PREFACE
Plants belonging to family Cucurbitaceae exhibit a wide range of sex forms such as monoecious, dioecious, gynoecious, hermaphroditic, gynomonoecious, andromonoecious and trimonocious. Although it is a species character, a wide range of variations have been reported in cucurbits. *Cucumis sativus*, *C. moschata*, *C. pepo* and *Citrullus vulgaris*, though typically monoecious, exhibit exceptional sex forms, such as andromonoecious in the first two cases and hermaphroditic in the latter two species in some varieties. Currence (1932) reports the nodal sequence of flower type in *Cucumis sativus*, the lower nodes being predominantly male and the upper predominantly female. Node number of the first female flower is suggestive to be a sex tendency index in *C. sativus* (Shifriss and Galun, 1961). Sex regulation in Cucurbitaceae is considered to be a genetically controlled phenomenon, although complicated gene-environmental interaction plays a very important role. Galun (1961) reports the effect of increase in day length from 13 to 15 hours and gibberellic acid on monoecious (st<sup>+</sup> st<sup>-</sup>), heterozygous (st<sup>-</sup> st<sup>+</sup>) and gynoeconomic (st st<sup>-</sup>) cucumbers, causing the latter to produce male flowers and thus masking the effect of st<sup>+</sup>. Several environmental factors such as photoperiod, temperature, nutritional status of the soil are known to interact and give rise to a wide
range of sex forms in these plants. Auxins, anti-auxins, gibberellins and growth retardants are found to alter sex-expression in several species and varieties of cucurbits.

In India a large number of species and varieties of this group of plants are grown throughout the country and constitute very important vegetables. The experiments on sex-expression have mostly been carried out in *Cucumis sativus* and few other species of this family. In order to elucidate the physiological basis of sex-expression, it is thus considered important to study the effects of various environmental factors and growth regulating chemicals on a number of species and varieties of cucurbitaceous plants. Some of the experiments are also considered to be of practical importance to increase the number of female flowers and yield under field condition. With the above aim in view a series of experiments were carried out in the following lines:

I. Effect of different growth substances on growth, flowering and sex-expression in cucurbits.

II. Effect of photoperiod, temperature and chemicals on growth, flowering and sex-expression in cucurbits.

III. Effect of nitrogen and phosphorus on growth, flowering and sex-expression in cucurbits.