אב[ו] יע[ק]ו[ב] רח אללה ואע.....
 אלאעתדאל פי אלסא[עה אלי?] א מן נהאר יום אל.....
 מן דו אלקעדה סנה תיא
 לם יוגד פי דו אלקעדה שי ועידת אלגמאעה בלא שך [פי]
 די אלחגה אלאעתדאל פי אלסאעה אלד מן לילה אלא[רבעא]
 אלכט מן [די] אלקעדה[דה] סנה תיב
תלת[א] אלתאסע ואלעשרין מ[ז]
ב עליהא אלא.....

T-S AS 158.147, recto

.....קר[ב] [ר]פח חקל
א [ק]ריב אגבר
אגבר ופיה

8. Square brackets represent conjectures due to lacunae and other damage to the manuscripts, such as rubbing.

[פסת]קי וא[ב]צר דגן ודכר [בעץ] אלפלאחין אן הדא אלחקל
 [לם י] לחק גל־תהא נקץ ולא פסאד
 קד יכון אל[י] ... אי־אם
 [חצא]דה אחקל תקא[רבהא] ושוהד פי תלא[ת] כלון
 קר? חקל תקדיר גלתה מ־ק[פ]יז
 א קטעה דון נצפהא אבלג מן באקיהא אל
 אלאגבר ואלפסתקי [ו]אלבאקי אכצ־דג[י] [ומג]ב[י]? ופיה
 [ש]איע ואחאד גבר ו.....ל אל
 עלי אלחעייד פי נצ[ף]א ל
 [מחצ־?]ר מן אלקרא[יין].....

T-S AS 158.147, verso

about 50 *qafiz*⁹
 of them green and doughy¹⁰
 the ripe [part] of the field will be harvested in days
 beginning of the month and was not found close [in terms of growth
 stage] to this field.
 The Qaraites intercalated and the elder Abū Yaʿqūb, may God have mercy for
 him, celebrated and
 The equinox is in the eleventh(?) hour of the day on the
 of Dū al-Qaʿdah. Year 411
 Nothing could be found in Dū al-Qaʿdah and the community celebrated,
 without any doubts, in
 Dū al-Hijjah. The equinox is in the fourth hour of the night of Wednesday,
 the 29th of Dū al-Qaʿdah. Year 412
 Tuesday, the 29th of
 on it

T-S AS 158.147, recto

..... near Rafah a field
 almost dust-coloured
 dust-coloured and in it
 pistachio-coloured and green and doughy. Some peasants mentioned that this
 field

9. *Qafiz* is a measure of capacity typically used for grain and flour (W. Hinz, *Islamische Masse und Gewichte: Umgerechnet ins metrische System* (Leiden: Brill, 1970), pp. 48–50).

10. For barley growth stages, see 'Aviv barley and other barley growth stages' below.

..... its crop is not affected by damage or decay
 can be in ... days
 his harvesting of fields that are in a similar [growth stage]. When three
 nights have passed
 a field was inspected, the yield of which was estimated to be 40 *qafiz*.
 a piece less than half of it that was riper than the rest of the [field]
 dust-coloured and pistachio-coloured and the rest was green and doughy
 and curdled¹¹ and in it
 widespread and turned dust-coloured. And the
 about celebrating in the middle of the
 report(?) from the Qaraites

RNL Evr Arab I 1151

אל[אעתדא]¹² ל¹² פי אלסאעה אלה מן יום אלגמעה אל...
 [מן די אלחג]ה סנה ת'יה לאן סנה ת'יד לס
 שי וכאן פי הדה אלסנה כוף מן אלערב
 אלכרוג ללטלב וכאנת אלחכאיה א[ן] אלעלאמ[ה]
 אלסנה פאמא אלמעלם [אבו סעי]ד
 כ[ר]ג אלי [ע]מל אלרמלה וגירהא
 לה. [שא]הד פי מ[וצ]ע בקרב בשמשה זרע
 ה וחצל עיד אלגמהו[ר] פי אלנצף מן אלמחרם
 מן הדה אלסנה וכאנת ללמעלם אבו סעיד ולמן
 כבס מעה פי אלעאם אלמאצי בסיטה ואבו אלטיב
 שלום כבס פי הדה אלסנה בעקב כביסה פימא
 קבלהא וכרג שלו[ם] אל[י] נאחיה זגה¹³ ועאד אל[י] אלרמלה
 פי אלעאשר מן אלמחרם ודכר משאהדתה חקלא
 קד חצד בעצהא וחקולא אכר מקארבה ללחצאד
 וכרג אלמעלם ושלום אל[י] עמל עסקלאן ו[ע]אדו
 פי אליג מן אלשהר ודכרו וגודהם חקלא סאלמה
 [אל]זרע¹⁴ תצלח ללחצאד ווצל מחצר אל[קר]אין ...
 אלחצאד פי עמל גזה פי אלז מן אלשהר ול[ם] י[עול]
 שלום עלי גמיע דאך אלעאדאל פי אלב מן

11. On this term, see 'Aviv' barley and other barley growth stages' below.

12. Fol. 1r.

13. See 'Locations where fields were inspected' below.

14. Fol. 1v.

סנה תיז לם יתמכן אצחאבנא [מן]
 אלכרוג פי הדה אלסנה לאגל כוף אלט[ר]יק ו...
 כתב באן אלקראיין טלבו פי אל[מ]ואצע
 עאדה באלטלב פיהא פלם יגדו אלא ס[נב]לא [וכרג]
 קום אלי עמל זגר ועאדו אכר נהאר יום אלתלא[תא]
 אליג מן אלמחרם סנה תיז ומעהם ג קבצאת מ
 מכתלפה אלצורה דכרו אן כאן וקופהם עלי ג
 אלאחקל אלתי קטעת מנהא יום אלאחד יא מן
 אלשהר אלמדכור ו[כא]ן אבלג אלקבצאת קבצה
 עדדהא נח סנבלה מנהא אגבר יד אצפר י
 [סנב]לה לא[ח]קה באלביאץ ופוק אלאכצר ודון אל
 א[צפר] ל[ג] ודכרו אן הד[ה] אלקבצה מן אוסט אלזרע
 בהד[א] אלחקל ואן בדאר אלחקל קפיז ונצף ואנה
 אל[ת]לאת אחקל ורה הדא אלחקל
¹⁵ [מ]ן בדארהא ואלחקלין א...ע מן בדאר[הא]
 וא[ן] בעץ אלפלחין קאל אן אלסלט[א]ן לו א[ט]לק לנא
 [אלחצ]אד לחצדנא ועיד בעץ אלגמאעה פי אלמחר[ם]
 [וכבס א]לגמהור אלאעתדאל פי אלסאעה יב? מן ליל[ה] [אל]
 את[נ]ין יג מ[ן] אלמחרם סנה תיז
 מא שוהד חקלא פי בהראריא פי ג כלין מ[ן]
 [אלמ]חרם קטעה מן חקל הי אבלגהא צורת[הא]
 [אכ]צר דגן ובקיה ירע אלחקל דון דלך ועידת אלגמ[א]עה
 פי צפר פכאנת הדה אלסנה כביסה ללמעידין
 ובסיטה ללכבאסין וכאן אלאעתדאל פי אלסאעה
 אלי מן לילה אלתלאתא אלכג מן אלמחרם
 סנה תיז שוהד יום אלאחד סלך אלמחרם
 סנה תיז פי עמל גזה חקל מכתלפה אלזרע
 קבץ מנהא מן אלגהא אלגידה ג קבצאת עדדהא
 סד מנהא מלבן ומגבן לז אכצר דגן כב פסתקי
 ט וקבץ מן גהת אלדון ג קבצאת עדדהא מט
 מנהא¹⁶ אכצר דגן ו פסתקי ג מגבן ומלבן מ
 ותקדיר בדארהא נצף ותלת קפיז ושוהד יום אל
 אתנין חקל קבץ מן אלגהה אלגידה ג קבצאת

