International Journal Of Multidisciplinary Research In Science, Engineering and Technology (IJMRSET)

| ISSN: 2582-7219 | www.ijmrset.com | Impact Factor: 4.988| Monthly Peer Reviewed & Referred Journal |

| Volume 4, Issue 3, March 2021 |

Floristic Analysis of Family Cucurbitaceae in Beawar Tehsil

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ABSTRACT: The Cucurbitaceae, also called cucurbits or the gourd family, are a plant family consisting of about 965 species in around 95 genera.[2] Those most important to humans are the following:

- *Cucurbita* – squash, pumpkin, zucchini or courgette, some gourds
- *Lagenaria* – calabash, and others that are inedible
- *Citrullus* – watermelon (*C. lanatus*, *C. colocynthis*) and others
- *Cucumis* – cucumber (*C. sativus*), various melons and vines
- *Momordica* – bitter melon
- *Luffa* – the common name is also luffa, sometimes spelled loofah (when fully ripened, two species of this fibrous fruit are the source of the loofah scrubbing sponge)
- *Cyclanthera* – Caigua

The plants in this family are grown around the tropics and in temperate areas, where those with edible fruits were among the earliest cultivated plants in both the Old and New Worlds. The family Cucurbitaceae ranks among the highest of plant families for number and percentage of species used as human food.[3] The name *Cucurbitaceae* comes to international scientific vocabulary from Neo-Latin, from *Cucurbita*, the type genus, + *-aceae*,[4] a standardized suffix for plant family names in modern taxonomy. The genus name comes from the Classical Latin word *cucurbita*, meaning "gourd".

KEYWORDS-cucurbitaceae,gourd,cucurbits,families,Beawar,genera,species

I.INTRODUCTION

In Beawar tehsil most of the plants in this family are annual vines, but some are woody lianas, thorny shrubs, or trees (*Dendrosicyos*). Many species have large, yellow or white flowers. The stems are hairy and pentangular. Tendrils are present at 90° to the leaf petioles at nodes. Leaves are exstipulate, alternate, simple palmately lobed or palmately compound. The flowers are unisexual, with male and female flowers on different plants (dioecious) or on the same plant (monoecious). The female flowers have inferior ovaries. The fruit is often a kind of modified berry called a pepo.

Cucurbita (Latin for 'gourd')[3][4] is a genus of herbaceous fruits in the gourd family, Cucurbitaceae (also known as *cucurbits* or *cucurbi*). Five edible species are grown and consumed for their flesh and seeds. They are variously known as squash, pumpkin, or gourd, depending on species, variety, and local parlance.[a] Other kinds of gourd, also called bottle-gourds, are native to Africa and belong to the genus *Lagenaria*, which is in the same family and subfamily as *Cucurbita*, but in a different tribe. These other gourds are used as utensils or vessels, and their young fruits are eaten much like those of the *Cucurbita* species.

Most *Cucurbita* species are herbaceous vines that grow several meters in length and have tendrils, but non-vining "bush" cultivars of *C. pepo* and *C. maxima* have also been developed. The yellow or orange flowers on a *Cucurbita* plant are of two types: female and male. The female flowers produce the fruit and the male flowers produce pollen. Many species in Beawar tehsil are visited by specialist bee pollinators, but other insects with more general feeding habits, such as honey bees, also visit.

There is debate about the taxonomy of the genus, as the number of accepted species varies from 13 to 30. The five domesticated species are *Cucurbita argyrosperma*, *C. ficifolia*, *C. maxima*, *C. moschata*, and *C. pepo*. All of these can be treated as winter squash because the full-grown fruits can be stored for months; however, *C. pepo* includes some cultivars that are better used only as summer squash.

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The fruits of the genus *Cucurbita* are good sources of nutrients, such as vitamin A and vitamin C, among other nutrients according to species. The fruits have many culinary uses including pumpkin pie, biscuits, bread, desserts, puddings, beverages, and soups. Although botanical fruits, *Cucurbita* gourds such as squash are typically cooked and eaten as vegetables. Pumpkins see more varied use, and are eaten both as vegetables and as desserts such as pumpkin pie.

