Materials and Methods

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Present work was carried out in the preview of Satara district. Satara district is one of the important districts within the western Maharashtra. It occupies position on the east side of western Gahts.

Satara district lies between 16° 15' and 18° 10' north latitude and 73° 45' and 75° 0' east longitude. It occupies an area of 4792 square miles.

Satara district is bounded on the north by the Nira River and the old empire states of Bhore and Phaltan and beyond them by Pune; and beyond the Warna River by Kolhapur, on the east by Solapur, on the west by the Sahyadris and beyond the Sahyadris by the Konkan districts of Kolaba and Ratnagiri.

For administrative purpose Satara is divided into eleven subdivisions. Of these seven in the east (Koregaon, Khatao, Vaduj, Patan, Phaltan, Karad, Dahiwadi) and four on the west (Mahabaleshwar, Medha, Wai and Khandala). The district Satara is the head of the valley of the Krishna River. Krishna river flows first to the south and then to the east, passing across the whole district from its north west to its south east corner. From the central plain of the Krishna, eight valleys branch to the hills. In the west the district is rugged and well watered. In the east it is flatter, but parched and barren.

The climate of Satara district is one of the best in western India. The hot season generally sets in about the beginning of March. In ordinary years the heat reaches its maximum in April. In the early part of May the temperature somewhat declines. During the first half of June a gradual change is felt as soft and refreshing of the monsoon. For about a fortnight in July the rain falls heavily. But during the rest of the monsoon there are two or three heavy falls of a week. The temperature is cool and equable.

In the rainy season the Mahadev hills which lie across the north of the district are scantily covered with green and during the hot months most of the county is parched and bare.

The Sahyadri ranges in the extreme west, the Mahadev range passing at right angles from the Sahyadris east across the north of the district, and the spurs of the Sahyadris chiefly stretching east and south-east and the south – running spurs of the Mahadev hills divide Satara into three belts, a western, a central, and an eastern.

Extreme west of the Koyna and Warna valleys includes the bulk of the Satara forest land and is throughout hilly and thickly wooded with evergreen trees. On the hill slopes the vegetation is dense; and in the valleys where the washings of the hills have gathered the tree growth is luxuriant forming high forest.

The Krishna and Koyna valleys are in the centre of the district. Krishna valley is the finest valley in the district. These broad valleys are the richest part of the district. Well watered black soil yields a succession of rich crops which keeps area green till February.

The Satara district contains two main systems of hills; the Sahyadri range and its offshoots, and the Mahadev range and its offshoots. Five spurs pass east and south east from the Sahyadris water parting between Venna on north west and Urmodi on south west becomes feeders of the Krishna.

The top of Mahabaleshwar the highest point in the district is about 1427.27 meters above the sea.

Within Satara limits there are fifty six notable hills and hill forts. The seven hills in the Satara sub-division are Ajinkyatara, Yevateshwar, Sajjangad, Petova, Ghatai, Pateshwar and Shulpani, varying from 909.09 meters to 1212.12 meters above sea level. The Satara hill about 1002.12 meters above the sea level and 363.63 meters above the plain.

Within Satara district there are two river systems the Bhima system in a small part of the north and north east and the Krishna system throughout the rest of the district. Length of the Krishna River is 551.7241 Km and drainage area is about 65.1724 Km.

The whole of Satara falls within the Deccan trap area. In other parts of the west Deccan the hills are layers of soft trap separated by flows of hard basalt and capped by laterite or iron clay.

The Satara forest lands belong to three groups, the evergreen Sahyadri forest land, the slopes of the spurs that run east from the Sahyadri and the bare or bush sprinkled hills to the east of the Krishna.

The soils of district belong to three main classes, red in the hills, black and light coloured in the plains. The Black or *Kali* soil is generally found in belts lying along the banks of the leading streams, the breadth of the belt varying with the size of the stream. The Krishna valley is found the broadest belt of this rich soil. The leading light coloured soils are the *mal ran* or *murum mal* a hard rocky soil commonest at the

bases of the more eastern hills. The same soil mixed with red at the foot of the Sahyadies form one variety of the soil called as *tambadi* or red. Near the heads of the streams which issue from the Sahyadries, the soil of the valleys is red or *tambadi* and yields most of the rice grown in the district. On the hill tops where water cannot be sufficiently confined for rice tillage the soil used for Kumri or wood-ash tillage. There is also the soil called *chunkhadi* which is strongly charged with lime. Lime is also found in black soils near river beds. The soil of the Sahyadris west of the Yerla is generally good, and the soil of the Krishna valley is especially rich. East of the Yerla land becomes poorer and the proportion of black soil becomes much smaller.

Collections were made from various localities (see the Map I) during the study period. The samples were collected before showers of monsoon, after the monsoon was over, and inbetween the two successive monsoons. Generally specimens were collected from stagnant water bodies such as pools, puddles, ditches, water reservoirs and various altitudes and different water bodies. Initially the samples were collected in sterile glass vials, polythene bags and other such containers. Specimens were brought to the laboratory for observation. Other localities of interest for the collection of blue green algal specimens were the water logged paddy fields in the hilly areas of the district. The specimens were observed fresh under the microscope and preserved in 4 % formaldehyde for further use. Identification was made using standard literature, such as the works of Desikachary (1959) and Santra (1993), Camera leucida sketches were drawn and measurements were taken. Wherever possible photomicrographs were taken.