15. Fol. 2r.

16. Fol. 2v.

עד[דה]א סו מנהא פסתקי כו אגבר ואבי[ץ] ...
 אכצר דגן ג בנאדיק קליל אלחב ...ף אלאל...
 מן אגבר ונאזל אלי מא לם יטהר סנבלה פ...
 ומן אלגהה אלדון קבצתין עדדהא מג מנהא מ[גבן]
 ומלבן כו אכצר דגן ז וקליל אלחב ובנאדיק י
 ותקדיר אלסאלם מן הדא נצף קפיו בדאר יחצל
 מנה ז אקפזה דכר אלפלחא אנה יסתחצד אלי
 י איאם וקאל אלנאטור אלי אלנצף ושוהד יום אלג
 חקל מכעבה אלזרע אלגאלב עליהא אלאכצר אל
 דגן ופיהא פסתקי אמהא שאיעה וחקל
 אכרי תקארבהא ולם תתפק אלגמאעה עלי
 אעתקאד אלעיד פי צפר וכבס אלמעלם אבו סעי[ד]
 וכ[ת]יר מן אלגמאעה וכאן אלאעתדאל פי אלסאעה

RNL Evr Arab I 1151

The equinox was in the 5th hour in the daytime of Friday the ...
 of Dū al-Hijjah Year 415 because in year 414 [we] did not
 anything.¹⁷ In this year there was a fear of the Bedouins¹⁸
 going out to search. It was related that the sign was
 the year. As for the teacher Abū Sa'id
 went out to the district of Ramla and to other places
 inspected grain in a place near בשמשה¹⁹
 The majority celebrated the festival in the middle of Muḥarram
 of this year. For the teacher Abū Sa'id and for those who
 intercalated the previous year with him this year was plain. But Abū al-Ṭayyib
 Šalom intercalated this year after intercalating the one
 before it. Šalom went out to the area of זגה²⁰ and returned to Ramla
 on the 10th of Muḥarram. He mentioned that he inspected a field
 some of which had already been harvested and other fields that were close to
 being harvested.

17. This sentence probably said something like 'in year 414 we did not do anything'. This is because the decision to intercalate was made at the end of 413 AH, and the intercalary month Adar II corresponded to Dū al-Hijjah of that year (see TABLE 2 in the Appendix). The crops were next examined in the beginning of 415 AH.

18. The 'fear of the Bedouins' in 415 AH (March 1024–March 1025) and the 'fear of the road' in 416 AH (March 1025–February 1026) must have been caused by the Bedouin uprising in Palestine in 1024–29 CE (Gil, *A History of Palestine*, vol. 1, secs. 580–93). Although the main military action took place between the summer of 1024 CE and spring 1025 CE, the situation could have been tense already in the spring of 1024 CE.

19. See 'Locations where fields were inspected' below.

20. See 'Locations where fields were inspected' below.

The teacher and Šalom went out to the district of Ascalon and returned on the 13th of the month. They mentioned finding a healthy field, the grain on which was ready for harvesting. And there arrived a report from the Qaraites [about] the harvest in the district of Gaza on the 7th of the month but Šalom did not rely on all this. The equinox was in the second of

Year 416 Our members were unable to go out this year for fear of the road²¹ letters that the Qaraites sought in the places in [which it is] habitual to seek. But they found nothing but [separate] ears. People went out to the district of Zoar and returned in the afternoon of Tuesday, the 13th of Muḥarram of the year 416. They brought three handfuls [of ears] in different growth stages. They mentioned that they inspected three fields, from which these were cut, on Sunday, the 11th of the mentioned month. The ripest of the handfuls was a handful counting 58 ears, of which 14 were dust-coloured, 10 yellow, one ear was close to whiteness and 33 were above green but not yet yellow. They mentioned that this handful was from the middle of the grain on this field, and that one and a half *qafiz* of seeds [were sown] on this field. [They also mentioned that] the three fields this field of its seeds and the two fields of their seeds And that a peasant said: 'Had the sultan set us free to harvest, we would have harvested'. A part of the community celebrated in Muḥarram

and the majority [intercalated]. The equinox was in the 12th(?) hour of the night of Monday, 13th Muḥarram.

Year 417 a field was inspected in בִּהְרָאֲרִיא²² when three nights have passed of Muḥarram, such that a piece of a field that was riper than the rest was in the green and doughy growth stage and the rest of the grain on the field was less developed than that. The community celebrated in Šafar. This year was intercalated according to the *mu'ayyidūn* and plain according to the *kabbāsūn*.²³ The equinox was in the 10th hour of the night of Tuesday, 23th of Muḥarram.

Year 418 On Sunday, the 30th of Muḥarram year 418 a field was inspected in the district of Gaza with grain in different [stages].

Three handfuls were taken from its good sides numbering 64 [ears]. They included: milky and curdled – 33, green and doughy – 22, pistachio-coloured –

21. See n. 18.

22. See 'Locations where fields were inspected' below.

23. On *mu'ayyidūn* and *kabbāsūn*, see 'Required amount of *aviv* barley' below.

9. From the inferior side three handfuls were taken, numbering 49 [ears]. They included: green and doughy – 6, pistachio-coloured – 3, curdled and milky – 40.

The amount of seeds [sown] was one half and one third of a *qafiz*. On Monday a field was inspected and three handfuls were taken from the good side, numbering 66 [ears]. They included: pistachio-coloured – 26, dust-coloured and white – ..., green and doughy – 3, bastard ears²⁴ with few kernels... [There were all stages] from dust-coloured and down to what did not show an ear]

From the inferior side there were two handfuls numbering 43 [ears]. They included: curdled and milky – 26, green and doughy – 7 and with few kernels and bastard ...

It is estimated that 6 *qafiz* of healthy [grain] would result from this half a *qafiz* of seeds. A peasant mentioned that it will be ripe in 10 days and the watchman said until the middle [of the month]. On Tuesday a field was inspected on which there was abundant grain. The majority of it was green and doughy, and the pistachio-coloured was beginning to spread. The community did not agree on the opinion that the festival was in Šafar. The teacher Abū Saʿīd and many in the community intercalated. The equinox was in the hour ...

Calendar chronicles

RNL Evr Arab I 1151 and T-S AS 158.147 preserve very similar texts. As such they must either represent two copies of the same calendar chronicle or two works of the same genre. It is unclear when and why the chronicles were written. They may have been added to on a yearly basis and represent logbooks kept for practical purposes. It is also possible that the texts were put together some time after the events, perhaps as a scholarly undertaking. This would require keeping barley examination reports past their year of reference. This practice is, indeed, attested in T-S 12.646v and T-S 12.147, which are copies rather than original barley examination reports, the former from a Qaraite book of court records. It is noteworthy that RNL Evr Arab I 1151 and T-S AS 158.147, which come from different manuscripts, hold data for the same period (410s AH). While this could be a coincidence, it can also indicate that the practice of summarizing barley observation reports into chronicles was short-lived and limited to the first half of the eleventh century.

24. The reference here may be to false barley, also known as wall barley.

That the surviving manuscripts were then copied up to two centuries after the covered years means that Qaraites considered this calendrical information worthy of preservation for posterity.

Structure of an entry

The following information is provided in RNL Evr Arab I 1151 and T-S AS 158.147 for each year:

1. A heading, which consists of a Hijri date.
2. Observation reports of different parties stating when and where fields were inspected, who performed the observations (not always mentioned), what the growth stage of the crop was, how much grain was sowed and how much yield was expected from each examined field, harvest times as predicted by peasants.
3. Decisions about intercalation made in each year.
4. Date and time of the vernal equinox.