In beawar, *Cucumis* is a genus of twining, tendril-bearing plants in the family Cucurbitaceae which includes the cucumber (*Cucumis sativus*), muskmelons (*Cucumis melo*, including cantaloupe and honeydew), the horned melon (*Cucumis metuliferus*), and the West Indian gherkin (*Cucumis anguria*).

Citrullus is a genus of seven species of desert vines, among which *Citrullus lanatus* (the watermelon) is an important crop in Beawar.

Citrullus lanatus, the domesticated watermelon, since the 1930s. Although this error only occurred in 1930 (Bailey, Gentes Herbarum 2: 180–186), it has been perpetuated in hundreds of papers on the watermelon. In addition, there is an older name for the watermelon, *Citrullus battich* Forssk. (Fl. Aegypt.-Arab.: 167. Jun 1775), which would normally have the precedence over *Momordica lanata* Thunberg (Prodr. Pl. Cap.: 13. 1794). To solve this problem, it has been proposed to conserve the name *Citrullus lanatus* with a new type to preserve the current sense of the name [1]

Cucurbita (Latin for 'gourd')[3][4] is a genus of herbaceous fruits in the gourd family, Cucurbitaceae (also known as *cucurbits* or *cucurbi*), native to the Andes and Mesoamerica. Five edible species are grown and consumed for their flesh and seeds. They are variously known as squash, pumpkin, or gourd, depending on species, variety, and local parlance.[a] Other kinds of gourd, also called bottle-gourds, in Beawar and belong to the genus *Lagenaria*, which is in the same family and subfamily as *Cucurbita*, but in a different tribe. These other gourds are used as utensils or vessels, and their young fruits are eaten much like those of the *Cucurbita* species.

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II.DISCUSSION

Cucurbita species fall into two main groups. The first group are annual or short-lived perennial vines and are mesophytic, i.e. they require a more or less continuous water supply. The second group are perennials growing in arid zones and so are xerophytic, tolerating dry conditions. Cultivated *Cucurbita* species were derived from the first group. Growing 5 to 15 meters (15 to 50 ft) in height or length, the plant stem produces tendrils to help it climb adjacent plants and structures or extend along the ground. Most species do not readily root from the nodes; a notable exception is *C. ficifolia*, and the four other cultivated mesophytes do this to a lesser extent. The vine of the perennial *Cucurbita* can become semiwoody if left to grow. There is wide variation in size, shape, and color among *Cucurbita* fruits, and even within a single species. *C. ficifolia* is an exception, being highly uniform in appearance.[6] The morphological variation in the species *C. pepo*[7] and *C. maxima*[8] is so vast that its various subspecies and cultivars have been misidentified as totally separate species.[7] The leaves of *Cucurbita moschata* often have white spots near the veins.

The typical cultivated *Cucurbita* species has five-lobed or palmately divided leaves with long petioles, with the leaves alternately arranged on the stem. The stems in some species are angular. All of the above-ground parts may be hairy with various types of trichomes, which are often hardened and sharp. Spring-like tendrils grow from each node and are branching in some species. *C. argyrosperma* has ovate-cordate (egg-shaped to heart-shaped) leaves. The shape of *C. pepo* leaves varies widely. *C. moschata* plants can have light or dense pubescence. *C. ficifolia* leaves are slightly angular and have light pubescence. The leaves of all four of these species may or may not have white spots.[9]

The species are monoecious, with unisexual male (staminate) and female (pistillate) flowers on a single plant and these grow singly, appearing from the leaf axils. Flowers have five fused yellow to orange petals (the corolla) and a green bell-shaped calyx. Male flowers in Cucurbitaceae generally have five stamens, but in *Cucurbita* there are only three, and their anthers are joined together so that there appears to be one.[10][11] Female flowers have thick pedicels, and an inferior ovary with 3–5 stigmas that each have two lobes.[9][12] The female flowers of *C. argyrosperma* and *C. ficifolia* have larger corollas than the male flowers.[9] Female flowers of *C. pepo* have a small calyx, but the calyx of *C. moschata* male flowers is comparatively short.[9]

