Diversity of Fruits in Bottle Gourd (*Lagenaria siceraria* L.) Collected from Mainpuri District, Uttar Pradesh, India

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A great deal of diversity in fruits as well as seeds in bottle gourd (*Lagenaria siceraria* L.) was observed in Mainpuri district, Uttar Pradesh (India). Variability in fruit and seed shape, size and colour, their uses are described in the present paper.

Key Words: Bottle gourd, Germplasm, Diversity, Kamandal

There is little doubt that bottle gourd (*Lagenaria siceraria* L., Cucurbitaceae) has been under cultivation in old world for a considerable period of time. India is considered to be the centre of origin for *Lagenaria.* Due to its high consumer preference and medicinal uses, *Lagenaria* is now extensively cultivated in Arunachal Pradesh, Assam, Bihar, Madhya Pradesh, Maharashtra, Punjab, Tamil Nadu, West Bengal and Uttar Pradesh. The present study was undertaken to study the diversity in fruits and seeds in bottle gourd *L. siceraria* from various parts of Mainpuri district, Uttar Pradesh, India.

Materials and Methods

A survey was made for the collection of diversity in the germplasm of *Lagenaria siceraria* from Mainpuri, Bhaogan and Karhal tahsils and blocks of Mainpuri district. Field data and germplasm of bottlegourd was collected from the farmer's field, river bank as well as from the protected areas. The characters recorded were habit, habitat, status of the species, topography of the area, sample type, sampling method, source and plant characters. Collected germplasm from farmers fields, protected areas, threshing yards, market, farm store etc. was packed in polythene bags and sent to National Bureau of Plant Genetic Resources (NBPGR) New Delhi for its storage in National Gene Bank.

Results and Discussion

Lagenaria siceraria commonly known as white flower gourd or bottle gourd, is monoecious, long running or climbing plant.

The diversity in fruits as well as seeds of bottle gourd observed in various parts of Mainpuri district has been described in the following paragraphs.

1. Goal Bottle Gourd

This type is not common and was collected in the months of September and October from road side villages of Mainpuri tehsil. The fruits are spherical or globular with smooth and soft surface (Fig. 1). The pericarp is thin (0.3-0.5 cm) and soft. The seeds are brown in colour and measure 1.3-1.5 x 0.7-0.8 cm in size with 100 seed weight as 10.80 g. The fruits are used as vegetable and for making sweets.

2. Chakti Bottle Gourd

It is also rarely cultivated and was collected from Kurauli block of Mainpuri district. The fruits are spherical in shape (Fig. 2). The fruit surface is smooth and thin with soft pericarp (0.2-0.4 cm). The seeds are light brown in colour and their size ranges between 1.3-1.4 x 0.6-0.8 cm. The 100 seed weight was 10.25 g.

3. Tuma Bottle Gourd

It was collected from a small village of Vernahal block of Karhal Tahsil. The fruits are large pyriform and looks like a tuma hence called tumari (Fig.3). The pericarp is tough and the thickness ranges between 0.6-1.0 cm. The seeds are medium size with triangular apex. They are dark brown in colour. The size of seed ranges between 1.8-1.9 x 0.8-0.9 cm and 100 seed weight is 10.6 g.

4. Long Bottle Gourd

It is commonly grown in all parts of Mainpuri district. The fruits are elongated and are 30-100 cm long. Their surface is smooth with thin and soft pericarp (0.3-0.5 cm) (Fig. 4). The seeds are light brown in colour and their size ranges beween 1.3-1.4 x 0.7-0.8 cm. The 100 seed weight was 10.68 g.

