STRATEGIES FOR ENHANCEMENT IN FOOD PRODUCTION - L7

BOTANY

PANKHURI MA'AM

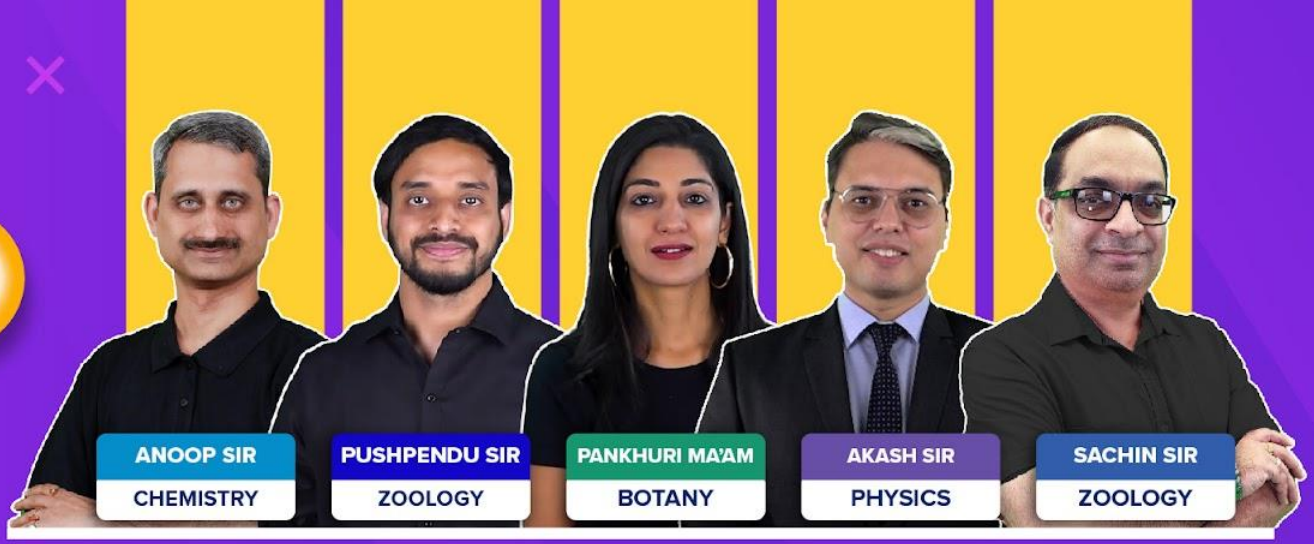
ANTHE

AAKASH NATIONAL TALENT HUNT EXAM

Your Gateway To Success

For Class VII to XII

Current Students & Passouts



Aakash + BYJU'S

MISSION MBBS

MON - SAT

4PM - 8PM

Aakash BYJU'S

NEET STUDENTS' SURVEY

