CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

During the last few decades the use and manufacture of knitted structures have increased considerably. This expansion has resulted in the creation of new markets as well as the competition of knitted structures with woven and other textile structures. Another interesting development in the knitting sector is the increasing popularity of sophisticated circular knitting machines. This is mainly due to the speed and number of feeders and with facilities for introducing lycra, the elastomeric fibres. These developments in circular knitting have opened up exciting possibilities for the knitwear designed.

In India, roughly about 1000 tons per month is manufactured in the garment sector and about 3 million pieces of garments are produced. The exports are indeed encouraging and the volume growth is expected to be multifold than the present level when the world wide market will be quota free, effective from January 2005.

The product development plays a key role in sustaining the market at reasonable revenue. The need to produce an acceptable level of quality product at competitive cost is not only the responsibility of garment manufacturers, but the researcher should also contribute to new products. The product knowledge of a researcher is to be exploited by the manufacturing industry in order to develop a new well balanced product in terms of commercial and technical value.
Indian garment industry mostly operates in a miniscule manner, has little or no room for structured research and developmental activities. This results in high cost, low quality and highly fragmented developmental activities. This leads to more and more unpleasantness and the international buyers are reluctant to visit the knitting units.

The product cost also varies from one manufacturer to the other and in order to have a long term solution many companies emerging in the value chain have started to view the developmental activities of new products which would be of internationally acceptable quality and at competitive price.

Another point is that, although a great deal of developments have taken place in the knitting sector, rejects due to defects such as spirality continue to remain unabated. Silk is a natural fibre which has a good lustre. Many varieties of silk have been exploited commercially of which the silk from mulberry silk worm (Bombyx Mori), Tasar (Antherea Spp.), Eri (Samia Cynthia ricini) and Muga (Antheraea assama) have gained the textile importance for the production of fabrics with elegance and pleasant feel in association with outstanding beauty and fineness.

Of the above varieties, mulberry silk is produced throughout the world and contributes to about 90% of the total silk production. India is the second largest producer of raw silk with an annual input of 14,000 metric tonnes (1998-99) which accounted for 17% of the world mulberry raw silk production. Karnataka, with an annual production of 8,121 tonnes, contributes about 67% to the raw silk production in India.

While India is the second largest producer of silk next only to People's Republic of China, the gap between the two countries in terms of production and quality is large. India exports only about 15% of total production. In Indian export goods, fine categories, namely garments, dress
materials, sarees, carpets and scarves can be identified. Of these exports, ready made garments have showed steady growth.

Keeping future of the country's exports in mind, i.e., after 31 December, 2004, wherever a more transparent, quota free trade in textile and clothing under WTO rules will begin and also under the liberalised scenario, the motto of the industry should be produce for exports, instead of export what we produce".

As the imports increase, the need for producing new products arises. It has been pointed out that Indian exports in future should consist of novel silk fabrics and knitted fabrics produced from silk will be an exciting area.

It has been demonstrated (Ramasamy 1999) that the yarn characteristics of rotor spun cotton yarn can be improved by introducing roving or sliver along with the sliver which is fed to rotor; these yarns have not been exploited in knitting so far.

This thesis addresses the spirality of plain knitted from cotton yarns which differ in twist produced by ring and rotor spinning techniques. The effects of using roving introduced rotor spun cotton yarns vis-a-vis regular rotor on the spirality and handle have been investigated. The effect of detwisting the yarn to the extent of 16% on spirality has been examined. The effect of different knitted structures on the handle of weft-knitted fabrics has been investigated. Finally, the effects of using different types of silk and also silk cotton and silk viscose blended yarns on the dimensional properties and handle of weft knitted fabrics are discussed.