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Mini Review

A Piece of History and Botanical Issues of Tulips

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Abstract

This article summarizes the history of tulips taxonomy from the distant past to the present, in relation to their grouping and dividing them into botanical structures, and about the history and botany of tulips.

Keywords: Chemical constituents; Flowering process; Nectaries; Phytopathological base

Introduction

The tulip is the main ornamental flowering bulb. According to [1] statistics for 1974 numbered about 9,400 ha. annually. This amounts to several billion bulbs. Besides, tulip is a complex plant having an integrated series of growing and aging organs (Figure 1,2). Following this, it presents a problem not only for bulb growers, law enforcers and gardeners, but also for applied and main scientists [1]. Although reviews have been [2-4], books [4,5], mandatory manuals [6-9] and three international symposiums on flower bulbs [10,11] (Rees and van der Borg, 1975), in which discussed various aspects of the tulip, never had the review is devoted exclusively to the tulip. Our goal is to cover all important areas related to botany, use, growth and tulip development. In many areas there are well-documented research base, such as the flowering process. Thus, we have presented personal observations or unpublished studies when appropriate.

Botanical classification, distribution and description

Tulips belong to the genus *Tulipa* L (Liliaceae). According to Cronquist [12], Liliaceae are placed in the division Magnoliophyte, class Liliopsid, subclass Laridae and order Lili ales. The diversity of tulips varies 40-120 species [13] that usually grow in high heigh altitude habitats [14]. The distribution area is from the Mediterranean through Asia to Korea and Japan [15-18]. Bailey [15] describes tulips as follows: plants derived from bulbs are sheathed, mostly tapering upwards (toward the "nose"), with fleshy scaly leaves; with a stem-like petiole that bears leaves; lonely and simple, sometimes branched, sometimes multiple; three to five leaves; flowers hypogynous, erect, bell-shaped to saucer-shaped; six perianth segments distinct, without nectarines; six stamens included basis fixed; column one- or two-leaved (most garden varieties), stigma three-lobed; the fetus is a tricuspid loculicidal box; and seeds numerous, flat. Tulips usually differ from other bulbous genera in that family with erect flowers, usually with six perianth lobes (tepals), six anthers and one style with a three-lobed stigma. This is a typical image of a garden tulip. However, there is great variability not only between species, but also within more than 2000 varieties resulting from breeding and breeding (Kon. Alg. Ver. Bloembollencultuur 1981). So, there are tulips with more than six perianth parts of various shapes, with plumage or perianths fringed, with more than six anthers and with multiple and branched petioles with several flowers. Cultivated tulips were divided into 15 groups based on

during flowering in the open field, the morphology of the perianth parts and their origin. It should be noted that although in 1981 classification gives 15 groups, there have been big changes from the previous 15 groups (Kon. Alg. Ver. Bloembollencuhur 1976). Mendel's tulips have been classified as Triumph; the only latecomer class now includes Darwin and Cottage tulips; and two new classes Fringed tulips and Variciform tulips have been added. Varieties provide a wide range of perianth colors other than true black or blue. There are red, pink, white, lavender, and yellow varieties, among others. with a solid base color and edge-dyed, flamed and/or striped. The last type of variation can be caused by viruses [18] and this was a contributing factor to the "tulip mania" that occurred in the Netherlands in the 1600s [19,20].

Basic morphology, anatomy, growth and development

General characteristics. Tulip bulbs are obtained from seeds [16] that come from the fruit box. Seeds after harvest contain an immature embryo that is in "embryonic rest" and requires minimum 40-50 days at 4 °C to achieve full development (Niimi 1978, 1980). An additional period of 30 days at 4 °C was necessary for germination and subsequent seedling development. As described in Section II.H, it takes 4-6 years to reach flowering. The annual cycle of growth and development of a blooming tulip the light bulb is shown in Figure 1 and 2. This section will briefly describe general morphological, anatomical and evolutionary changes various organs. Specific changes in the production and forcing of bulbs are discussed in Sections I11 and IV.

