DAVANGERE UNIVERSITY

S.J.M. Vidyapeetha (R.)

S.J.M. ARTS, SCIENCE & COMMERCE COLLEGE,

Chandravalli, Chitradurga - 577 501

DEPARTMENT OF BOTANY

A Project report on

SURVEY ON VEGETABLES CROPS IN CHITRADURGA TALUK – WITH REFERENCE TO SOLANACEAE FAMILY



For the partial fulfillment of the requirement for the Degree of

BACHELOR OF SCIENCE

Submitted by

THIPPESWAMY B.	U13SJ21S0013
YOGESH M.	U13SJ21S0022
ULFATH BANU K.	U13SJ21S0036
MEGHANA V.	U13SJ21S0038
KAVYA S.	U13SJ21S0056
PAVANA D.T.	U13SJ21S0065

Under the Guidance of

Ms. Heena Kouser

Lecturer

Department of Botany

2024

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Certificate

This is to certify that the project work entitled **"SURVEY ON VEGETABLES CROPS IN CHITRADURGA TALUK – WITH REFERENCE TO SOLANACEAE FAMILY"** *submitted by* **THIPPESWAMY B.** (U13SJ21S0013), **YOGESH M.** (U13SJ21S0022), **ULFATH BANU K.** (U13SJ21S0036),**MEGHANA V.** (U13SJ21S0038), **KAVYA S.** (U13SJ21S0056) and **PAVANA D.T.** (U13SJ21S0065) *Students of B.Sc., VI Semester Botany of this college has satisfactorily completed the project work assigned to us my guidance as prescribed by the* ***Davangere University*** *in partial fulfillment for the award of the degree of Bachelor of Science in Botany and submitted the report during the year 2023-24.*

Head of the Department
(Prof. C.N. Venkatesh)

Guidance
(Ms. Heena Kousar)

External Examiners

1. _____

2. _____

Date :

Place : Chitradurga

Declaration

We hereby declared that the project work on ***"SURVEY ON VEGETABLES CROPS IN CHITRADURGA TALUK – WITH REFERENCE TO SOLANACEAE FAMILY"*** *submitted to Davangere University for the award of Bachelor's Degree in Botany is the result of the bonafide work carried out by me in the Dept. of Botany, S.J.M. Arts ,Science & Commerce College, Chandravalli, Chitradurga under the guidance of* ***Ms. Heena Kousar,*** *Lecturer, Department of Botany, S.J.M. Arts ,Science & Commerce College, Chandravalli, Chitradurga, affiliated to Davangere University during the year 2023-24.*

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Date :

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Chitradurga

Acknowledgement

Our sincere gratitude to honorable Prof. Panchakshari, principal SJM college for rendering his helping hand in providing all facilities

We wish to express our deepest gratitude to our Head of the Department Prof. C.N. Venkatesh.

We wish to express our deepest gratitude to our Guide Ms.Heena Kousar.

Finally we would like to thanks our Parents and my dear Friends, who encouraged and gave inspiration and support in completing this project work. Directly or in indirectly helped us.

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INTRODUCTION

The plant family *Solanaceae*, has world-wide distribution and many of its species such as potato, tomato, capsicum and egg-plant are of considerable economic importance. Other representatives are of horticultural importance e.g.*Petunia*, while still others are important for their pharmacological properties and for their use within various cultures e.g. *Nicotiana, Datura, Solanum*.

SOLANACEAE

Class	:	Dicotyledonae
Sub-class	:	Gamopetalae
Series	:	Bicarpelatae
Order	:	polimoniales
Family	:	solanaceae(potato,tomato,brinjal ,chilly family)

1. Habit-herbs ,shrubs,small trees or climbers
2. Stem-modified underground stem tubers in potato
3. The plants have stellate hairs & contain bicollateral vascular bundles
4. Leaves-simple,alternate in the vegetative shoots & alternate or opposite in the flowering region.the leaves have unequal leave bases.

In solanaceae three types of branching is seen:

1. Datura type-the branching is dichasial and the leaf at any given node really belongs to the node just below it.but has become raised on its axillary shoot till the next node.
2. Atropa type-of the branches of each node one remains undeveloped.there are a pair of unequalleaves at each node.the smaller has the undeveloped branch and the larger leaf has been raised up from the node below.

3. Solanum type-here there is the ---------of the infloroscence axis to the stem so that the infloroscence becomes extraaxillary.