Parties whose observations and calendrical decisions are recorded

In RNL Evr Arab I 1151 two persons are mentioned as inspecting fields and making calendrical decisions: the teacher (*al-mu'allim*) Abū Sa'īd (415 אה, 418 אה) and Abū al-Ṭayyib Šalom (415 אה). These people went to the fields both together and separately (415 אה) and at least sometimes made different decisions on the basis of what they observed (415 אה). Abū Sa'īd and Abū al-Ṭayyib Šalom represent the in-group of the compiler of the document, referred to as 'our members' (416 אה). Besides, written reports from 'the Qaraites' (415 אה, 416 אה) and observations of anonymous 'people' (416 אה) are taken into account when making calendrical decisions.

T-S AS 158.147 does not preserve information on who inspected fields but records that a decision was made in 410 אה by the elder (*al-šayḥ*) Abū Ya'qūb, whose name is accompanied by a blessing for the dead. This decision was different from the decision of the Qaraites. A report of the Qaraites may also be mentioned on the recto.

In the context of Palestinian Qaraites, *al-šayḥ* Abū Ya'qūb and *al-mu'allim* Abū Sa'īd may be identified as Abū Ya'qūb Yūsuf al-Bašīr and Levi (Abū Sa'īd) b. Yefet, who frequently appear in the sources with the appellations *al-šayḥ* and *al-mu'allim*, respectively. These scholars were associated with the Qaraite academy in Jerusalem in the second half of the tenth–first half of the eleventh centuries and wrote legal works that included sections on the *aviv*.²⁵ However, it is impossible to be certain of these identifications. Both Abū Ya'qūb and Abū Sa'īd are common names. As is explained below, some of Abū Sa'īd's decisions go against Levi b. Yefet's views expressed in his *Book of Commandments* and the same may be true regarding Abū Ya'qūb.²⁶ Most importantly, the identification of Abū Ya'qūb with Yūsuf al-Bašīr is only possible if the blessing for the dead that accompanies the elder's name in the 410 AH entry (1019/20 CE) was added later since Yūsuf al-Bašīr was still alive as late as the first half of 1037.²⁷ The name Abū al-Ṭayyib Šalom is, to the best of my knowledge, not recorded in secondary literature and could not be identified in catalogues of Cairo Genizah collections and the Firkovich Collection.

References to 'the Qaraites' are probably to other Qaraite barley observation parties.²⁸ That more than one observation party was active at the same time is noted in an *aviv* report in Oxford, Bodleian Heb. b. 11.10 and in a short sixteenth-century guide on seeking the *aviv* preserved in RNL Evr Arab I 1180. The guide states that 'previous generations' used

25. Levi b. Yefet, *Book of Commandments*, 'Discourse on the sign of the year' and 'Discourse on the *aviv*'; Yūsuf al-Bašīr, *Kitāb al-Istibṣār*, book 4.

26. See 'Intercalating two years in a row' and 'The time of inspecting crops and making a decision to intercalate', respectively, below.

27. G. Schwarb, 'Yūsuf al-Bašīr', in *Encyclopedia of Jews in the Islamic World*; accessed 1 April 2020.

28. Admittedly, this usage is uncommon. However, it is difficult to imagine that the protagonists of the chronicles were not themselves Qaraite and are juxtaposed here to all Qaraites. By the eleventh century other sects that may have intercalated on the basis of the state of crops, such as the 'Ananites and the followers of Benjamin al-Nahāwendī, became part of the Qaraite movement (M. Gil, 'The Origins of the Karaites', in M. Polliack [ed.], *A Guide to Karaite Studies: The History and Literary Sources of Medieval and Modern Karaite Judaism* [Leiden: Brill, 2003], pp. 78, 90, 114; H. Ben Shammai, 'Between Ananites and Karaites: Observations on Early Medieval Jewish Sectarianism', *Studies in Muslim-Jewish Relations* 1 [1993], pp. 19–29, p. 23). The closest parallel to the use of the term 'the Qaraites' in the sense of 'the other Qaraites' that is known to me is found in fragments of a Qaraite calendar roster associated with the Tustarī clan (ENA 4010.35, ENA 4196.15, T-S K2.107r and T-S NS J 609r; Gil, *The Tustarīs*, pp. 86–94). While T-S NS J 609r contrasts a Tustarī date with that of 'the rest of the Qaraites', in ENA 4010.35v the comparison is with 'the festival according to the Qaraites and the Rabbanites'. 'The Qaraites' in ENA 4010.35v must mean the same as 'the rest of the Qaraites' in T-S NS J 609r. On the Tustarīs' Qaraism, see Rustow, *Heresy and the Politics of Community*, pp. 141–2.

to send *aviv* searching parties from Egypt, Damascus and Jerusalem.²⁹ It is likely that expeditions from these three communities performed separate examinations.

Reports of other Qaraites were used by the in-group of RNL Evr Arab I 1151 if making a decision to intercalate proved difficult. For example, in 415 AH barley crops were sufficiently ripe to celebrate Passover but Abū al-Ṭayyib Šalom decided to intercalate. It appears that others tried to convince him against it: Abū Sa'īd accompanied him to examine crops in the district of Ascalon and a report of the Qaraites about harvest in Gaza was presented as additional evidence. In 416 AH the in-group was unable to go and seek the crops 'for fear of the road' but Qaraites 'sought in the places in which it is habitual to seek' and some people also went to Zoar. Here a decision was made entirely on the basis of this external evidence.

Most barley examination reports, in the chronicles and in other sources, contain information collected from peasants, especially in years when grain in a relatively ripe stage was found. This information is of two kinds: peasants' estimates of the harvesting time and information on the amount of seeds planted and the expected yield. How this information was used and what weight it carried in the decision-making process in comparison with Qaraites' own observations are unclear. The amount of planted seeds and the expected yield may have been important in assessing how representative inspected fields were and whether barley grew and ripened on them in the usual manner, unaffected by special circumstances. It is, perhaps, for the same reason that reports state whether examined fields were good, inferior or damaged.

Aviv barley and other barley growth stages

The biblical text provides little specific information on what constitutes for barley the state called *aviv*. This vagueness gave rise to a plethora of opinions regarding the stage or stages in the grain ripening process that should be called *aviv* and that one should rely upon when making a decision when to celebrate Passover.³⁰

29. RNL Evr Arab I 1180, fol. 8v.

30. Al-Qirṣānī, *Book of Lights and Watchtowers*, 1.19.2, v11.20.1 (Nemoy, *Kitāb al-Anwār*, vol. 1, pp. 60–61; vol. 4, pp. 842–3); Levi b. Yefet, *Book of Commandments*, RNL Evr Arab I 3920, fols 89r–91r; Levi b. Yefet, *Book of Differences between Yefet b. 'Eli and Sahl b. Mašliah*, BL OR 2573, fol. 10r; Yūsuf al-Bašīr, *Kitāb al-Istibṣār*, book 4, ch. 2, RNL Evr Arab I 1170, fols 4r–13r.

