I. INTRODUCTION

The cultivation of edible mushrooms in India dates back to 1886 when Newton could cultivate some mushrooms and exhibited them at the annual show of the Horticultural Society of India (Bahl, 1988). Afterwards, Prain (1908) made a comprehensive survey of edible mushrooms of India. Later Bose (1921) reported the culturing of two agarics on a sterilized natural medium. Bose and Bose (1940) discussed in detail about the cultivation of edible mushrooms on horse manure. Padwick (1941) reported that cultivation of edible mushrooms in India was not a very successful experience and pointed out the difficulties of the same.

The cultivation of paddy straw mushroom (Volvariella) was first started in India by the Department of Agriculture, Madras at Coimbatore in 1939 and it continued till 1945 only. Su and Seth (1940) reported about the spawn production of Volvariella volvacea. Thomas et al. (1943) gave the detailed procedure about the cultivation of Volvariella diplasia at Madras. Subsequently the cultivation of paddy straw mushroom spread to the other parts of India.

As the cultivation of paddy straw mushroom spread to other parts of India and gradually it was accepted by the growers of the different States of India, the Department of Agriculture, Government of Himachal Pradesh was the first to
take up the responsibility of developing the mushroom industry in India jointly with the Indian Council of Agricultural Research, New Delhi and in 1961, a project entitled "Development of Mushroom Cultivation in Himachal Pradesh" was started at Dr. Y. S. Parmar University of Horticulture and Forestry, Solan. Since 1961 the cultivation technology of *Volvariella*, *Pleurotus* and *Agaricus* was standardized on the basis of the prevailing conditions of India as the imported technology did not suit the Indian conditions. By 1970, scientists were convinced that the technology could be extended to the farmers. Subsequently in 1977, Government of Himachal Pradesh in collaboration with the United Nation Development Programme (UNDP) established a Mushroom Centre at Solan to provide the technical knowhow and supply of critical inputs like spawn and other items to the entrepreneurs. Since then the mushroom cultivation spread to New Delhi, Jammu and Kashmir, the Nilgiris, Ooty, Coimbatore, Tamil Nadu, Punjab, Haryana, Chandigarh, Uttar Pradesh, Maharashtra, Madhya Pradesh, Gujrat, Orissa and Bihar.

Later the Indian Council of Agricultural Research sanctioned the National Centre for Mushroom Research and Training (NCMRT) at Solan in 1982 with the aims to conduct research and training on problems of mushroom production, preservation and utilization of agricultural wastes.

But since 1961, the emphasis for development of mushroom cultivation was shifted to *Agaricus* and *Pleurotus* from
Volvariella. As a result, the cultivation technology for the Agaricus and Pleurotus developed quickly and farmers were more interested to cultivate these two species than Volvariella as they get more return in the former than the latter. As a result the progress for the development of Volvariella cultivation suffered a lot. Even now the biological efficiency of this mushroom is minimum in India which is about 6-10% only.

But the 80% of the total population of India are rural people and most of them are under the poverty line i.e. members of lowest income group.

As the substratum of the paddy straw mushroom cultivation, the paddy straw are available in huge amount in the rural India, and there are hardly any costly ingredients or inputs are required for the cultivation of the mushrooms a proper technology for the cultivation of this mushroom under rural conditions, if available, will definitely help these rural people to come out of their poverty line and thereby uplift the national economy also.

But the main constraints of the cultivation of the Volvariella in rural India are the following:

(i) the instability in yield of mushroom; and
(ii) the low biological efficiency of the mushroom.

In order to solve these problems, an attempt has been made in the present investigation to study the following:
(a) to determine the strains of *Volvariella* suitable for cultivation in rural eastern India;
(b) to find out the best substratum;
(c) to develop the best type of spawn; and
(d) to develop and design model mushroom farm for the small and large scale mushroom industry.

The findings of these objectives are presented in subsequent chapters.