4. Infloroscence-solitary axillary & extraaxillary cyme

5. Flower-complete,bisexual,hypogynous,actinomorphic,pentamerous.

6. Calyx-5sepals gamosepalous,persistant,sometime acresent.i..e.it grows with the fruit.withania sownifera.where the fruit is covered by the bllon like calyx.

7. Corolla-5petals,amopetalous,rotate or wheel shaped or funnel shaped plicate and twisted in the bud.

8. Androecium-5stamens,epipetalous,alternating with the petals stamens apparently connate in a cone,anthers dithecus.opening b the apical pores.thre is a hypogynous disc.

9. Gynoecium-bicarpellary,syncarpous.the two carpels are obliquely placed.i.e.in a floral diagram the poss carpel is placed to he right and carpels to the left ovary. superior. bilocular with many ovules on a axil placenta.ovary may be tetra locular(ex-datura)style simple,stigma capitate & gren.

10. Fruit-it is a capsule or berry with persistant calyx

ECONOMIC IMPORTANCE

1. Atropa belladonna(dedly niht shade)-important medicinal plants.the roots yield atropin.it is a poisonous alkaloid.which is usedas a sedative & also for severe cold.used in ointment,plaster etc

2. Nicotiana tobaccum(tobacco)-the leaves are used after curing for fumigatory & masticatory.this contains a dangerous alkaloid nicotine which causes various types of cancer.it can be used as a insectiside.

3. Datura stromonium :the seeds are narcotic & poisonous.the drug stramonium used in asthama.

4. Solanum tuberosum (potato)underground modification.stem is edible
5. Solanum melogena (brinjal)
6. Capsicum fruitiscence (chilli)
7. Lycopercicum esculentum (tomato)
8. Physalis persiana (winter cherry)
9. Physalis maxima (edible fruit)
10. Physalis minima-edible fruits with acresent calyx
11. Cestrum nocturnum(night queen)
12. Withania sownifera(ashwaganda)-important medicinal plant

FAMILY SOLONACE INCLUDING IMPORTANT VEGETABLES PLANTS

A) SOLANUM LYCOPERSICUM (TOMATO)

B) CAPSICUM ANNUUM (CHILLI)

C) SOLANUM MELONGENA (EGG PLANT/BRINJAL)

INTRODUCTION OF TOMATO

Scientific Name : SOLANUM LYCOPERSICUM

Family : Solanaceae

Common name : TOMATO

Tomato is one of the most important – "protective foods" because of its special nutritive value and widespread production. It is the world's third largest vegetable crop after potato and sweet potato, but it tops the list of capped vegetables. Tomatoes are used for soup, salad, pickles, ketchup, puree, sauces etc. It was introduced in India by the Portuguese. It is now the most important and remunerative vegetable in India. The tomato plant has many interesting features such as fleshy fruit, a sympodial shoot, and compound leaves, the tomato belongs to the extremely large family Solanaceae.

Climate and Soil Requirement for Tomato Cultivation Climate:

Tomato is warm season crop. Grows well is those retain that are free from frost. It can't be grown successfully in places of higher rainfall. Temperature after tomato crops in following ways.

1. Optimum temperature for seed germination is 26 to 320C.
2. The optimum temperature required for its cultivation is 15 - 270C. At higher temperature its blossoms drops off. The damages great when high temp is combined with dry wind. It will result in the failure of fruit set due to drying of stigmatic liquid.
3. Colour development: In tomato red colour is due the pigment Lycopene. Lycopene is highest at 18 to 260C while production of this pigment drops off rapidly above 300C and 'nil' above 400C.

Soil Requirement:

Potato cultivation is done under a wide range of soil types ranging from sandy loam, silt loam, loams and clay soil. The soils should be friable and well drained. It should be grown at soil reaction between pH of 4.8 to 5.4 (acidic). This is mainly to control the scab disease of potato. Better tuber yields have been obtained from potatoes grown at soil reaction ranging from pH 5.0 to 7.0. It is also grown in the red sandy or fine textured black cotton soils in the plateau region of the country.

VARIATYS OF TOMATO

1) **Arkasaurabh** : aselection from a line V685 introduction from Canada;semiinde-terminate plant growth;fruitround,medium-large deep red nipple tipped;suitable for both fresh market and processing recommended for cultivation in Karnataka.

