

A study of seed morphology of malvaceae plants in Gujarat state, India

ALPESH B. THAKOR

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The ability to recognize seeds are always important in farming. It has become even more essential in modern scientific agriculture, without it there would be little merit in perfecting methods of growing useful plants. Ability to identify the seed is of particular importance to the agriculturist, biologist, forester, horticulturist, ethno botanist, pharmacist and others interested in land-use programs to identify the seeds in their particular ecological fields of interest. Though seeds are physiologically important for they provide fairly reliable attribute, seed characters are largely ignored except for a few cursory references in classic as well as contemporary floras (Cook, 1901- 1903; Shah, 1978)

The state of Gujarat with its unique climatic conditions, eco-geographical regions, agro climatic zones and five biogeography zonations holding ten biotic provinces represent a vast array of floral and faunal diversity. The state of Gujarat was separated from the east while Mumbai state on 1st May 1960. Referring to the taxonomical and floristic work in pre-independence era, quite a remarkable contribution deserves special mention. Mention has to be made about Graham (1839), Dalzell and Gibson (1861), Nairne (1894), Cooke (1901-1903), Talbot (1909-1911), Blatter and McCann (1926-1935), Santapau (1954). All these prolific workers have concentrated on different parts of the Western Peninsula and Southern parts of Bombay Presidency.

The Hooker's flora of British India (1875-1897) compiled during 18th century provides the culmination of floristic and taxonomic researches of a team of dedicated scientists. The flora proved a useful tool all these years and accelerated the documentation of many remarkable floras like the Flora of Madras Presidency (1915-1936); Flora of Bombay Presidency (1908, rep. ed. 1958); Flora of Upper Gangetic Plains (1973 rep. ed.) etc. The state of Gujarat is also blessed with first state level flora, *i.e.* The Flora of Gujarat State (1978).

Pioneering works on the seeds of the plants were carried out by Ducne (1947) and MC Clure (1957) who have studied the seed characters of some selected families

of U.S.A. Some notable workers on the seed are Scurti (1948), Murley (1951), Duke (1964-65), Vartak (1966), Duke (1969), Richard (1970), Schuyler (1971), Chuang and Heckard (1972), Whiffin and Tomb (1972), Berggren (1974), Skvortsov and Rusanovitch (1974), Brisson and Peterson (1976), Corner (1976), Hill (1976), Mulligan and Bailey (1976), maiti (1976), Simpson (1976), Seavey et al (1977), Gunn (1979), Mangaly *et al.* (1979) and Gavit (1990).

Seed is a small embryonic plant enclosed in a covering called seed coat and usually with some stored food. It is the product of the ripened ovule of gymnosperm and angiosperm plants occurring after the process of fertilization within the mother plant.

During the tenure of this work the author had visited different areas of the state. The plant specimens of Malvaceae family were collected to prepare herbarium specimens along with the seed. Seeds were collected, dried and were stored for further study. Some of the seeds were mounted in different position over a card slide with the help of domestic adhesive – like Fevicol. The seed slides were then subjected to detailed observation. Each and every collection was supported with the voucher specimen of the herbarium. Collected seed were either dried in sun or were dried by using incubator / oven at a temperature of 28°C - 30°C.

The most useful clues for recognition of seed are usually the seed shape, coloring, hilum shape, seed/fruit, seed weight etc. Colour of the seeds were compared with standard colour shade charts of RHS (Royal Horticultural Society, London). Seeds weight of individual seed or a unit of 10 seeds were made with the help of analytic balance and also Monopan balance.

This paper presents 51 seed plants of Malvaceae family and its seed morphology from the study area.

An earnest attempt has been made here to exploit the seed characters for taxonomic purpose. The descriptive accounts are rather lengthy. Much of the critical observation such as an attempt to mention nearer to the correct colour shade using RHS colour charts and the seed weight determination are more of academic interest rather than their practical utility to be used as a tool for the identification of taxa under investigation. This is the limitation. Above morphological characters of seeds are

Correspondence to:

ALPESH B. THAKOR, Department of Biology, B.K.M. Science College, VALSAD (GUJARAT) INDIA