To understand grain development stages mentioned in literary and documentary sources, it is useful to look at the process of barley ripening as it is described by pre-modern Qaraites.³¹ The guide on seeking the *aviv* in RNL Evr Arab I 1180 lists fifteen stages in the development of barley, noting that it takes grain about three days to move from one stage to the next.³² The first four stages precede the emergence of ears and are irrelevant for *aviv* barley observation since they always occur too early in the year. The following eleven stages are listed for barley that has produced ears (the classification refers to the colour of the ear and/or the state of kernels):

5. heading, pushing out ears (*muṭliq sunbula*)
6. empty (*fāriḡ*)
7. milky (*mulabban*)
8. curdled (*mujabban*)
9. green and tender (*aḥḍar raṭb*)
10. green and doughy (*aḥḍar dajn* or *aḥḍar dājīn*)
11. pistachio-coloured (*fustuqī*)
12. yellow (*aṣfar*)
13. dust-coloured (*aḡbar*)
14. white and tender (*abyaḍ raṭb*)
15. white and dry (*abyaḍ yābis*)

A note is required here on my translation of *mujabban* as ‘curdled’ (stage 8) and *aḥḍar dajn* as ‘green and doughy’ (stage 10). The term *mujabban* was understood by Gil as ‘yellowish green’ and *aḥḍar dajn* as ‘dark green’,³³ the latter presumably derived from the Arabic *dajn* ‘dark, gloomy’. This interpretation of the terms was supported by Blau, who in both cases translated ‘a sort of green’.³⁴ Corriente translated ‘yellowish (i.e. light) and dark green’ and conjectured that *mujabban* in the sense of light green reflects the light green

31. For a modern description of barley growth, see J.C. Zadoks, T.T. Chang and C.F. Konzak, ‘A Decimal Code for the Growth Stages of Cereals’, *Weed Research* 14 (1974), pp. 415–21.

32. RNL Evr Arab I 1180, fols 4r–4v.

33. Gil, *A History of Palestine*, vol. 2, p. 542 (doc. 301).

34. J. Blau, *Dictionary of Medieval Judaeo-Arabic Texts* (Jerusalem: Academy of Hebrew Language, 2006), pp. 80, 205.

colour of some kinds of fermented cheese.³⁵ However, the interpretation of *mujabban* as ‘yellowish green’ and *aḥḍar dajn* as ‘dark green’ is unlikely in the light of RNL Evr Arab I 1180, of which Gil, Blau and Corriente were probably not aware. The stage of *mujabban* appears in the list before ‘green and tender’ while *aḥḍar dajn* comes two stages later, between ‘green and tender’ and ‘pistachio-coloured’. Clearly, the earlier *mujabban* stage in cereal growth cannot be described as lighter green or yellower than the later *aḥḍar dajn*. Since *aḥḍar dajn* is placed between ‘green and tender’ and ‘pistachio-coloured’, it must refer to a stage when grain is changing colour from greenness to yellowness and cannot be dark green. I suggest that instead of describing colour, *dajn* is a measure of taste and consistency, and that the pair of stages *aḥḍar raṭb* and *aḥḍar dajn* is parallel to a later pair of *abyaḍ raṭb* and *abyaḍ yābis* where the first descriptor refers to the colour of the ear and the second to the state of its kernels. That *dajn* refers to barley’s taste and is separate from its colour is supported by other sources that present theoretical discussions of *the aviv*. For example:

In terms of taste there is no difference [between *qaṣir* and *aviv*] because *aviv* has developed full *dajn*. In terms of colour, *aviv* is yellow, for which we will bring proof,³⁶ and *qaṣir* is white.³⁷

For these reasons, I prefer to translate *dajn* as ‘doughy’, which links with the modern barley ripening stages of early, soft and hard dough, during which the kernel gradually hardens and the ear loses its green colour.³⁸ If so, *mujabban* can also be a descriptor of consistency, when the kernels are ‘cheesy’ or ‘curdled’ – that is, more solid than ‘milky’ but less solid than ‘doughy’.

Theoretical works on the *aviv* pay attention only to the later stages in the crop ripening. The stages of green and doughy, pistachio-coloured, yellow, white and tender, and white and dry are regularly discussed and different opinions are put forth as to which stages are *aviv*, which are less ripe than *aviv* and which are more ripe than *aviv* and represent the harvest stage,

35. F. Corriente, ‘Notes on a Basic Work for the Study of Middle Arabic: J. Blau’s *Millon le-teqstim ‘arbiyim yehudim Miyyeme ha-bbenayim* (A Dictionary of Medieval Judaeo-Arabic Texts)’, *Collectanea Christiana Orientalia* 4 (2007), pp. 311–55, p. 318.

36. This definition of the *aviv* was supported by some but not by all Qaraites.

37. Intra-Qaraite polemic on the *aviv*, RNL Evr Arab II 3105, fol. 3v.

38. Zadoks growth scale stages 83–7 (Zadoks et al., ‘A Decimal Code’, p. 418).

qaṣir.³⁹ In general, one or several stages from among green and doughy, pistachio-coloured and yellow were considered *aviv*, although many scholars held that green and doughy is below the *aviv* stage. Admitting that ears on the same field can be in a number of different growth stages, Sahl b. Maṣliaḥ (tenth century, Palestine) proposed a quantitative method of determining whether intercalation was required. He suggested taking a handful of barley stalks from the middle of a field and counting ears in each stage. Sahl b. Maṣliaḥ did not intercalate if out of every ten ears six were yellow, two were pistachio-coloured and two were green, and if other fields were in a similar state – that is, if more than half of the grain was yellow.⁴⁰

Actual examination reports mention a wider variety of barley growth stages than are discussed in theoretical works since other stages could also be observed on the fields. Stages between milky and white feature regularly. If grain in multiple developmental stages was discovered on a field, the quantitative method was applied. In RNL Evr Arab I 1151 the described practice was to take two or three handfuls of barley stalks from each field or side of a field and either to examine them collectively, counting ears in each developmental stage (418 אה), or to examine only the ripest handful (416 אה). The results of such counting were open to interpretation and the final decision to intercalate must have depended on each group's definition of the *aviv* state and on other factors. Surviving fragments of the chronicles do not explicitly mention what barley growth stages were considered ripe enough to celebrate Passover in the thirteenth month, and this may not have been the same for everyone. Only when grain was unripe – that is, green and doughy or below (411 אה, 417 אה) – did everyone agree that intercalation was necessary. In all other cases intercalation was possible. Abū al-Ṭayyib Šalom intercalated even when all reports showed that fields were harvest-ripe in Muḥarram 415 אה. This suggests that factors other than the growth stage may have played a role in his decision, such as the required amount of *aviv* barley.

39. See references in n. 30.

40. Sahl b. Maṣliaḥ, *Book of Commandments*, RNL Evr Arab I 823, fol. 26r. See also intra-Qaraite polemic on the *aviv*, RNL Evr Arab I 1163, fol. 46r.

Required amount of *aviv* barley

Qaraite legal works lay down various rules on how much grain in the correct stage must be found in order to declare the month of *aviv* and celebrate Passover.⁴¹ Some authorities maintained that the mere presence of even the smallest amount of grain in the correct stage was enough. Others were satisfied with a small plot, or a field of a certain size. Many authorities wanted to see *aviv* widely present in Palestine.

Two terms appear in the sources that characterize people with regard to the amount of *aviv* barley that they required in order to celebrate Passover in the thirteenth month: *mu'ayyidūn* ('those who celebrate') and *kabbāsūn* ('those who intercalate').⁴² The terms themselves do not refer to required amounts of *aviv* barley, but their connection with this criterion can be inferred. In an anonymous intra-Qaraite polemic on the *aviv*, *kabbāsūn* are described as requiring much *aviv* grain:

This is a kind of statement that *kabbāsūn* make, to whom you are opposed. And here I can see you reverting to what they say by saying 'a lot [of *aviv* barley]' and 'a lot' is what they say.⁴³

In a similar vein, Oxford, Bodleian Heb. e.45.17 discusses *mu'ayyidūn* and *kabbāsūn* in a section that deals with the amount of *aviv* barley and contrasts *mu'ayyidūn* with somebody in whose opinion one field in the stage of *aviv* is not enough to call a month the first month.