2) **Arkavikas:** aselection from avariable population of ameican tomato tip tap plant indeterminate;fruits medium large with uniform deep red colour,suitable for fresh market,tolerant to moisture stress;redommended for cultivation in Karnataka.

3) **Hisararun;** Extremely early and very high-yielding;plantdwarf,determinate concentrated flowering and fruits medium to large,round,deepred;recommended for cultivation in delhi, hariyana,uttarpredesh,Karnataka,Maharashtra and Orissa.

Preparing the Soil

Assuming you've figured out your staking system, the most important thing you'll need to consider while growing tomatoes in the ground is your local soil quality. Good dirt equals good tomatoes.

The first step is to determine exactly what type of soil you're dealing with. Talk to growers in your area, or check out the local agricultural extension office. A simple Google search on "soil quality in [wherever you live]" might yield a surprising amount of information. Note factors like the percolation rate, soil composition (e.g., clay, loam, silt or sand), and pH.

Seed Rate:

For optimum plant population, 150-200gm of seeds is needed for 1ha of land.

Fertilization

One to two days before transplanting, apply 1 tbsp (10g) per hill complete fertilizer 914-14-14). Mix thoroughly with the soil. The first side dressing can be done 30 days after transplanting by mixing two parts urea (46-0-0) and one part muriate of potash (0-0-60). Apply 1 tbsp (10 g) per hill of this mixture 6-8 cm away from the base of the seedlings in bands.

- Nutrient Amount
- Edible portion 95.0 %
- Moisture 94.1%
- Food energy 19.0 cal
- Protein 1.0 g
- Fat 0.2 g
- Total carbohydrates 4.1 g
- Fiber 0.8 g
- Ash 0.6 g
- Calcium 18.0 mg
- Phosphorous 18.0 mg
- Iron 0.8 mg
- Sodium 4.0 mg
- Potassium 266.0 mg
- Riboflavin 0.04 mg
- Niacin 0.60 mg
- Ascorbic Acid 29.00 mg

Production Management

Nutrient Management:

Tomato requires large quantities of readily available plant foods. Both macro and micro nutrients are required for economic yields of tomato. A yield of 16,000 kg of tomatoes removes 50 kg of nitrogen, 16kg of phosphate and 65 kg of potash from soil. For a good yield 25-30 T/ha of well rotten FYM should be incorporated in the soil 10-15 days prior to transplanting and mixed well in the soil. The additional nutrient of crops should be met from green manuring, use of bio-fertilizers, spray of cow horn manure/bio-dynamic liquid manure/cow urine/vermicompost, etc.

Water and Irrigation:

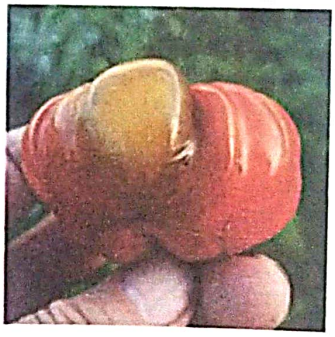
Tomatoes need very careful irrigation. It is observed that water table of an area plays an important role to meet the moisture need of the crop. Staked crops need water every five to seven days and ground crops very 10 days. A period of draught followed by a sudden heavy watering during fruiting period may cause cracking of the fruit. Generally open furrow method of irrigation is also practiced. This method is highly economical and produces quality tomatoes in open field. The drip system has been modified which provides irrigation with fertilizers.

DISEASE OF PLANT TOMATO

Tomato Plant Disease: Septoria Leaf Spot Septoria leaf spot is one of the most common tomato plant leaf diseases. You can first detect this fungus as it creates a small, circular spot with a grayish-white center and dark edges. Small black spots may show up in the center. Affected tomato plant leaves turn yellow, wither, and fall off.

Tomato Plant Disease: Anthracnose

Follow the same procedures used for septoria leaf spot against the tomato plant disease anthracnose. This fungus shows up as a small, circular, indented area on tomato fruits. Eventually, rings surround the original spot.



Tomato Plant Disease: Early Blight (Alternaria)

Another tomato plant disease fungus, *Alternaria*, also causes leaf spot or early blight. Lower leaves show brown or black spots with dark edges, almost like a target. Stem ends of fruits may be attacked, showing large, sunken black areas with concentric rings. This tomato plant disease fungus usually strikes after plants set fruit.

Disease Management:

Tomato is prone to a number of diseases. The causes may be fungus, bacteria, virus, root knot nematodes or abnormal environmental conditions. Some of the important diseases and their control measures are described below.

