CHAPTER - I

INTRODUCTION
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Barley occupies fourth position in the world area under cereals and third in total cereal production. In odd conditions it gives better results the any other cereal, India stands seventh in total area as well as in production with barley in the world. The acreage and production of barley in India fluctuate between 1.99 to 3.45 million hectares and 2.00 to 3.25 millions tonnes respectively. The contribution of Uttar Pradesh is about 40 million hectares with a production of 1.2 millions tonnes with the introduction of high yielding varieties of barley and expansion of irrigation facilities. The area under barley has shown declare trend of its cultivation has shifted to marginal lands.

Barley like wheat has a spike type of inflorescence, the barley spike has three spikelets per rachis node, and each spikelet has a single florat. The barley spike terminator in a spikelet thus it is determinate in growth two distinct types of spikes are recognised in barley; six rows type and two rows type.

Barley is the most widely distributed cereal crop because of its tolerance to adverse climatic conditions. It is grown in all crop area from north to the south pole. It is well adopted to regions where other winter season crops are produced. Yield under dryland conditions supress
those of wheat, oat & rye. Barley tolerates high temperature is above 90°F under dry condition but to less tolerate of heat under conditions of high humidity. Thus barley is poorly adopted to the hot humid subtropical region of the south eastern united states.

Barley grows well on a fairly wide range of soil. It is best suited to heavier soil that have a high moisture holding capacity and a natural to slightly basic (pH between 7.00 - 8.00). Barley is the most saline soil tolerant of the cereal crops. Compared with other cereals it is also moderately drought and frost tolerant.

Barley grows in temperature ranging from 38° - 100°F during the vegetative stage of growth. The optimum temperature is the 70°F and during folowering the optimum temperature is 80°F and for germination the temperature must be between 40°F - 85°F. Seed maturation is favoured by warms day weather.

Genetic improvement is one of the avenues through increases in food production can be achieved to match population explosion in a developing country like India. The need of the hour is to embark upon very exhaustive programm for maximum exploitation of the allele resources of our economic species, more so barley a crop of vast multitude of smells marginal farmers in minimum time
maximum exploitation of allele resource of a species involves synthesis of ideal genotypes possessing most useful allele of each gene, that has any bearing of value of genotype. Phenotypic value in Agricultural species depends on various trials, most of which are multifactorial and incompletely heritable. Acknowledge of genotypic variance of population under study is it a major factor in the formation of appropriate breeding strategy for its improvement either through classical or recurrent selection method.

Although the knowledge of the correlation plays a very important role in guiding selection but it become ambiguous, it number of variables are more. In such a situation it is essential to partition the correlation coefficient into components of direct and indirect effects in order to provide the relative importance of the causal factors. Under such situation path coefficient analysis developed by Wright (1921) is the only readily available tool in the hands of breeders which measures the actual contribution of such character.

Keeping in view, the above consideration the present investigation. A study of genetics of yield components in barley (Hordeum vulgare) was therefore undertaken to make an intensive study on the following aspects.
1. To estimate the Genotypic and phenotypic variabilities
2. To determine the nature and magnitude of genotypic
   and phenotypic correlation coefficients between yield
   and its contributing characters and among the charac-
   ters themselves.
3. To identify the characters which have direct and indirect
   effect on grain yield with the help of path analysis.