Different decisions made by *mu'ayyidūn* and *kabbāsūn* are mentioned in RNL Evr Arab I 1151. The entry for 417 AH states that the entire community celebrated in Šafar and that 'this year was intercalated according to the *mu'ayyidūn* and plain according to the *kabbāsūn*'.⁴⁴ This means that between Šafar 417 AH and the beginning of the previous Jewish year there were twelve months according to the *kabbāsūn* and thirteen months according

41. Al-Qirḡisānī, *Book of Lights and Watchtowers*, 1.19.2, VII.19 (Nemoy, *Kitāb al-Anwār*, vol. 1, pp. 60–1, vol. 4, pp. 841–2); Israel b. Daniel, *Book of Commandments*, RNL EVR ARAB I 1012, fols 158v–159r; Levi b. Yefet, *Book of Commandments*, RNL Evr Arab I 3920, fols 91r–92v; Levi b. Yefet, *Book of Differences between Yefet b. 'Eli and Sahl b. Mašliah*, BL OR 2573, fol. 10r; Yūsuf al-Bašīr, *Kitāb al-Istibšār*, book 4, ch. 4, RNL Evr Arab I 1170, fols 15r–22r.

42. Intra-Qaraite polemic on the *aviv*, RNL Evr Arab I 1163, 52r, 53r; Levi b. Yefet, *Book of Commandments*, RNL Evr Arab I 3920, fols 86r, 105r; Oxford, Bodleian Heb. e.45.17.

43. RNL Evr Arab I 1163, fol. 53r.

44. This demonstrates that *mu'ayyidūn* and *kabbāsūn* are not simply descriptions of the choices people made each year in a way that those who intercalated in a given year were that year's *kabbāsūn*.

to the *mu'ayyidūn*. Hence, *kabbāsūn* celebrated previous Passover in Šafar 416 AH and *mu'ayyidūn* in Muḥarram 416 AH. In the entry for 416 AH we learn that only 'a part of the community celebrated in Muḥarram'. These people must have been the *mu'ayyidūn*. The rest must have intercalated the year and celebrated in Šafar and so must be identical with the *kabbāsūn*. As can be seen from TABLE 2 in the Appendix, *kabbāsūn* here are followers of Abū al-Ṭayyib Šalom and some followers of Abū Sa'īd who joined them, and *mu'ayyidūn* are the rest of Abū Sa'īd's group. That Abū al-Ṭayyib Šalom looked for widespread *aviv* barley may explain why he intercalated in 415 AH when reports showed harvest- or near-harvest-ripe crops on some fields.

Locations where fields were inspected

Qaraite treatises on the calendar mention a number of regions in Palestine where barley ripens early and where for that reason *aviv* should be sought. These are the Darom, the district of Ramla, the district of Asqalon, Gaza, the Jordan valley and Zoar.⁴⁵

The chronicles analysed here agree with theoretical treatises and refer to barley inspections in the district of Gaza (415 AH and 418 AH) and more specifically near Rafah (410 AH or 413 AH), the district of Zoar (416 AH), the district of Ramla (415 AH) and the district of Ascalon (415 AH). I was unable to identify three locations mentioned in the fragments: בשמשה (415 AH); בהראריא (417 AH); the region of זגה (415 AH). The first two may have been villages in or near which the examined fields were located. From the context, בשמשה appears to have been in the district of Ramla. The third place name זגה could plausibly be a misreading for either גזה Gaza or זגר Zoar. However, both Gaza and Zoar are identified in the manuscript as 'amal (district, sub-province), whereas זגה is referred to as *nāḥiya* (area). Moreover, understanding זגה as either Gaza or Zoar appears problematic in the context of events in 415 AH. The chronicle tells that Abū al-Ṭayyib Šalom went to the area of זגה and came back to Ramla in a year when there was a fear of the

45. Levi b. Yefet, *Book of Commandments*, RNL Evr Arab I 3920, fol. 94v; Levi b. Yefet, *Book of Differences between Yefet b. 'Eli and Sahl b. Maṣliḥ*, BL OR 2573, fol. 10r; Yūsuf al-Bašīr, *Kitāb al-Istibṣār*, book 4, ch. 5, RNL Evr Arab I 1170, fols 23r–23v.

Bedouins, presumably due to the Bedouin uprising.⁴⁶ It also mentions that a report about the state of crops in Gaza arrived from the Qaraites. If זגז stands for Zoar, an expedition from Ramla to Zoar and back seems unlikely in a year when travel was dangerous. If it indicates Gaza, there would have been no need to consider a report from the Qaraites.

The time of inspecting crops and making a decision to intercalate

Another aspect of *aviv*-based intercalation discussed in theoretical works is the time of the thirteenth month when it must be decided whether the year is plain or intercalated.⁴⁷ According to some authors it was essential to know from the beginning or in the first one or two days of the thirteenth month whether it is Nisan or the intercalary month of Adar II. Others were prepared to postpone the decision until seven or ten days of the month have passed. Still others advocated seeking the *aviv* on the 12th or even the 14th of the thirteenth month.

These different views are reflected in the chronicles. Data in RNL Evr Arab I 1151 show that the Qaraites and Abū al-Ṭayyib Šalom did not require that the nature of the thirteenth month be known before the beginning or in the first days of the month. In 415 AH and 416 AH they inspected crops very close to the middle of the thirteenth month (Muḥarram in both years).⁴⁸ It is not clear when Abū Saʿīd inspected crops in 415 AH but it appears that he made a decision before going to Ascalon with Abū al-Ṭayyib Šalom between the 10th and 13th Muḥarram. In 417 AH and 418 AH crops were examined in the beginning of the thirteenth month (Muḥarram and Šafar respectively) and, although no ripe grain was discovered, they were not re-examined again nearer the middle of the month. In 417 AH even the ripest barley was still green, preventing its becoming sufficiently ripe by the middle of the month. In 418 AH barley was riper and peasants assumed that it might

46. See n. 18.

47. Al-Qirqisānī, *Book of Lights and Watchtowers*, v 11.18 (Nemoy, *Kitāb al-Anwār*, vol. 4, pp. 839–41); Levi b. Yefet, *Book of Commandments*, RNL Evr Arab I 983, fols 223r–223v, RNL Evr Arab I 3920, fols 95v–99r; Levi b. Yefet, *Book of Differences between Yefet b. 'Eli and Sahl b. Mašliaḥ*, BL OR 2573, fol. 10r; Yūsuf al-Bašīr, *Kitāb al-Istibšār*, book 4, ch. 6, RNL Evr Arab I 1170, fols 28r–34r.