Damping off (Phytophthora or Pythium sp.):

Symptoms:

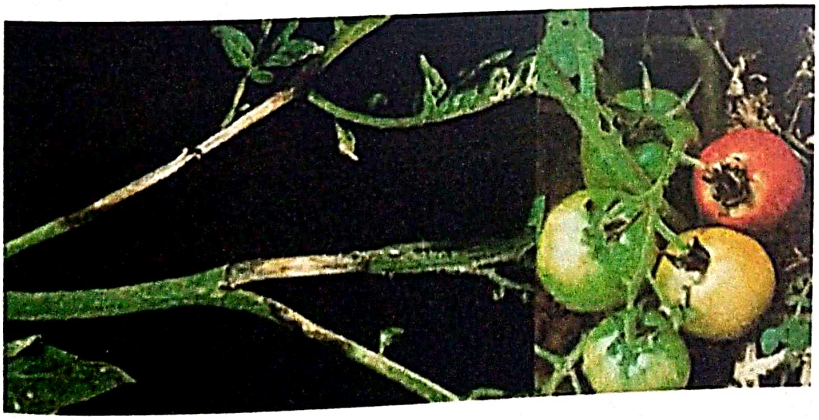
This disease occurs in the nursery bed. In pre-emergence damping off, the young seedlings are killed before they reach the surface of the soil. Since this happens under the soil surface, the disease is often not detected except for the resulting poor stand.

Control Measures:

- Seed coating with spores of Trichodermaharzianum and Penicilliumoxalicum and cells of Pseudomonas cepacia and Pseudomonas fluorescens have been found very effective bio-control methods of damping off.
- Crop rotation with any crop other than solanaceous crop.

Early blight (Alternariasolani):

Symptoms: The disease affects the foliage and cause brown spots on immature fruits. The fruits drop and the plant dries in serve cases.



Control Measures:

a) Crop rotation with non- solanaceous crop for 2-3 years.

b) Diseased plants should be uprooted and burnt just after detection in the field.

c) Spraying the crop with Bordeaux mixture (1%) at weekly interval before onset of disease.

Bacterial wilt (Pseudomonas solanacearum):

Symptoms:

The typical symptoms are wilting, stunting, yellowing of the foliage. When the infected stems are cut across and squeezed, grayish white bacterial ooze comes out of the vascular ring.

Control Measures:

a) Crop rotation should be followed.

b) As soon as the disease is noticed in the field, the diseased plant should be uprooted and burnt.

c) Growing resistant varieties.

d) Spray/drench with 1% Bordeaux mixture.

Insect-pests:

Tomato is attacked by a number of insect pests. Some important one with their possible control measures are listed below:

Damage and Symptoms of Attack:

The caterpillars cause the damage by feeding on tender leaves, shoots and fruits at night. It is extremely destructive as it cuts leaves; shoots and damages the fruits by boring and feeding internal portion.

INTRODUCTIONS OF CHILLI

INTRODUCTIONS OF BRINJAL

Introduction

Botanical Names	:	Capsicum annuum
Family	:	Solanaceae
Plant parts used	:	Fresh and dried fruits
Indian Names	:	Hindi- Lalmirch, Bengali- Lanka, Nepali- Khorsani, Marathi- Mirchi, Punjabi- Lalmirch, Gujrati- Marcha, Tamil- Milagay etc.

Chili is an important cash crop in India and is grown for its pungent fruits, which are used both green and ripe to impart pungency to the food. Green chillies are rich in Vitamin A and C, minerals and protein. Dry chillies are also rich in Vitamin A and D. As a condiment, it has become indispensable in every Indian home. It is also used medicinally, sauces, chutneys and pickles. Nadkarni (1927) has reported many medicinal value of chilli. In West Indies it is used to relieve the sinking at the epigastrium felt by drunkards. Chilli was known to Indians about 400 years ago, when this crop was first introduced into India by Portuguese, towards the end of the 15th century. Its cultivation became popular in the 17th century. It is now grown in all parts of India covering about 7,33,800 hectares. Chilli is valued for its diverse commercial uses. The largest producer of chillies in the world is India accounting for 11 lakh tons of production annually followed by China with a production of around 4 lakh tons. Mexico and Pakistan produces 3 lakhs tonnes each of chili every year. India also leads in the context of maximum area covered under chilli cultivation. In Sikkim, cherry pepper also known as dale khorsani is the most favorite chili grown in almost every kitchen garden.