LINK IN DESCRIPTION

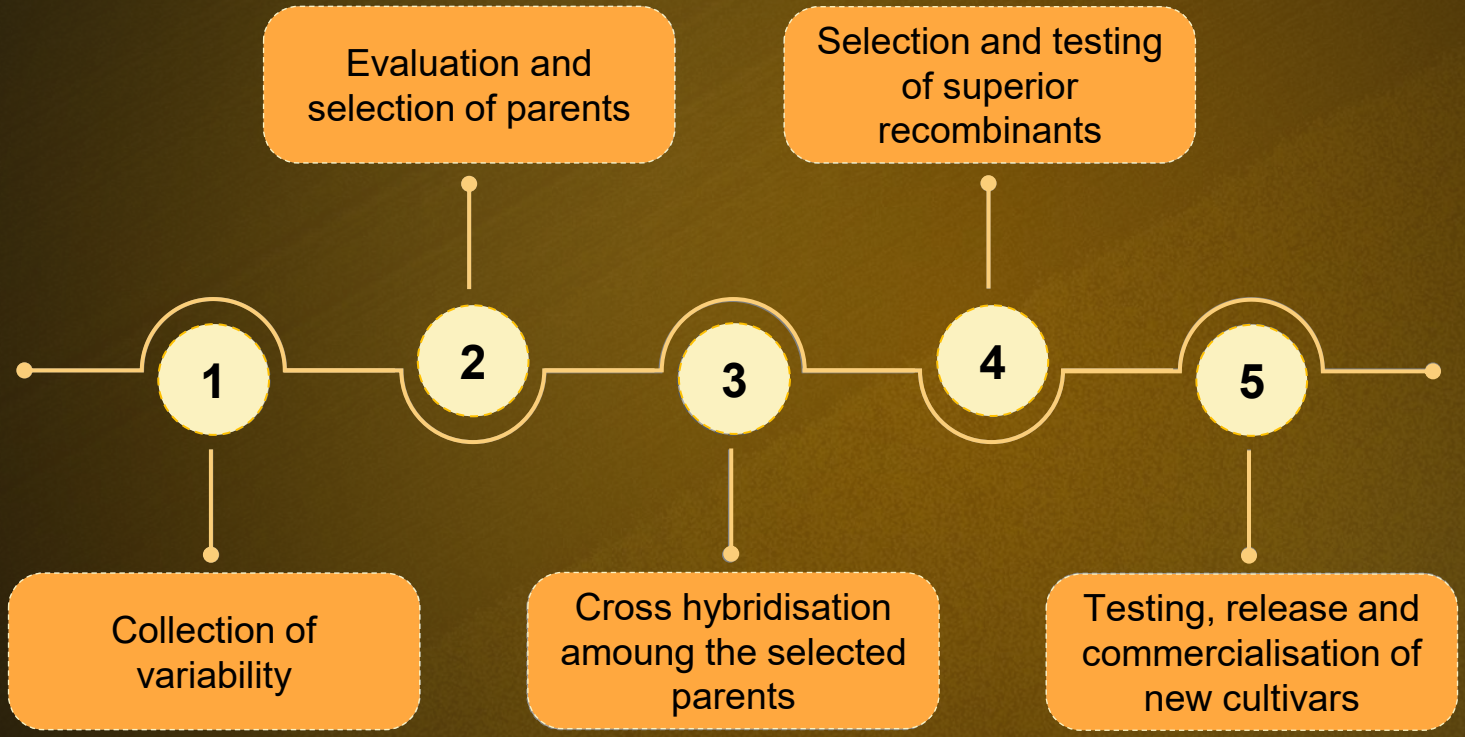
https://t.me/neetaakashdigital

Recall! Plant Breeding

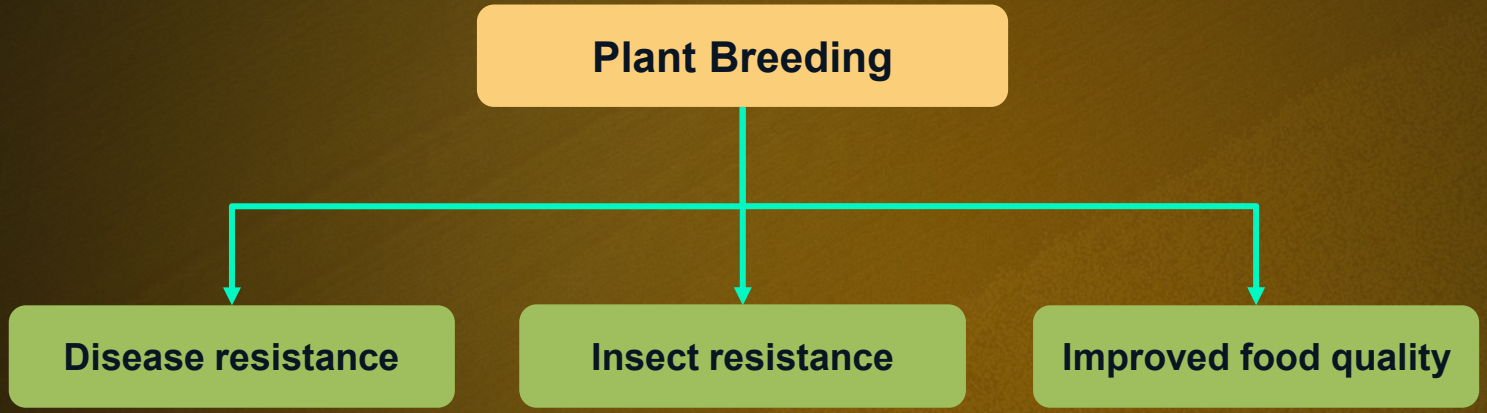
Plant Breeding

It is the purposeful manipulation of plant species to create desired plant types that are better suited for cultivation, give better yields and are disease resistant