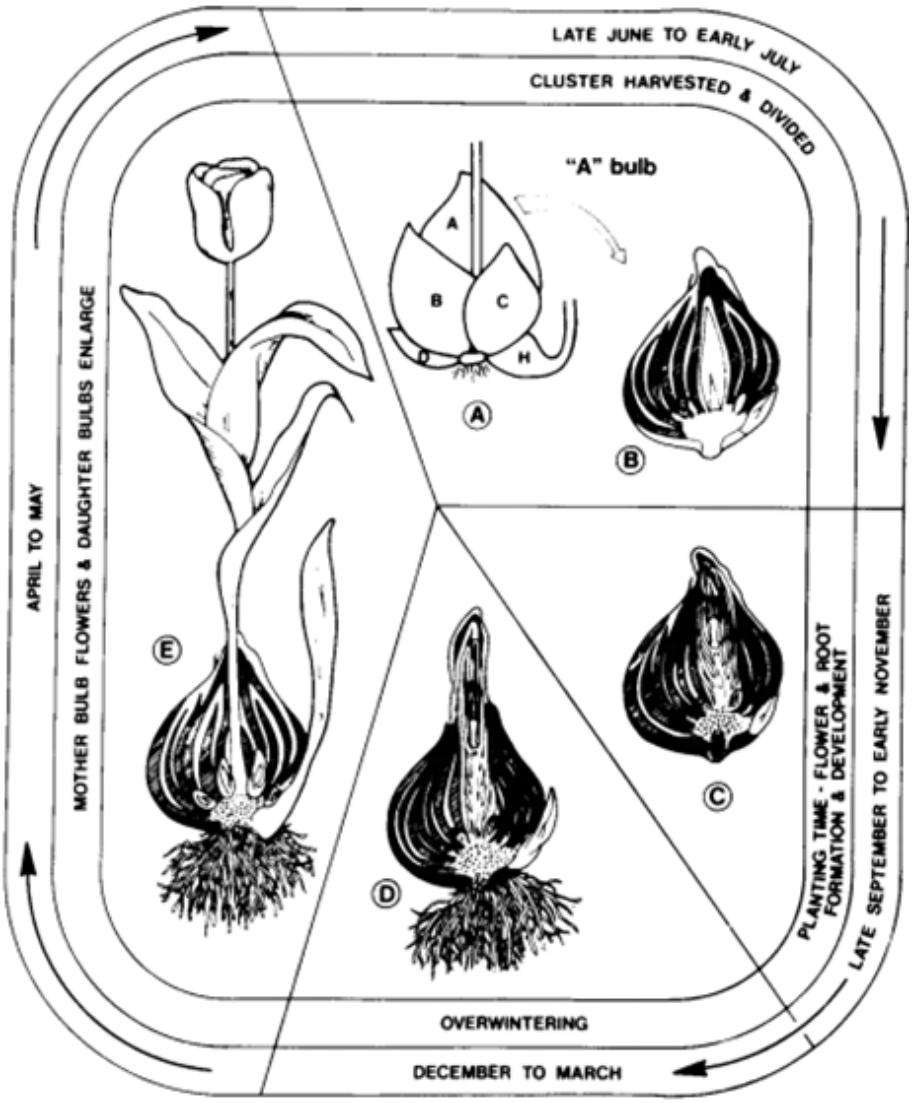

Figure 1: Annual growth and development cycle of a flowering tulip
(a) harvested cluster;
(b) separated "a" blub;
(c) mother blub with developed root primordia and shoot prior ro planing;
(d) rooted blub in overwintering environment;
(e) mother blub at anthesis, small shoot is "h" blub [27].