A variety of fruits displayed at the Beawar tehsil of Rajasthan in 2016

Cucurbita fruits are large and fleshy.[10] Botanists classify the *Cucurbita* fruit as a pepo, which is a special type of berry derived from an inferior ovary, with a thick outer wall or rind with hypanthium tissue forming an exocarp around the ovary, and a fleshy interior composed of mesocarp and endocarp. The term "pepo" is used primarily for Cucurbitaceae fruits, where this fruit type is common, but the fruits of *Passiflora* and *Carica* are sometimes also pepos.[13][14] The seeds, which are attached to the ovary wall (parietal placentation) and not to the center, are large and fairly flat with a large embryo that consists almost entirely of two cotyledons.[12] Fruit size varies considerably: wild fruit specimens can be as small as 4 centimeters (1+½ in) and some domesticated specimens can weigh well over 300 kilograms (660 lb).

Cucurbita was formally described in a way that meets the requirements of modern botanical nomenclature by Linnaeus in his *Genera Plantarum*,[16] the fifth edition of 1754 in conjunction with the 1753 first edition of *Species Plantarum*.[17] *Cucurbita pepo* is the type species of the genus.[17][18] Linnaeus initially included the species *C. pepo*, *C. verrucosa* and *C. melopepo* (both now included in *C. pepo*), as well as *C. citrullus* (watermelon, now *Citrullus lanatus*) and *C. lagenaria* (now *Lagenaria siceraria*) (both are not *Cucurbita* but are in the family Cucurbitaceae.[19]

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The *Cucurbita digitata*, *C. foetidissima*, *C. galeotti*, and *C. pedatifolia* species groups are xerophytes, arid zone perennials with storage roots; the remainder, including the five domesticated species, are all mesophytic annuals or short-life perennials with no storage roots.[6][20] The five domesticated species are mostly isolated from each other by sterility barriers and have different physiological characteristics.[20] Some cross pollinations can occur: *C. pepo* with *C. argyrosperma* and *C. moschata*; and *C. maxima* with *C. moschata*. Cross pollination does occur readily within the family Cucurbitaceae.[21] The buffalo gourd (*C. foetidissima*) has been used as an intermediary, as it can be crossed with all the common *Cucurbita*.[12]

An assortment of fruits of *C. maxima* and *C. pepo* in Beawar, Rajasthan

III.RESULTS

Momordica is a genus of about 60 species of annual or perennial climbers herbaceous or rarely small shrubs belonging to the family Cucurbitaceae, in Beawar. Most species produce floral oils and are visited by specialist pollinators in the apid tribe Ctenoplectrini. A molecular phylogeny that includes all species is available . Some *Momordica* species are grown in cultivation for their fleshy fruit, which are oblong to cylindrical in shape, orange to red in colour, prickly or warted externally, and in some species burst when ripe, generally with elastic force, into irregular valves.

Momordica can be cultivated in 5 litre vases or jardinière and is hardly susceptible to plagues. After seeding, *Momordica* develops leaves in about 11 days and flowers after 40 to 50 days. After fertilisation, the *Momordica* fruit will be developed in about 10 days.[1]

Momordica charantia is used in folk medicine in Beawar, for centuries as a 'bitter, cold' herb, and has recently been brought into mainstream medicine as well as natural medical traditions around the world. Recent research has shown that the immature fruit might have some antibiotic, anticancer, and antiviral properties, particularly well suited for use in treatment of malaria, HIV, and diabetic conditions. The use of *Momordica* fruit is contraindicated in a number of conditions, especially pregnancy.