48. Since both Qaraite and Muslim months begin when the new crescent is sighted, the given days of a Muslim month roughly correspond to the days in a Jewish month. For correspondences between Muslim and Qaraite months as they transpire from the chronicles, see Appendix.

be harvest-ready by the middle of the month at the latest. Nonetheless, a large part of the community, led by Abū Saʿīd, decided to intercalate. This suggests that Abū Saʿīd required that the nature of the thirteenth month be established already in the beginning of the month, a position that strengthens his identification with Levi b. Yefet, who was in favour of checking the *aviv* in the beginning of the month.⁴⁹

In T-S AS 158.147 not enough information on the time of seeking *aviv* barley is preserved. The beginning of a month is mentioned in the entry for 410 AH (but the context is lost), and observing a field when three nights have passed of a month is recorded on recto. This may suggest that the fragment's in-group required the state of barley crops to be assessed around the beginning of the month (unless observations were also performed nearer the middle of the month but no mention of them survived). If this is correct, it may weaken the identification of Abū Yaʿqūb with Yūsuf al-Baṣīr, who originally advocated examining barley up to the 14th day of the month but later changed his opinion in favour of the beginning of the month.⁵⁰

Intercalating two years in a row

A distinctive feature of Qaraite calendars reflected in the chronicles is that two years in a row can be intercalated. In 415 AH Abū al-Ṭayyib Ṣalom intercalated the year after intercalating the one before it. In 418 AH Abū Saʿīd and many in the community intercalated, whereas 417 AH was intercalated for all. This situation is precluded in the Rabbanite calendar where intercalated years are always two or three years apart. In Qaraite calendar literature conflicting views of consecutive intercalated years are attested. In the intra-Qaraite polemic on the *aviv* one polemicist defended his definition of the *aviv* on the basis that it ensured that no two years in a row were intercalated and no year was just eleven months long, whereas the other polemicist claimed that two intercalated years were allowed.⁵¹ Levi b. Yefet opined that intercalating two years one after the other deviated from the natural order of years and explained that he neither witnessed it nor

49. Levi b. Yefet, *Book of Commandments*, RNL Evr Arab I 3920, fol. 96v.

50. Yūsuf al-Baṣīr, *Kitāb al-Istibṣār*, book 4, ch. 6, RNL Evr Arab I 1170, fols 31v–32r. Abū al-Faraj Hārūn, *Talḥiṣ*, RNL Evr Arab I 1754, fol. 168v.

51. RNL Evr Arab II 3105, fol. 13v; RNL Evr Arab I 1163, fol. 16v.

heard of it happening.⁵² This weakens the identification of Abū Saʿīd with Levi b. Yefet.

The equinox

In each year RNL Evr Arab I 1151 and T-S AS 158.147 provide data on the vernal equinox (*iʿtidāl*).⁵³ It is not clear whether and how this data was used. Levi b. Yefet wrote that intercalation based on the vernal equinox was a method used by Qaraites in Iraq.⁵⁴ The equinox method was rejected by such Palestinian Qaraites as Yūsuf al-Baṣīr⁵⁵ and Sahl b. Maṣliāḥ.⁵⁶ Levi b. Yefet himself had a more nuanced attitude. While arguing against it as the main method of intercalation, he considered the vernal equinox to be a good substitute for the *aviv* in years when irregular weather patterns led to a much earlier- or a much later-than-expected ripening of barley crops.⁵⁷

Calendar diversity

In this section I analyse the extent of calendar diversity among Qaraites and between Qaraites and Rabbanites in the years covered by the chronicles. Data on the Rabbanite intercalation is not given in the manuscripts but can be deduced from the position of the years in the nineteen-year cycle. The section deals only with discrepancies of a whole month, which follow from different approaches to intercalation. Qaraites and Rabbanites regularly celebrated *roš ḥodeš* on different days of the week because the calculated *roš ḥodeš* of the Rabbanites generally falls before the new crescent can be observed. Such discrepancies of a few days at the beginning of most months are outside of the chronicles' area of interest and are not discussed here. Inasmuch as it is not entirely clear that T-S AS 158.147 and RNL Evr Arab I 1151 are copies of the same work and describe the same groups of Qaraites, I treat them separately so far as calendar diversity is concerned.

52. Levi b. Yefet, *Book of Commandments*, RNL Evr Arab I 3920, fols 105r–105v.

53. The given dates and times of the equinoxes do not correspond to the Rabbanite *tequfot*.

54. Levi b. Yefet, *Book of Commandments*, RNL Evr Arab I 3920, fol. 82r.

55. N. Vidro, 'The Book against the People of the Equinox: T-S K6.63', *Fragment of the Month: September 2019*, Taylor-Schechter Genizah Research Unit, Cambridge; <https://doi.org/10.17863/CAM.63288> (accessed 2 April 2020).

56. Sahl b. Maṣliāḥ, *Book of Commandments*, RNL Evr Arab I 823, fol. 27v.

57. Levi b. Yefet, *Book of Commandments*, RNL Evr Arab I 3920, fols 87r–87v.

T-S AS 158.147 records the following calendar decisions of Abū Ya'qūb and of other Qaraites:

410 AH:	The Qaraites intercalated and Abū Ya'qūb celebrated.
411 AH:	The community celebrated, without any doubts, in Dū al-Hijjah. Since no other parties are mentioned in the fragment, I assume that 'the community' here included the followers of Abū Ya'qūb and the Qaraites.

RNL Evr Arab I 1151 records calendar decisions of Abū Sa'īd, Abū al-Ṭayyib Šalom and, in some years, of parts of the community that are not described as following any particular leader:

End 413 AH –414 AH:	An intercalated year for Abū Sa'īd and Abū al-Ṭayyib Šalom (the intercalary month corresponded to Dū al-Hijjah of 413 AH).
415 AH:	The majority celebrated in Muḥarram. The year was plain for Abū Sa'īd and his follows. Abū al-Ṭayyib Šalom intercalated.
416 AH:	A part of the community celebrated in Muḥarram. The majority intercalated.
417 AH:	The community celebrated in Šafar. The year was intercalated for some and plain for others.
418 AH:	The community could not reach agreement to celebrate in Šafar. Abū Sa'īd and many in the community intercalated.

Correspondences between the Muslim calendar, the Qaraite calendars in the chronicles and the Rabbanite calendar for end 409–418 AH are established in TABLES 1 and 2 in the Appendix. Summary tables below focus on the Jewish calendars and in particular on the months of Tīšri and Nisan, when most important Jewish festivals take place. In some years data is available for only one of these months. The tables allow the visualization of the extent of intra-Qaraite and Qaraite–Rabbanite calendar diversity. For convenience, dates from the Era or Creation are used in the summary tables, with Hijri dates given in brackets.

The following picture emerges. Calendar diversity among Qaraites and between Qaraites and Rabbanites was very common in 4779–88 AM. Passover was celebrated in two different months in four out of nine years for which

4779–82 AM (409–12 AH)

	<i>Abū Ya'qūb</i>	<i>Other Qaraites</i>	<i>Rabbanites</i>
4779 (409)	Nisan	Nisan	Nisan
4780 (410)	Tišri	Tišri	Tišri
	Nisan	Adar II	Adar II
4781 (411)	Marḥešwan	Tišri	Tišri
	Nisan	Nisan	Nisan
4782 (412)	Tišri	Tišri	Tišri

information can be derived from the chronicles, and so was New Year. If one considers only those years for which information is available both for Tišri and for Nisan (4780–81 AM and 4783–87 AM), only in 4783 AM did all groups celebrate all festivals in the same month. On the other hand, the calendars never drifted apart for long. In five years out of nine, the calendar for the period between Nisan and the following Tišri was identical for all groups.

4782–87 AM (412–18 AH)

	<i>Abū Sa'īd</i>	<i>Abū al-Ṭayyib Ṣalom</i>	<i>Rabbanites</i>
4782 (412)	Nisan	Nisan	Nisan
4783 (413)	Tišri	Tišri	Tišri
(414)	Nisan	Nisan	Nisan
4784	Tišri	Tišri	Tišri
(415)	Nisan	Adar II	Nisan
4785	Tišri	Elul	Tišri
(416)	Nisan Adar II	Adar	Nisan
4786	Tišri Elul	Elul	Tišri
(417)	Nisan	Nisan	Nisan
4787	Tišri	Tišri	Tišri
(418)	Adar II ⁵⁸	Nisan	Nisan
4788	Elul	Tišri	Tišri

58. This assumes that the same group of Qaraites followed Abū Sa'īd in the spring of 4787 AM (418 AH) as in the spring of 4784 AM (415 AH). It is also possible that Abū Sa'īd's group was split again as they were in 4785 AM (416 AH), and a part of the group joined another party and celebrated Passover.