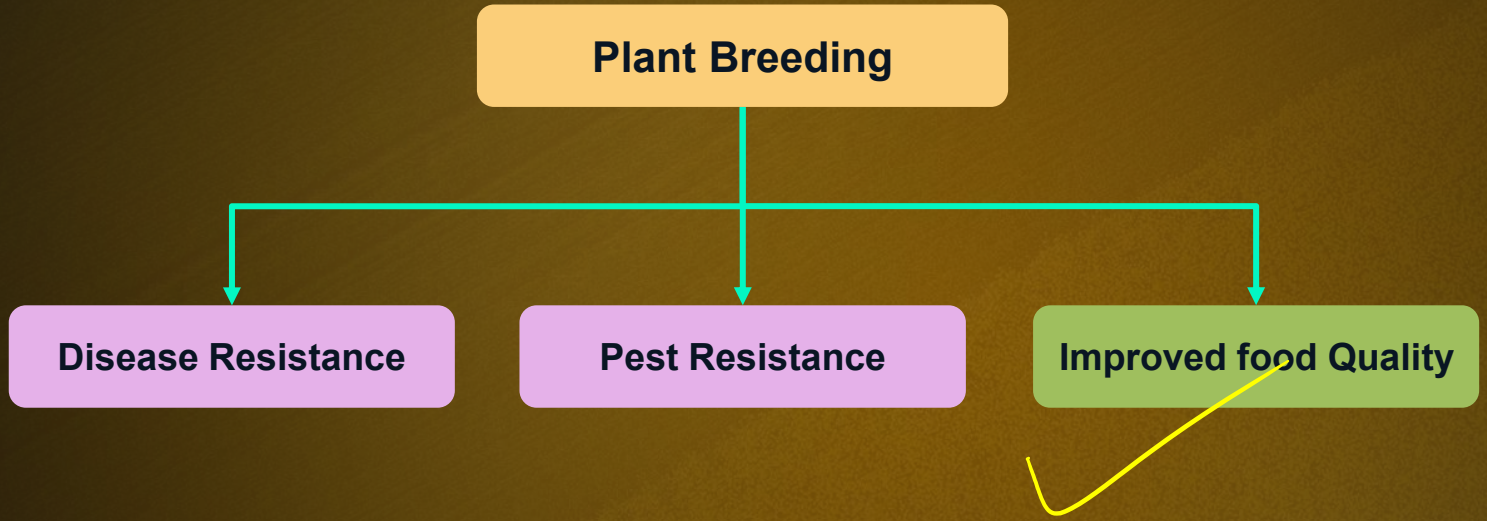
Recall! Breeding a New Genetic Variety



Applications of Plant Breeding

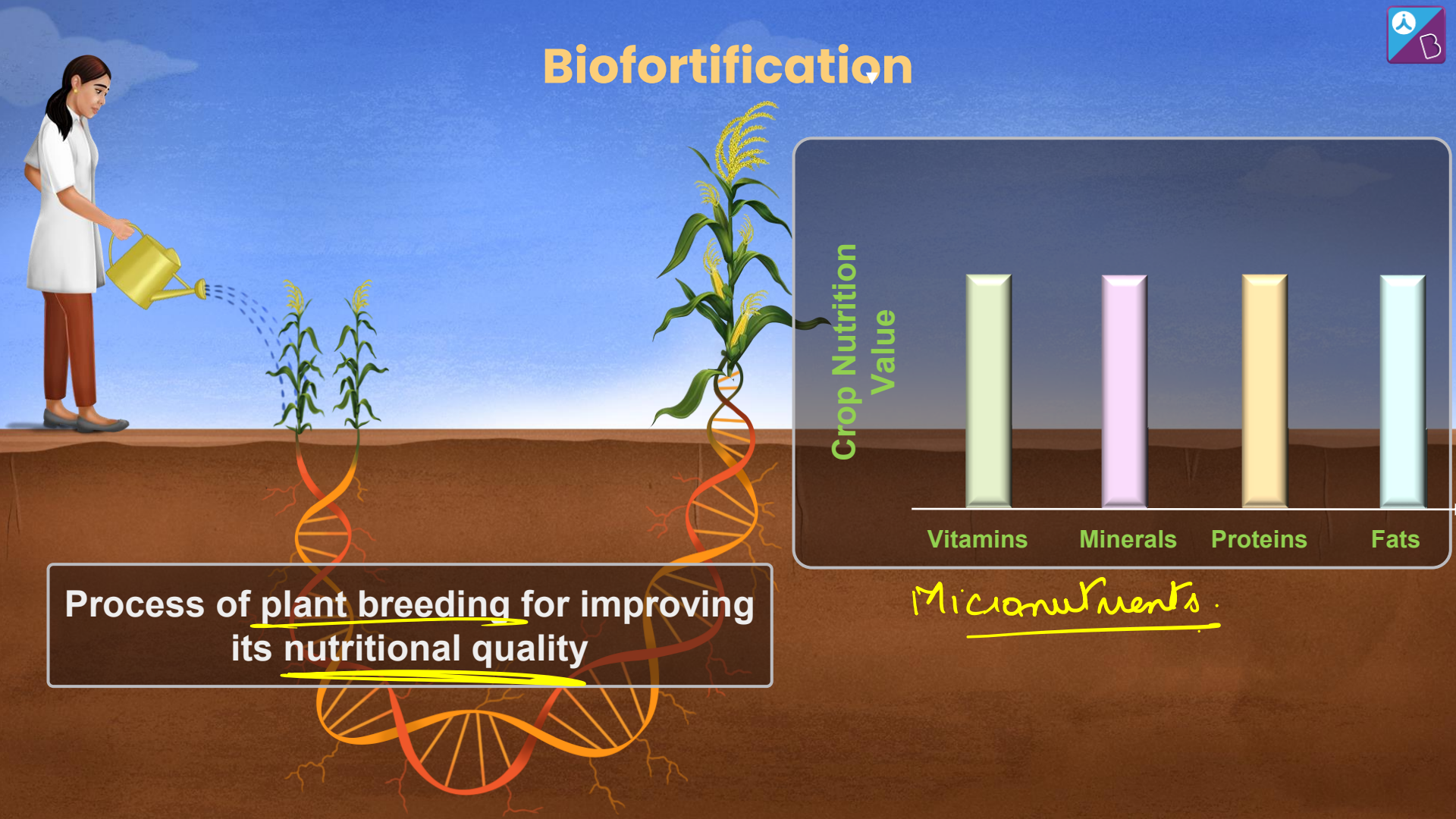


Applications of Plant Breeding




Biofortification

Biofortification



Process of plant breeding for improving its nutritional quality

Micronutrients.