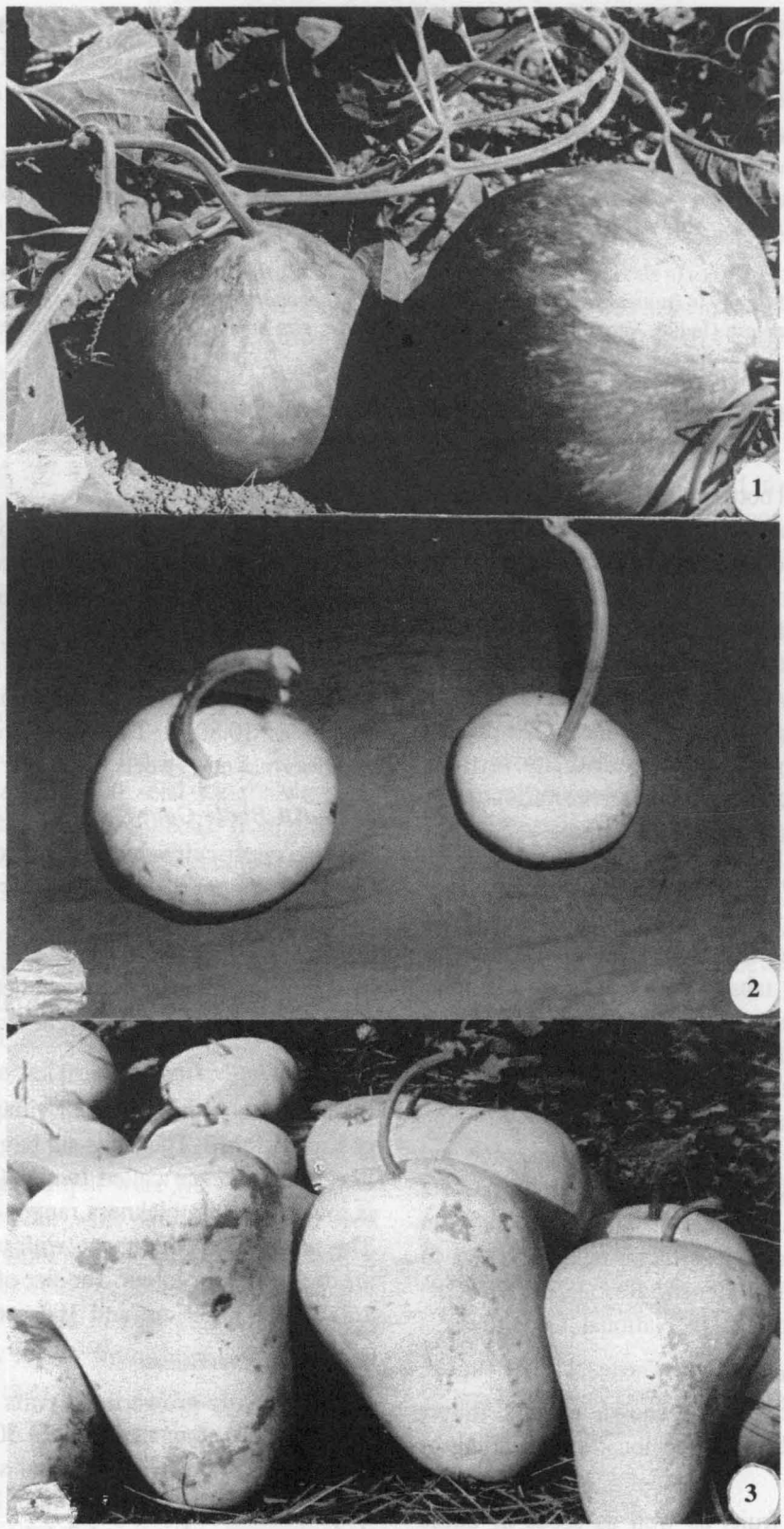

***Fig. 1**: Goal (spherical) Bottle gourd collected from road side village of Mainpuri district;*
***Fig. 2**: Chakti Bottle gourd collected from Kurauli block;*
***Fig. 3**: Tuma Bottle gourd collected from Vernahal block of Karhal tahsil*