Cases of calendar diversity between Qaraites and Rabbanites and among the Qaraites themselves are known from other sources.⁵⁹ A new insight afforded by the chronicles edited here is that intra-Qaraite calendar diversity was much more common than discrepancies between Qaraites and Rabbanites, at least in 1019–28 CE. Indeed, in all years with a calendar difference the split was not between Rabbanites and all Qaraites, but within the Qaraite community. Considering the many different methods of fixing the calendar on the basis of the *aviv* described in theoretical works, this intra-Qaraite diversity is not unexpected but its extent in practice has not previously been described. Apart from the frequency of the divides, the fluidity of intra-Qaraite calendar groups is noteworthy. Such groups were not fixed but could split and realign. The party that followed Abū Saʿīd in 4784 AM (415 AH) split in 4785 AM (416 AH), some of them accepting the decision of Abū al-Ṭayyib Šalom. Another regrouping may have taken place in 4787 AM (418 AH) when some Qaraites followed Abū Saʿīd, but it is not clear that they were the same people who originally followed him in 4784 AM (415 AH).⁶⁰

It was previously assumed that decisions regarding *aviv*-based intercalation were made by a central authority, either the *nesi'im* or the Qaraite academy, and distributed to Qaraite congregations.⁶¹ This scholarly assumption reflects the Rabbanite idea that everyone should follow the same calendar. The chronicles demonstrate that at least in the first half of the eleventh century Qaraites did not follow centrally made decisions about intercalation. Instead, decisions could be made independently by those groups that had access to barley fields in Palestine. If my conjectural identification of the chronicles'

59. A 1063 CE Qaraite betrothal deed refers to a one-month 'discrepancy between the [Rabbanite and Karaite] communities' in Fuṣṭāṭ (T-S 20.42; J. Olszowy-Schlanger, *Karaite Marriage Documents from the Cairo Geniza: Legal Tradition and Community Life in Mediaeval Egypt and Palestine* [Leiden: Brill, 1998], pp. 298–300 [doc. 6]). A conflict over a similar discrepancy occurred in Byzantium in the eleventh century (T-S 20.45; Ankori, *Karaites in Byzantium*, pp. 328–36). A Qaraite betrothal formulary that mentions 1009 CE includes a dating formula in the event of a month's difference between the calendars of the bride and the groom (RNL Evr II A 506, fol. 1r; Olszowy-Schlanger, *Karaite Marriage Documents*, p. 463 [doc. 55]). A draft Qaraite betrothal deed is dated 1032/3 CE in a month 'which is Av for the majority of the Qaraites, and which is Elul for some of them' (T-S J 3.47v; Olszowy-Schlanger, *Karaite Marriage Documents*, pp. 300–2 [doc. 7]).

60. See n. 58.

61. E. Bareket, 'Karaite Communities in the Middle East during the Tenth to Fifteenth Centuries', in M. Polliack (ed.), *A Guide to Karaite Studies: The History and Literary Sources of Medieval and Modern Karaite Judaism* (Leiden: Brill, 2003), pp. 237–52, p. 242; Gil, *A History of Palestine*, vol. 1, sec. 929.

protagonists is correct, some of the decision-makers were scholars associated with the Qaraite academy in Jerusalem.

The chronicles' data on calendar diversity among Qaraite makes it necessary to reconsider M. Gil's views on the calendar of the Tustarīs. A calendar roster from the Cairo Genizah records that the Tustarī calendar was a month ahead of that followed by the rest of the Qaraite in 1047/8 CE and 1049–51 CE.⁶² This led Gil to believe that their calendar was fundamentally different and possibly based on calculation.⁶³ Gil also assumed that the Tustarīs were unique in following a different calendar from the rest of the Qaraite and ascribed all cases of intra-Qaraite calendar diversity to the use of the Tustarī calendar.⁶⁴ This now seems unlikely. First, Qaraite theoretical works refer to Tustarī opinions on the *aviv*, a clear sign that their calendar was not calculated.⁶⁵ Second, the chronicles discussed here prove that calendar diversity existed among Qaraite who relied on the *aviv*. It is now clear that the Tustarīs were not unique in sometimes deviating from other Qaraite groups in matters of calendar.

Conclusions

In this article I have examined two Qaraite calendar chronicles that document barley observations and decisions regarding intercalation made on their basis in 1019–28 CE. The chronicles provide evidence of the practical implementation of divergent opinions about intercalation and *aviv* in Qaraite theoretical works. The chronicles demonstrate that a number of barley observation parties were active simultaneously examining fields in different regions. The parties exchanged information, which could then be taken into consideration when making calendrical decisions. Multiple factors influenced a party's decision to intercalate, including barley growth stage, the amount of discovered *aviv* barley and, possibly, harvesting times predicted by

62. ENA 4010.35, ENA 4196.15, T-S K2.107r and T-S NS J 609r; Gil, *The Tustarīs*, pp. 86–94.

63. Gil, *The Tustarīs*, p. 63.

64. See Gil's analysis of T-S J 3.47v, dated to a month 'which is Av for the majority of the Qaraite, and which is Elul for some of them', where he identified the minority as the Tustarīs on the basis of the calendar difference alone (Gil, *A History of Palestine*, vol. 1, sec. 929; Gil, *The Tustarīs*, pp. 62–3). Rustow, *Heresy and the Politics of Community*, p. 142, notes that there is no evidence for this identification.

65. RNL Evr Arab I 1164v.

local peasants. The chronicles demonstrate that while everyone agreed that it was important to intercalate on the basis of the state of barley crops, in practice as well as in theory there was little agreement on how to determine this status.

It is now clear that at least in the first half of the eleventh century Qaraite decisions about intercalation were not sent out by a central authority but could be made independently by groups with access to barley fields in Palestine. It is possible that members of the Qaraite academy in Jerusalem were involved in the process of intercalation; nothing in the chronicles hints at the involvement of *nesi'im*.

Together with other sources, the chronicles attest to frequent calendar difference among Qaraites and between Qaraites and Rabbanites in eleventh-century Palestine and Egypt. Between 1019 and 1028 CE various Qaraite groups differed among themselves more often than they differed from the Rabbanites. A notable feature of this intra-Qaraite calendar diversity was that factions did not stay fixed but could split and realign, without any perceptible social consequences. All evidence currently known to me of calendar diversity among *aviv*-observing Qaraites is for the first half of the eleventh century. It remains to be investigated if this is historically significant or merely a reflection of what happens to survive. On the whole, the chronicles make it clear that the Qaraite calendar of the period was not a monolithic calendar counterposed to that of the Rabbanites and that it is unjustified to speak of a clear calendar divide along denominational lines other than in matters of theory, on the question of whether intercalation should be empirical or based on a fixed calculated scheme.

APPENDIX Calendar correspondences between the Muslim calendar, Qaraite calendars in the chronicles and the Rabbanite calendar in 409–19 AH

TABLES 1 and 2 establish correspondences between Muslim, Qaraite and Rabbanite months as they follow from T-S AS 158.147 and RNL Evr Arab I 1151 respectively. TABLE 1 covers end 409–412 AH, TABLE 2 covers end 412–beginning 419 AH. Inasmuch as it is uncertain that the two manuscripts are copies of the same chronicle, the tables are not combined into one. Correspondences between the Muslim and the Rabbanite calendar follow Fourmilab’s calendar converter www.fourmilab.ch/documents/calendar. Both tables were extended beyond the dates covered by the chronicles due to the fact that no variation of a full month is possible in the Jewish calendar between Adar and the previous Nisan.