Objectives of Biofortification

Biofortification

Objectives

- **Protein Content and Quality**

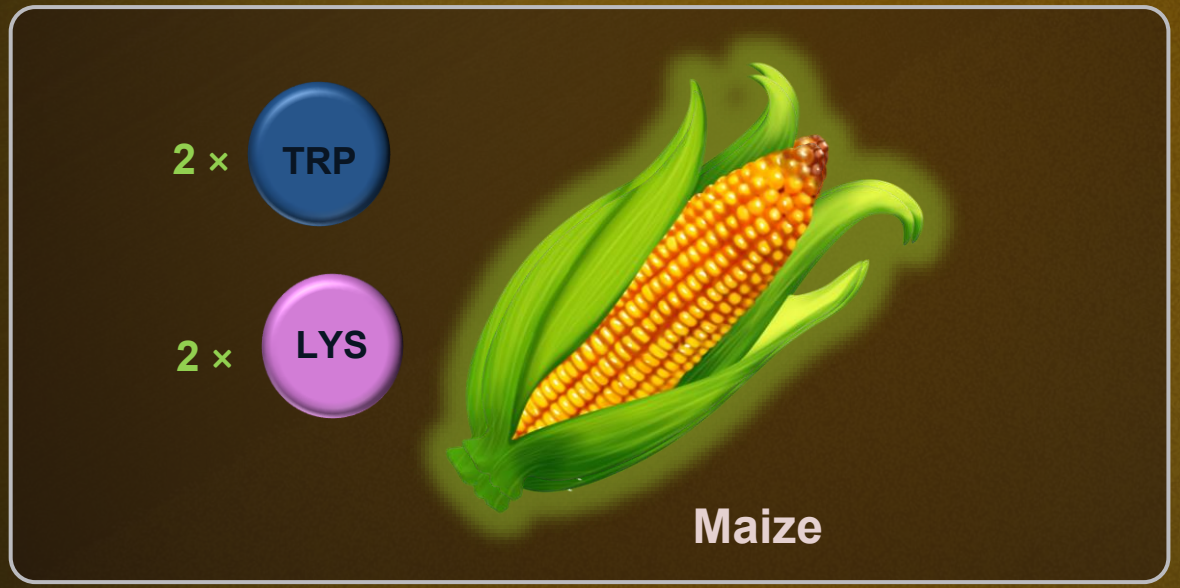
- Oil Content and Quality
- Vitamin C Content
- Micronutrient, Mineral Content

Improved Protein Content

P.Y.Q.

Maize hybrids with double the amount of essential amino acids- **lysine and tryptophan** →

Imp Q.

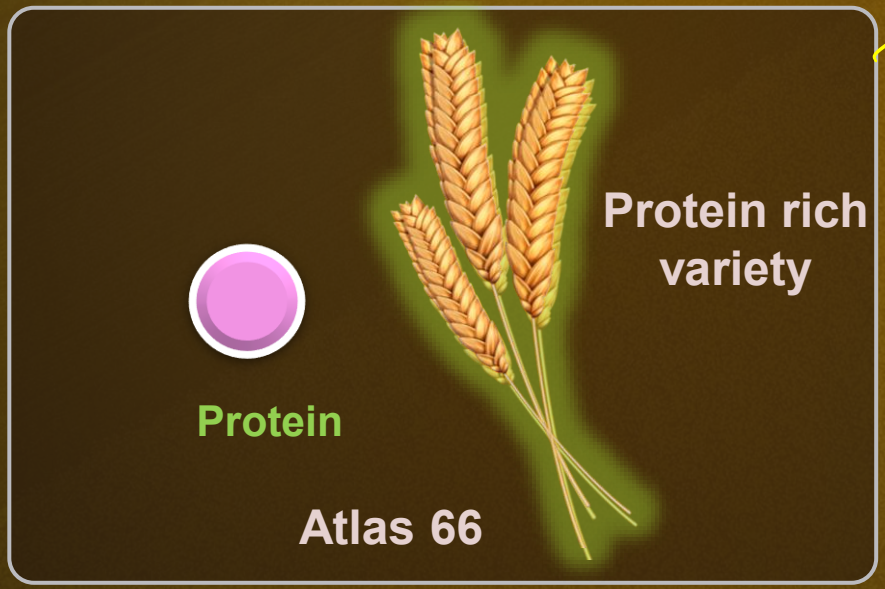


Improved Protein Content

Donor :

Wheat variety, **Atlas 66** used as donor to cultivate new **protein rich variety**

