

Research Methods in Horticulture

Hort-401 3 (2-1)



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Areas of Research In Horticulture

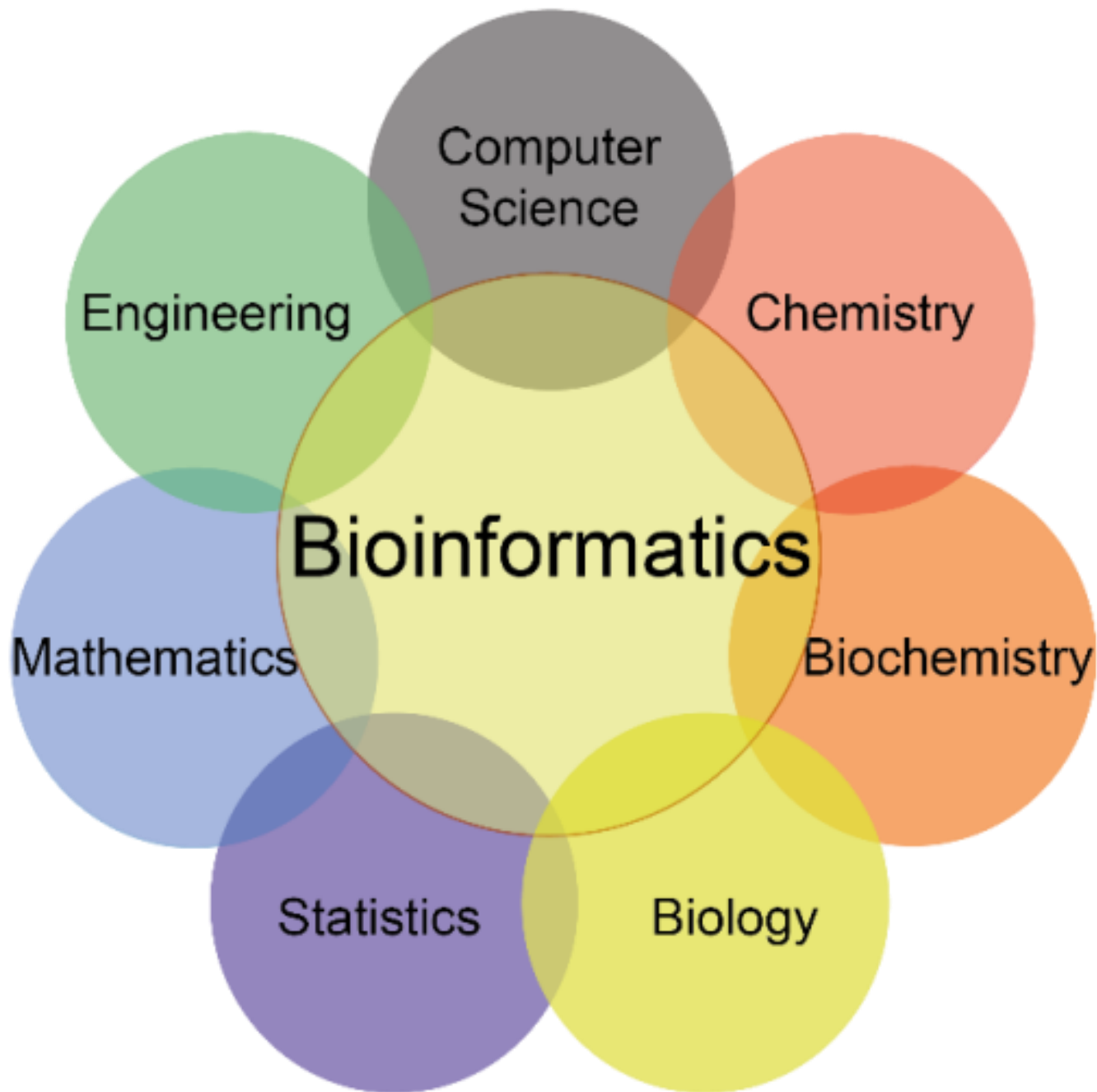
- Fruits science
- Vegetable science
- Floriculture and ornamental plants
- Medicinal and aromatic plants research

Areas of Research In Horticulture

- Biotic stress management/Pest management
- Abiotic stress management
- Harvest and postharvest handling
- Crop improvement
- Nutrient use efficiency
- Fruit quality improvement
- Vegetable grafting/Rootstocks related research work
- Use of growth regulators in Horticulture

Areas of Research In Horticulture

- Environmental controls/Protected Cultivation (Temperature, humidity, light, light sources, energy saving, photosynthesis etc.)
- Biotechnology/Applied Biotechnology
- Bioinformatics
- Epigenetics/miRNAs/smallRNA/microRNA (20-22 nucleotides)



Research Parameters

- **Growth**
- **Yield**
- **Morphological**
- **Physiological**
- **Bio-chemical**
- **Genetic Regulation**

Growth Parameters

- Plant height
- Number of leaves
- Leaf size/leaf area
- Number of nodes
- Internodal distance
- Biomass
- Fresh weight
- Dry weight
- Root length
- Fresh weight of root
- Fresh weight of shoot
- Root to shoot ratio

Yield Parameters

- Fruit weight
- Fruit size
- Number of fruits per plant (fruits)
- Weight per unit area (leafy vegetables)
- Harvestable yield per unit area or per plant
- Genetic regulation related parameters

Morphological Parameters

- Fruit shape
- Fruit length
- Fruit width/breadth
- Color
- Surface smoothness

Organoleptic Properties

- Taste
- Aroma
- Flavor
- Flesh Texture
- Sweetness
- Appearance

Physiological Parameters

- Gas exchange parameters
- Net photosynthetic rate
- Intercellular CO₂ Concentration
- Respiration rate
- Vapor pressure deficit (VPDL)
- Photochemical activity/Maximum photosynthetic efficiency (Fv/Fm)
- Chlorophyll content (Chlorophyll a, Chlorophyll b)
- Relative Chlorophyll Content/SPAD
- Relative water content
- Water use efficiency

Bio-chemical Parameters

- **Sugars**

Reducing sugars

Non-reducing sugars

Glucose, Mannose, Fructose, Sucrose etc.

- **Vitamins**

Vitamin C (ascorbic acid)

Vitamin E (tocopheroles)

Phenolics

- **Minerals**

N, P, K, Ca, Mg, S, Zn, Na, Fe, Cu, Mn, Mo, etc.

- **Antioxidants**

Enzymatic Antioxidants

Superoxide dismutase (SOD)

Catalase (CAT)

Glutathione peroxidases (GPX)

Ascorbate peroxidase (APX)

Glutathione reductase (GR)

Nonenzymatic Antioxidants

Ascorbic acid (vitamin C)

α -Tocopherols (Vitamin E)

Glutathione

Carotenoids

Phenolic compounds

- **Cell Damage Measurement**

Malondialdehyde (MDA) content

Electrolyte leakage/Relative membrane permeability

Genetic Regulation Related Parameters


- Gene expression (RTPCR; qRTPCR)
- Whole genome sequencing

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+ Overview

Full Name	<i>Citrullus lanatus</i> subsp. <i>vulgaris</i> cv. 97103
Genus	<i>Citrullus</i>
Species	<i>lanatus</i>
Subspecies	<i>vulgaris</i>
Cultivar	97103
Common Name	Watermelon (97103)

+ Feature Summary

Feature Type	Count
Chromosome	12
Gene	23,440
mRNA	23,440
Protein	23,440

The End