

How are the dates of the four seasons worked out?

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The Seasons

One finds disagreement on the starting dates of the seasons at both the scientific and the lay level. There are however three basic ways in which starting dates may be assigned. South Africa does not really experience four distinct seasons. Throughout South Africa the transitional seasons of Autumn and Spring tend to be very short. Most analysis of climate is done using the assumption that January is mid-summer and July mid-winter.

Astronomical basis

The instances at which the solstices and equinoxes occur can be accurately calculated. Earlier astronomical textbooks often defined the four seasons as starting on the dates of the corresponding equinoxes and solstices. But more recent books avoid defining the seasons in any way: two new editions of earlier books have in fact deleted their previous definitions. Moreover, expressions such as spring equinox and summer solstice are no longer used in astronomy. Instead, the four astronomical instances are identified as the ascending and descending equinoxes in March and September respectively, and the northern and southern solstices in June and December. One reason for these changes is to avoid the inevitable confusion of northern and southern hemisphere seasons: the ascending equinox in March is the spring equinox in the northern hemisphere, but the autumnal equinox in the southern hemisphere.

Thus the earlier astronomical definitions of the starting dates of the seasons are no longer relevant, and their use should be discouraged.

Climatological basis

A further failing of the earlier astronomically defined seasons is that they simply did not describe the real seasons as actually experienced. As one of the contributors to this article expressed it, summer does not start four days before Christmas. A climatologically definition of the seasons would obviously be more realistic. In the temperate latitudes of Europe and North America the climatological seasons are conventionally defined as shown in Table I. The equivalent seasons in the southern hemisphere are of course six months out of phase with those in the northern hemisphere, and are also given in Table I.

The use of intervals of exactly three calendar months for the conventional temperate latitude seasons is a matter of convenience rather than climatological reality. For example, in England the latter part of November is wintry rather than autumnal, with cold, foggy days occurring fairly frequently. Elsewhere in the world the disparity becomes even worse. Climatologists therefore ignore the conventional seasonal nomenclature and use labels which are more appropriate to the climate of a particular region: for example hot season, cold season, post-rainy season, etc. The durations of these seasons depend on the climate of the region, and have no direct relationship to either the astronomical seasons or the

calendar months. Thus September is spring-like in Gauteng, with cool mornings and warm afternoons, whereas it is still winter-like in the Western Cape, with the possibility of snow on the Eastern Cape mountains. Unfortunately the lay public would find it too confusing if a different set of seasonal dates was adopted for different parts of the country in order to encompass this variability.

Phenological basis

Phenological phenomena (this is, those relating to the natural seasonal behaviour of plants and animals) are the most fundamental markers of the changing seasons. This can be seen from the etymology of the names of the seasons in various languages. Thus in English, spring, from Anglo-Saxon for rise or burst forth, is the season when sap rises and plants put out buds. Autumn, from early Latin for ripen, is the season when crops reach maturity and can be harvested.

Unfortunately, an appeal to the phonological seasons merely confounds the confusion. In parts of Europe the phonological seasons are taken to occur one month earlier than the conventional climatic season, where in other parts and in the USA the two systems coincide. In any case, May Day (1st May) rather than the first day of spring however that may be chosen seems to be the preferred date for celebrating this season in Europe. In South Africa, the wide range of climatic regions and phenotypes (compare coastal KwaZulu-Natal with the south-western Cape) also adds to the difficulty of defining a clear-cut seasonal calendar based on phenology.

Conclusion

Apart from rejecting the astronomically-based seasons in compliance with modern astronomical usage, there are no firm grounds for choosing one set of dates rather than another for the starting dates of the seasons. There is certainly no official designation of the starting dates. On broad climatological and sociological grounds, however, choosing the dates in Table I would have the advantage of conformity established conventions.

On the basis of these conclusions, the following recommendations are suggested:

Adopt the seasonal calendar given in Table I for the southern hemisphere.

Emphasize strongly that these are conventional or traditional dates, and that an official calendar does not exist.

Southern Hemisphere	Calendar dates	Northern Hemisphere
Autumn	1 March to 31 May	Spring
Winter	1 June to 31 August	Summer
Spring	1 September to 30 November	Autumn
Summer	1 December to 28/29 February	Winter

Table I