CHAPTER – 1

INTRODUCTION
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Vegetable are very important component in our diet which supply carbohydrates, proteins, vitamins and minerals matters. In our country the different vegetables are cultivated on about 51.03 lac hectares area about 710.00 lac tonnes of production is obtained. India ranks second after China in vegetables production sharing 12.58% of total world production (Panday 1997). Bihar has the credit to bag the highest area (8.87 lac hectares) followed by U.P (6.73 lac hectares), W Bengal (6.10 lac hectares) and Karnataka (4.17 lac hectares). As the production is concerned Bihar again stand first (162.00 lac tons) followed by West Bengal (129.77 lac tones), U.P (95.58 lac tones) and Orissa (77.45 lac tones).

Okra or lady’s finger commonly known as ‘bhindi’ in India is one of the most important fruit vegetables grown throughout the tropics and warmer parts of the temperate zone. It is widely cultivated as a summer season crop in North India and also as a winter crop in Gujarat, Andhra Pradesh, Karnataka and Tamilnadu. It fails to grow in the high hills and area which experience vary low temperatures. In fact okra is a hot weather, tropical, low land crop, susceptible to drought and low night temperature. Thus it grows well in areas where day temperature remains between 25 degree C to 40 degree C and that of night is over 22 degree C. Okra is commercially grown in the states of Gujrat, Maharastra, Andhra Pradesh,
Okra is especially valued for its tender and delicious fruits in the different parts of the country. However, to a limited extent it finds its use in canned, dehydrated or frozen forms. It has been reported to have an average nutritive value (ANV) of 3.21 which is higher than tomato, egg plant and most cucurbits except bitter gourd (Grubben, 1977). According to Berry et al. (1988) okra dry seeds contains 18-20% oil and 20-23% crude protein. Roasted and grounded seeds find their use as a coffee substitute (Martin, 1982, Singh 1989). At proper edible stage okra fruits are a good source of calcium, iron and vitamins. The okra fruits constitute about 89.6% moisture, 1.9% protein, 0.2% fibre, 6.4% carbohydrates and 0.7% minerals viz., magnesium 43.0 mg, potassium 103.0 mg, sodium 6.9 mg, copper 0.19 mg, sulphur 30.0 mg and calcium 41.0 mg per hundred grams of different dishes as fried, curries, stews and cooked into soup. Generally tender fruits of okra are used as cooking media but some time their slices are sun dried for off season use. It is also used for canning and frozen form. Mucilage present in stem and roots is used for cleaning sugarcane juice for brown suger preparation.

The powder of root of Okra is given with sugar for treatment of leucorrhoea with proved to be very effective remedy of this disease for women. It cures people suffering from renal infection. Fresh Fruits eating morning an empty stomach nourishes the Body and enriches the semen content. Okra acts as tonic for both men
and women and enables them to increase their vitality and vigour. It is as excellent source of iodine which helps in control of goiter (Yawalkar 1965). Further, okra has a vast potential as one of the foreign exchange earner crops and accounts for garlic etc. The importing countries are Gulf countries, Western Europe and the U.S.A. (Anon, 1988). It ranks first in vegetable production. Hence the encouragement of this crop is necessary through improved cultural practices and breeding high yielding varieties.

A successful breeding programmes on this crop on this crop species must emphasize on the following points because there are not sufficient varieties available:

1. To develop high yielding varieties capable of giving more marketable yield of dark green, tender, thin, medium long, smooth, 4-5 ridged fruits.
2. To breed early maturing varieties with a prolonged harvest and to evolve varieties resistant to yellow vein mosaic virus and also to fungal diseases like Fusarium wilts, Cercospora leaf spot, powdery mildew, Alternaria leaf spot, fruit rot anthracnose etc.

3. To combine resistance to yellow vein mosaic virus with resistance to fruit and shoot borer, white fly, jassids, miters and root knot nematodes and to develop multiple disease and pest resistance varieties.

4. To combine resistance mist suitable ideotype, short plants with more number of nodes with short intermodal length which would be more productive than a tall plant with long internodal length. Plants and fruits should be devoid of conspicuous hairs. Fruit should snap easily form the stalk for facilitating easy and economic harvest.

5. To breed varieties with optimum fruit setting ability.

6. To evolve varieties tolerant to abiotic stresses especially tolerance to low temperature excessive rains, saline and
alkaline soils, fungicide, insecticides and other environmental pollutants.

7. To develop varieties suitable for export markets and to evolve varieties suitable for processing industry.

Genetic variability is important in plant breeding for the improvement of crop plants. Greater the variability in the material more is the genetic potential and greater are the chances of selection a desired type estimate of heritability serve as a useful guide to the breeder. The breeder is a able to appreciate the proportions of variations attributed to genotypic variance (broad sense) or additive variance (narrow sense) that is heritable proportions of variations in first case and fixable portion of genetic variation in second. The selection for improving the character controlled by additive component would be fairly effective. Genetic advance helps in the improvement of the mean genotypic value for the selected families over the base population. When dealing with segregating population, heritability in narrow sense is more appropriate for estimating genetic advance.

Character association reveals the type, nature and magnitude of correlations between yield and yield component and among
themselves. Correlations studies provide better understanding of yield component which help the plant breeder during selection (Robinson et al., 1951; Johnson et al., 1955).

Mass selection has been used to improve seed yield in several crops through indirect selection for highly suitable characters which are directly and indirectly influence the yield and it also provides the basis for selection of superior genotypes from the divers breeding population.

In order to determine the stability of the variety, so many methods have been suggested giving various components (Plaisted and Peterson, 1959; Allard, 1961; Griffing and Langridge, 1963). Regression analysis suggest by Yate & cockerham (1963) regression analysis suggest by Yeat & cockerham (1938) lateral and finally suggest by Eberhart and Russell (1966) is used to estimate the stability.

In our country the production and productivity is very low breeding. Besides using improved agro technique, breeding for high and suitable plants types, which many be highly responsive to inputs can help crops the yield barriers is most urgently needed. In India developments of high yielding varieties is most urgently needed in India developments of high yielding varieties in okra was started during fifty decade by plants introduction department of IARL and as the result some high yielding varieties have been obtained. Still there is great possibility of improvement in this crops species the different estimates of genetic parameter serve as the
useful guide to breeder to obtain the success in breeding programme.

Keeping the above viewpoint the present investigation “Stability and gentle of fruit and related traits in Okra (Abelmoschus (L) Moench)” was designed to derive the information’s on the following objectives:

(1) To study the variability, heritability and genetic advance for different traits.
(2) To study the correlation among fruit yield and related traits and path coefficients.
(3) To analyse the stability parameter over environments.

(4) To find out the yield performance of different genotypes/varieties of okra in different environments.
(5) To identify the high yielding varieties suitable for different environments.

(6) To identify the most stable high yielding varieties genotypes of okra.