BRINJAL

Scientific Name : Solanummelongena

Family : Solanaceae

Centre of Origin : India

Introduction:

Brinjal is a native of India and one of the most popular vegetables grown throughout the country especially in North East Region. There are many wild relatives of brinjal and are being grown in their kitchen garden. The unripe fruits are used as a cooked vegetable alone or mixed with other vegetables. There is no reliable statistics available regarding the area under this crop in India. It is adapted to a wide range of climatic conditions from North to South and West to East. It is grown as summer crop in hilly regions. Brinjal is used in a variety of culinary preparations. Pickles and industrially processed food are also produced from brinjal.

Nutritive Value: The nutritive value varies with varieties. Brinjal has got Ayurvedic medicinal value and white brinjal is said to be good for diabetic patients. (Per 100gm of edible portion):

Moisture	92.7 gm	Iron	0.9mg
Protein	1.4 gm	Sodium	3.0 mg
Fat	0.3 gm	Potassium	200 mg
Minerals	0.3 gm	Copper	0.17 mg
Fibre	1.3 gm	Copper	0.17 mg
Calories	24	Sulphur	44 mg
Calcium	18 mg	Thiamine	0.04 mg

CONCLUSION AND DISCURSION

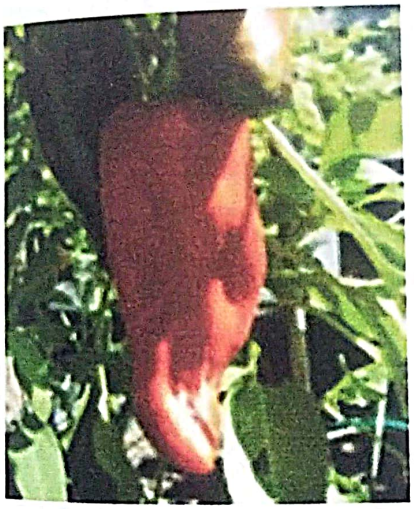
The family solancase has world –wild distribution and many of its species such as tomato chilli brinjal when we visited and interaction with the formers those who involved in crops like tomato chilli brinjal

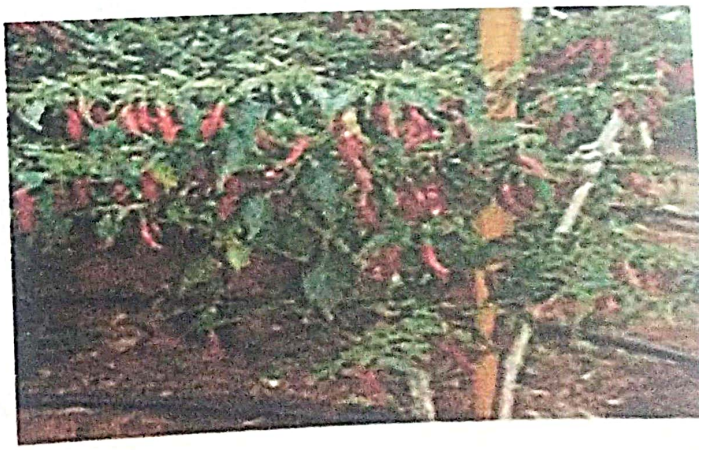
We are visited to PATEL KHASIM SAB KURUBARAHALLY,irfan sab, pandrally, gajrappa, sidapura road, narappa, kallihatty , mantesh benakanahally and karianna jhalikate chitradurga Tq , Dst we come to know that if is one of the important commercial crops tomato chilli brinjal

We are going to study the field report in all villages mentioned above in chitradurga formers followed by scientific method how to grow crops and how to control the desease

- They have borewell system and drip water
- Farmers grow multiple crop (tomato , chilly , brinjal , arecanut)
- Arecanut cultivaters also cultivate tomato chilly as a side crop
- Most of the farmer used red soil for cultivation
- These crops grow very well in summer season hence market rate is down due to low of cost farmer could not take care of plants
- Most of them cultivate crops in 2 to 3 acres
- These crops could n't grow very in winter season hence the market rate is increase
- In winter season we can cultivate these crops by using scientific method - green house
- Soil-black , red
- Water-every 3 days 1 time
- Fertilizer-cowdung and urea
- Flat- total 2-3 acres

PHOTOS OF CHILLI





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