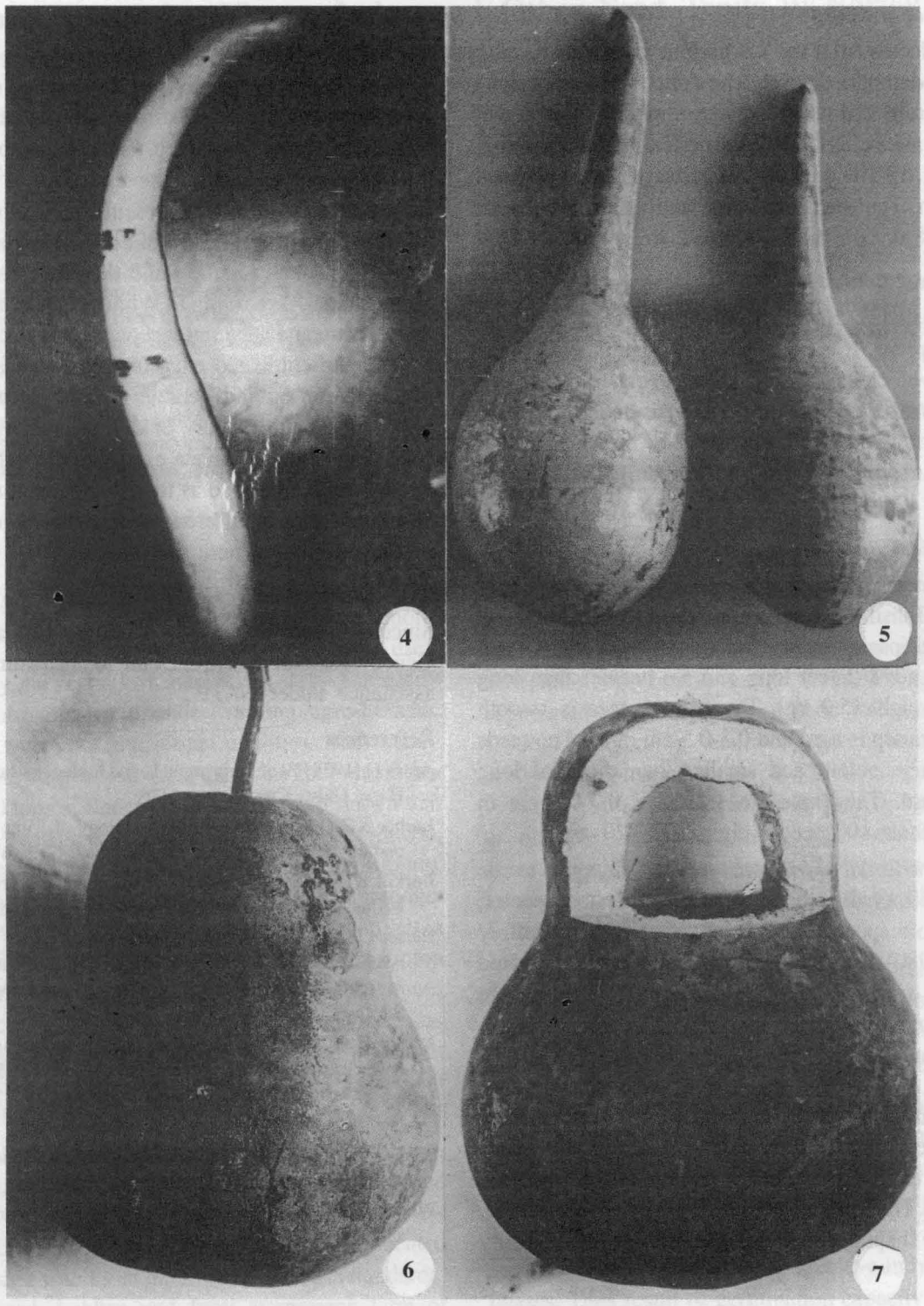

***Fig. 4**: Long Bottle gourd collected from all parts of Mainpuri district*

***Fig. 5**: Bean Bottle gourd collected from Kurauli block*

***Fig. 6**: Kamandal Bottle gourd collected from Kurauli block*

***Fig. 7**: Kamandal used by Indian Saint*

5. Bean Bottle Gourd

It was collected from the Lakhrajpur village of Kurauli block of Mainpuri district. The fruits are bean shaped and ripe fruits are used to make a musical instrument used by snake-charmers. The pericarp is smooth but tough (Fig. 5). The thickness of pericarp ranges between 0.3-0.5 cm. The seeds are white and measure between 1.5-1.6x0.8-0.9 cm and 100 seed weight is 11.20 g.

6. Kamandal Bottle Gourd

It is cultivated by Sadhus (Saints) near their huts over which it creeps. It is collected from Hanukhera village of Kurauli block of Mainpuri district (Fig. 7). The fruits are pyriform (Fig. 6). The pericarp is rough and hard and 1-2 cm thick. The seeds are dark brown in colour and medium sized (1.3-1.4 x 0.7-0.8 cm). The 100 seed weight is 12.40 g.

7. Cylindrical Bottle Gourd

It is cultivated in villages of Mainpuri district particularly in Kishni Tahsil. The fruits are cylindrical in shape but sometime ellipsoidal shaped fruits have also been observed. The fruits are 1-2 feet long and are heavier then long lauki in weight (5.0 kg). The fruit surface is smooth but the pericarp is hard and 0.3-0.5 cm thick. The seeds are brown in colour and smaller than those of long bottle gourd. They measure 1.2-1.3 x 0.7-0.8 cm in size and their 100 seed weight is 10.20 gm.

Lagenaria siceraria was earlier thought to be monotypic including only a single cultivated species, but six more species have been recognized by Jeffrey (1962 & 1980). One of these is the monoecious cultivated *Lagenaria siceraria* (Mol.) standl and five others are wild perennial, dioecious species of Africa and Madagascar. Recent work has confirmed the existence of two sub-species of *L. siceraria* one is from Asia and the other one is from both Africa and the New World (Heiser, 1973). The fruits as well as the seeds of the genus *Lagenaria* exhibit great deal of variability in shape, size and weight. The fruits may be either pyriform, cylindrical, oval, club shaped, tuma or bean shaped. At maturity they are hard shelled, smooth surfaced and green to whitest in colour.

Barber (1909) has divided the pericarp of cucurbits into six more or less distinct parts namely, epicarp, hypoderm, outer mesocarp, middle mesocarp, inner mesocarp and endocarp. The thickness of pericarp of fruits collected during the present course of study varies between 0.3-1.0 cm and that of a pyriform fruit is thickest (1.5-2.0 cm) and toughest and therefore, used to serve as Kamandal. According to Whitaker and Davia (1962), the pericarp and adherent receptacle which compose the fruit of the cultivated cucurbitaceae vary in thickness (thick or thin or rind), colour (white, green, yellow or red), and texture (watery or dry, sclerenchymatized or soft). The central planceta extend to the outer wall and divide, turning back so as to give a parietal appearance. However, certain differences exist between the fruits of the different genera and species.

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