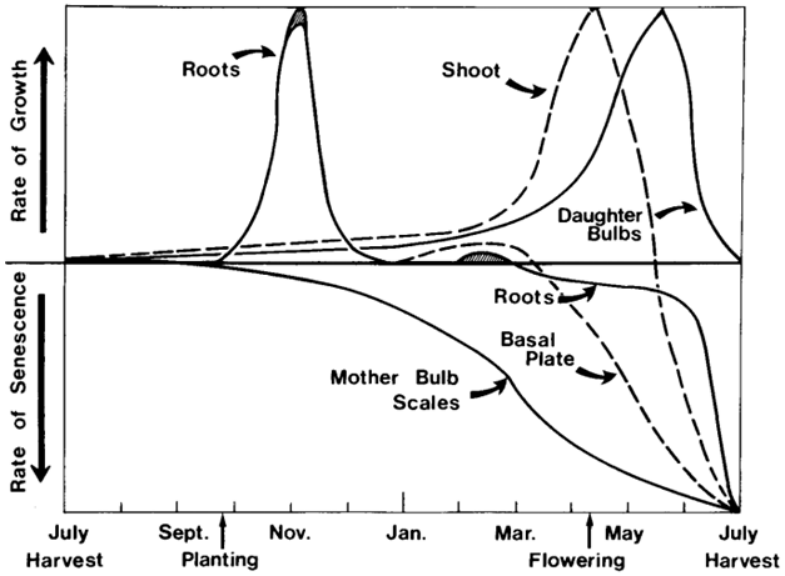

Figure 2: Annual growth and senescence changes of major organs of a flowering tulip [27].

Tulip Bulb Forcing

General aspects

The normal forcing season for tulips runs from early December to mid-May, and many factors must be considered for successful forcing. Key tasks are the prevention of abortion of flowers, optimization of commercial height, make the flower harvest evenly, force a reasonable amount days in the greenhouse and optimize the size of flowers and leaves. All used techniques based on the annual cycle of growth and development of the tulip (Figure 1,2). Awareness of the interaction of the environment on this cyclical process with particular attention to flowering the process is essential. From a commercial point of view varieties [7-9] is important. Some varieties of tulips cannot be bred, and those that can have optimum distillation and use time.

Bulb size has been found to be critical for flowering. process [3]. In addition, the size of the flower depends on the size of the bulb. and the larger the bulb, the larger the flower. Therefore, for commercial forcing only 11/12cm and bulbs 12/up cm are used with 11/12cm Bulbs are primarily cut for late forcing. Another bulb size effect seen in some varieties is the "Anchylose" disease [21]. This is a real example of blindness. Full sheet Complement is formed but flowering is not initiated. It's been seen in bulbs 16/18cm varieties "Apricot Beauty", "Demeter" and "Yokohama".

Forcing techniques

The standard forcing method is based on normal sequence summer-autumn-winter-spring. It may include up to 6 weeks of pre-cooling at 7 or 9 °C, provided that the bulbs have reached or passed stage G. These lamps are designed for early compulsion. Bulbs without pre-cooling are used for medium and late forcing. Whether they have been pre-chilled or not, all bulbs are initially rooted at 9 °C compromise temperature between optimum temperature for rooting [22] and cooling [23]. During low temperature programming, the temperature must be reduced to 5 °C after the roots have reached a length of at least 5cm. When or if shoots reach 5cm, the temperature in the rooting room should be reduced to W-1 "C to slow down the growth of shoots.

Conclusion

Pioneering Dutch exploration of Balaua in Wageningen and Van Slaughtermen et Lises and colleagues presented a robust physiological analysis and Phyto pathological base for commercial production of tulip bulbs and forcing during the 1950s Subsequently, a large number of publications became available [7-9,21,24-27]. In addition, over the past two decades there have been significant increases not only in knowledge related to endogenous and exogenous growth regulators, chemical constituents and metabolism, but also in improved methods of bulb production and forcing. Nonetheless the tulip is very complex and a lot of research needs to be done to fully understand the mechanisms that control overall growth and bulb development. Finally, we want to point out that although we have cited many published reports and articles, a more comprehensive bibliography is maintained [28-32].

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