Wheat is the second most important staple food next to rice, consumed by nearly 35% of the world population and providing 20% of the total food calories. Wheat occupies about 32% of the total acreage under cereals in the world. The main wheat growing countries include China, India, USA, Russia, France, Canada, Germany, Turkey, Australia and Ukraine. In India, wheat is mainly grown in the states of Uttar Pradesh, Madhya Pradesh, Punjab, Rajasthan, Haryana, Bihar, Maharashtra, Karnataka and Gujarat. India accounts an area, production and a productivity of 30.37 million ha., 90.78 million metric tonnes and 2989 kg/ha. respectively (Anon., 2015). In Gujarat, wheat is grown in about 11.46 lakh ha. with total production of 28.32 lakh metric tonnes and a productivity of 2471 kg/ha (Anon., 2015). Globally, probable demand for wheat by the year 2020 is forecast at around 950 million tonnes per year. This target will be achieved only, if global wheat production is increased by 2.5% per annum.

Heat stress at later growth stages is a problem in 40% of wheat areas in the temperate environments (Singh et al., 2005). A brief period of exposure to high ambient temperature (>35 °C) can drastically reduce grain yield in wheat because of induction of early senescence and acceleration of grain filling activities in wheat due to shortening of grain filling duration and constriction of carbon assimilation (Singh et al., 2005). Grain weight is affected by high temperatures, especially above 34 °C, that reduces the duration of grain filling owing to the limited photosynthesis, and inhibit starch biosynthesis in the endosperm (Prakash, 2007)

The wheat belongs to the genus Triticum of the family Poaceae and its believed to be originated from South West Asia (Lupton, 1987). Three species of wheat viz. T. aestivum L. (bread wheat), T. durum Desf. (macaroni wheat) and T. dicoccum Schulb. (emmer wheat) are presently grown as commercial crop in India, covering 86, 12 and 2 per cent of the total area, respectively. The bread wheat, a hexaploid with chromosome number 2n=6x=42 is cultivated in all the wheat growing areas of the country, the macaroni or durum wheat (tetraploid, 2n=28) is mostly grown in the northern (Punjab) and southern states, while, the emmer wheat (tetraploid, 2n=28) is confined to the southern states (mainly Karnataka) and some parts of Gujarat.
Wheat is a unique gift of nature to the mankind as it can be moulded into innumerable products like chapatis, breads, cakes, biscuits, pasta and many hot and ready-to-eat breakfast foods. Wheat is consumed by nearly 35% of the world population and contributes 20% food calories. Wheat grain contains starch (60-68%), protein (6-21%), fat (1.5-2.0%), cellulose (2.0-2.5%), minerals (1.8%) and vitamins. The uniqueness of wheat in contrast to other cereals is that wheat contains gluten protein which enables leavened dough to rise by forming minute gas cells and this property enables bakers to produce light breads.

Availability of sufficient genetic variability is very important in a crop improvement programme. For successful breeding programme, amount of variability present in the experimental material is desirable characteristic.

All varieties do not maintain the same relationship under different temperatures with regards to yield, height, tillering, flowering etc. This indicates that some varieties would do better than others in yield and other agronomic characters when exposed to comparatively high temperatures. The proper screening of genotypes for temperature tolerance and their use in breeding programme will enable us to develop thermo-insensitive varieties which will boost up the wheat production especially in temperature prone areas of the country.

It is essential for a plant breeder to measure the variability with the help of parameters like phenotypic coefficient of variation, genotypic coefficient of variation, heritability and genetic advance. The wheat crop requires favorable winter for about 100-110 days for producing its potential yield. Therefore, the heat tolerant wheat variety is still one of the priority of agricultural research, because above the optimum temperature (22-24°C) wheat yield is drastically affected.

In wheat, plants can be injured at seedling emergence, reproduction development, stem elongation, heading and grain filling stages by high temperature. Even 1°C increment in temperature reduce 8 to 10 % grain yield. Wheat is especially sensitive to temperature exceeds 32°C for any significant period. This occurs at the grain filling stage in wheat resulting in the development of shriveled grain which reduces yield and decreases quality. Many studies have shown that genetic variability for heat tolerance exists in germplasm lines and varieties.
Introduction

Yield being a complex character is a function of several component characters and their interaction with environment. Probing of structure of yield involves assessment of mutual relationship among various characters contributing to the yield. In this regards, genotypic and phenotypic correlation reveals the degree of association between different characters and thus, aid in selection to improve the yield and yield attributing characters simultaneously.

Different components of yield very often exhibit varying degree of associations with grain yield as well as among themselves. In order to accumulate optimum combination of yield contributing characters in a single genotype, it is essential to know the inter-relationships among the component traits. Further, the grain yield is influenced by its various components directly and/or indirectly via other traits, which create a complex situation before a breeder for making effective selection. Therefore, path coefficient analysis could provide a more realistic picture of the interrelationship, as it partitions the correlation coefficient in direct and indirect effects of the variables. However, they do not provide the exact picture of direct and indirect causes of such association, which can be cleared through path coefficient analysis (Dewey and Lu, 1959).

Keeping all the facts in view, the present study was planned with the following objectives.

1. To screen out high temperature tolerant wheat genotypes.
2. To find out genetic variability for high temperature tolerance.
3. To find out the association between grain yield and other yield contributing characters.
4. To determine the direct and indirect effects of different characters on grain yield per plant using path coefficient analysis.