TABLE 1 T-S AS 158.147

	<i>Muslim</i>	<i>Abū Ya‘qūb</i>	<i>Other Qaraites</i>	<i>Rabbanites</i>
409 AH	Ḍū al-Qa’dah	Nisan	Nisan	Nisan
	Ḍū al-Ḥijjah	Iyyar	Iyyar	Iyyar
410 AH	Muḥarram	Siwan	Siwan	Siwan
	Šafar	Tammuz	Tammuz	Tammuz
	Rabī’ I	Av	Av	Av
	Rabī’ II	Elul	Elul	Elul
	Jumādā I	Tišri	Tišri	Tišri
4780 AM	Jumādā II	Marḥešwan	Marḥešwan	Marḥešwan
	Rajab	Kislew	Kislew	Kislew
	Ša‘bān	Tevet	Tevet	Tevet
	Ramaḍān	Ševaṭ	Ševaṭ	Ševaṭ
	Šawwāl	Adar	Adar	Adar
	Ḍū al-Qa’dah	Nisan	Adar II	Adar II
	Ḍū al-Ḥijjah	Iyyar	Nisan	Nisan
	Muḥarram	Siwan	Iyyar	Iyyar
	Šafar	Tammuz	Siwan	Siwan
	Rabī’ I	Av	Tammuz	Tammuz
411 AH	Rabī’ II	Elul	Av	Av

	Jumādā I	Tišri	Elul	Elul
4781 AM	Jumādā II	Marḥešwan	Tišri	Tišri
	Rajab	Kislew	Marḥešwan	Marḥešwan
	Ša'bān	Ṭevet	Kislew	Kislew
	Ramaḍān	Ševaṭ	Ṭevet	Ṭevet
	Šawwāl	Adar	Ševaṭ	Ševaṭ
	Ḍū al-Qa'dah	Adar II	Adar	Adar
	Ḍū al-Ḥijjah	Nisan	Nisan	Nisan
412 AH	Muḥarram	Iyyar	Iyyar	Iyyar
	Šafar	Siwan	Siwan	Siwan
	Rabī' I	Tammuz	Tammuz	Tammuz
	Rabī' II	Av	Av	Av
	Jumādā I	Elul	Elul	Elul
4782 AM	Jumādā II	Tišri	Tišri	Tišri
	Rajab	Marḥešwan	Marḥešwan	Marḥešwan
	Ša'bān	Kislew	Kislew	Kislew
	Ramaḍān	Ṭevet	Ṭevet	Ṭevet
	Šawwāl	Ševaṭ	Ševaṭ	Ševaṭ
	Ḍū al-Qa'dah	Adar	Adar	Adar

TABLE 2 RNL Evr Arab I 1151

	<i>Muslim</i>	<i>Abū Sa'īd</i>	<i>Abū al-Ṭayyib Šalom</i>	<i>Rabbanites</i>
412 AH	Ḍū al-Ḥijjah	Nisan	Nisan	Nisan
413 AH	Muḥarram	Iyyar	Iyyar	Iyyar
	Šafar	Siwan	Siwan	Siwan
	Rabī' I	Tammuz	Tammuz	Tammuz
	Rabī' II	Av	Av	Av
	Jumādā II	Elul	Elul	Elul
4783 AM	Jumādā II	Tišri	Tišri	Tišri
	Rajab	Marḥešwan	Marḥešwan	Marḥešwan
	Ša'bān	Kislew	Kislew	Kislew
	Ramaḍān	Ṭevet	Ṭevet	Ṭevet

	Šawwāl	Ševaṭ		Ševaṭ	Ševaṭ
	Ḍū al-Qa'dah	Adar		Adar	Adar
	Ḍū al-Ḥijjah	Adar II		Adar II	Adar II
414 A H	Muḥarram	Nisan		Nisan	Nisan
	Šafar	Iyyar		Iyyar	Iyyar
	Rabī' I	Siwan		Siwan	Siwan
	Rabī' II	Tammuz		Tammuz	Tammuz
	Jumādā I	Av		Av	Av
	Jumādā II	Elul		Elul	Elul
4784 A M	Rajab	Tišri		Tišri	Tišri
	Ša'bān	Marḥešwan		Marḥešwan	Marḥešwan
	Ramaḍān	Kislew		Kislew	Kislew
	Šawwāl	Ṭevet		Ṭevet	Ṭevet
	Ḍū al-Qa'dah	Ševaṭ		Ševaṭ	Ševaṭ
	Ḍū al-Ḥijjah	Adar		Adar	Adar
415 A H	Muḥarram	Nisan		Adar II	Nisan
	Šafar	Iyyar		Nisan	Iyyar
	Rabī' I	Siwan		Iyyar	Siwan
	Rabī' II	Tammuz		Siwan	Tammuz
	Jumādā I	Av		Tammuz	Av
	Jumādā II	Elul		Av	Elul
4785 A M	Rajab	Tišri		Elul	Tišri
	Ša'bān	Marḥešwan		Tišri	Marḥešwan
	Ramaḍān	Kislew		Marḥešwan	Kislew
	Šawwāl	Ṭevet		Kislew	Ṭevet
	Ḍū al-Qa'dah	Ševaṭ		Ṭevet	Ševaṭ
	Ḍū al-Ḥijjah	Adar		Ševaṭ	Adar
416 A H	Muḥarram	Nisan	Adar II	Adar	Nisan
	Šafar	Iyyar	Nisan	Nisan	Iyyar
	Rabī' I	Siwan	Iyyar	Iyyar	Siwan
	Rabī' II	Tammuz	Siwan	Siwan	Tammuz
	Jumādā I	Av	Tammuz	Tammuz	Av
	Jumādā II	Elul	Av	Av	Elul
4786 A M	Rajab	Tišri	Elul	Elul	Tišri

	Ša'bān	Marḥešwan	Tišri	Tišri	Marḥešwan
	Ramaḍān	Kislew	Marḥešwan	Marḥešwan	Kislew
	Šawwāl	Ṭevet	Kislew	Kislew	Ṭevet
	Ḍū al-Qa'dah	Ševaṭ	Ṭevet	Ṭevet	Ševaṭ
	Ḍū al-Hijjah	Adar	Ševaṭ	Ševaṭ	Adar
417 AH	Muḥarram	Adar II	Adar	Adar	Adar II
	Šafar	Nisan		Nisan	Nisan
	Rabī' I	Iyyar		Iyyar	Iyyar
	Rabī' II	Siwan		Siwan	Siwan
	Jumādā I	Tammuz		Tammuz	Tammuz
	Jumādā II	Av		Av	Av
	Rajab	Elul		Elul	Elul
4787 AM	Ša'bān	Tišri		Tišri	Tišri
	Ramaḍān	Marḥešwan		Marḥešwan	Marḥešwan
	Šawwāl	Kislew		Kislew	Kislew
	Ḍū al-Qa'dah	Ṭevet		Ṭevet	Ṭevet
	Ḍū al-Hijjah	Ševaṭ		Ševaṭ	Ševaṭ
418 AH	Muḥarram	Adar		Adar	Adar
	Šafar	Adar II ⁶⁶		Nisan	Nisan
	Rabī' I	Nisan		Iyyar	Iyyar
	Rabī' II	Iyyar		Siwan	Siwan
	Jumādā I	Siwan		Tammuz	Tammuz
	Jumādā II	Tammuz		Av	Av
	Rajab	Av		Elul	Elul
4788 AM	Ša'bān	Elul		Tišri	Tišri
	Ramaḍān	Tišri		Marḥešwan	Marḥešwan
	Šawwāl	Marḥešwan		Kislew	Kislew
	Ḍū al-Qa'dah	Kislew		Ṭevet	Ṭevet
	Ḍū al-Hijjah	Ṭevet		Ševaṭ	Ševaṭ
419 AH	Muḥarram	Ševaṭ		Adar	Adar

66. See n. 58.