The effect of *Momordica charantia* on glucose and insulin concentrations was studied in nine non-insulin-dependent diabetics and six non-diabetic rats. These results show that it might improve glucose tolerance in diabetes but much more research is needed. Doctors supervising Asian diabetics should be aware of the fruit's hypoglycemic properties.

Calabash (*Lagenaria siceraria*), also known as bottle gourd,[3] white-flowered gourd,[4] long melon, birdhouse gourd,[5] New Guinea bean, Tasmania bean,[6] and opo squash, is a vine grown for its fruit. It can be either harvested young to be consumed as a vegetable, or harvested mature to be dried and used as a utensil, container, or a musical instrument. When it is fresh, the fruit has a light green smooth skin and white flesh. Calabash fruits have a variety of shapes: they can be huge and rounded, small and bottle-shaped, or slim and serpentine, and they can grow to be over a metre long. Rounder varieties are typically called calabash gourds. The gourd was one of the world's first cultivated plants grown not primarily for food, but for use as containers. The bottle gourd may have been carried from Asia to Africa, Europe, and the Americas in the and then India, to Rajasthan, in Beawar tehsil, in

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course of human migration,[7] or by seeds floating across the oceans inside the gourd. It has been proven to have been globally domesticated (and existed in the New World) during the Pre-Columbian era.

Because the name "calabash" is used for both, they are sometimes confused with the hard, hollow fruits of the unrelated calabash tree (*Crescentia cujete*), whose fruits are also used to make utensils, containers, and musical instruments.[8]

Bottle gourds are grown by direct sowing of seeds or transplanting 15- to 20-day-old seedlings. The plant prefers well-drained, moist, organic rich soil. It requires plenty of moisture in the growing season and a warm, sunny position, sheltered from the wind. It can be cultivated in small places such as in a pot, and allowed to spread on a trellis or roof. In rural areas, many houses with thatched roofs are covered with the gourd vines. Bottle gourds grow very rapidly and their stems can reach a length of 9 m in the summer, so they need a solid support along the stem if they are to climb a pole or trellis. If planted under a tall tree, the vine may grow up to the top of the tree. To obtain more fruit, farmers sometimes cut off the tip of the vine when it has grown to 6–8 feet in length. This forces the plant to produce side branches that will bear flowers and yield more fruit.

The plant produces night blooming white flowers. The male flowers have long peduncles and the females have short ones with an ovary in the shape of the fruit. Sometimes the female flowers drop off without growing into a gourd due to the failure of pollination if there is no night pollinator (probably a kind of moth) in the garden. Hand pollination can be used to solve the problem. Pollen size is ~60 microns.

IV.CONCLUSION

A popular north Indian dish is *lauki chana*,inBeawar, (*chana dal* and diced gourd in a semi-dry gravy). In the state of Rajasthan in India, a similar preparation called *dudhi chana* is popular. The skin of the vegetable is used in making a dry spicy chutney preparation. It is consumed with fish curry, as boiled vegetable curry and also fried with potato and tomatoes. *lauki kheer* (grated bottle gourd, sugar and milk preparation) is a dessert, usually prepared for festive occasions. It is called *anapakaya* and is used to make *anapakaya pulusu* (with tamarind juice), *anapakaya palakura* (curry with milk and spices) and *anapakaya pappu* (with lentils). *Lau chingri*, a dish prepared with bottle gourd and prawn, is popular .Although popularly called *lauki* in Hindi in northern part of the country, it is also called *kaddu* in certain parts of country like eastern India. Interestingly kaddu popularly translates to pumpkin in northern India. It is consumed as a dish with rice or roti for its medicinal benefits. A traditional savoury cake called handvo is made primarily using bottle gourd (in Gujarati, *dudhi*), sesame seeds, flour, and often lentils. It is called *Sorekayi* and is used to prepare *palya* (stir-fry) and *Sambaru* (Indian stew). Also, crispy *sorekayi dosé* (dosa) is one of the popular breakfasts .

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