10 times



Improved Protein Content

Protein fortified **cassava** and ***Sorghum***

Cassava

Sorghum

Improved Protein Content

IARI developed protein rich beans

Broad beans

Hyacinth/Lablab beans

French beans

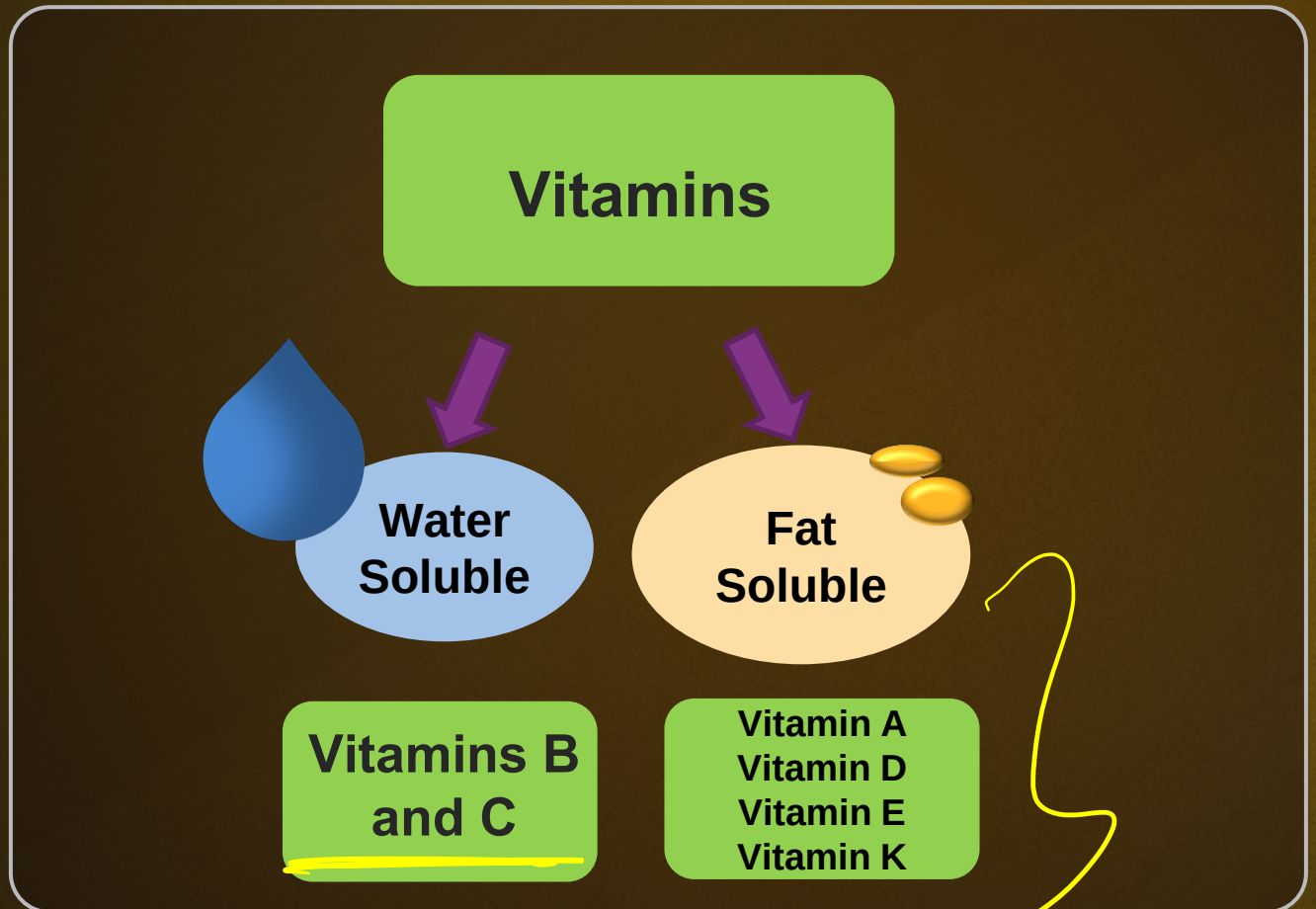
Garden peas

Biofortification

Objectives

- Protein Content and Quality
- **Oil Content and Quality** 
- Vitamin C Content
- Micronutrient, Mineral Content

Recall! Types of Vitamins



Improved Oil Content and Quality

Groundnut oil with increased vitamin A and D content

Biofortification

Objectives

- Protein Content and Quality
- Oil Content and Quality
- **Vitamin Content** 
- Micronutrient, Mineral Content

Improved Vitamin Content

Vitamin A enriched rice was developed **Golden rice**

Improved Vitamin Content

IARI developed vitamin A rich

Carrot

Pumpkin

Spinach

Improved Vitamin Content

IARI developed vitamin C rich

Bitter gourd

Tomato

Mustard

Bathua

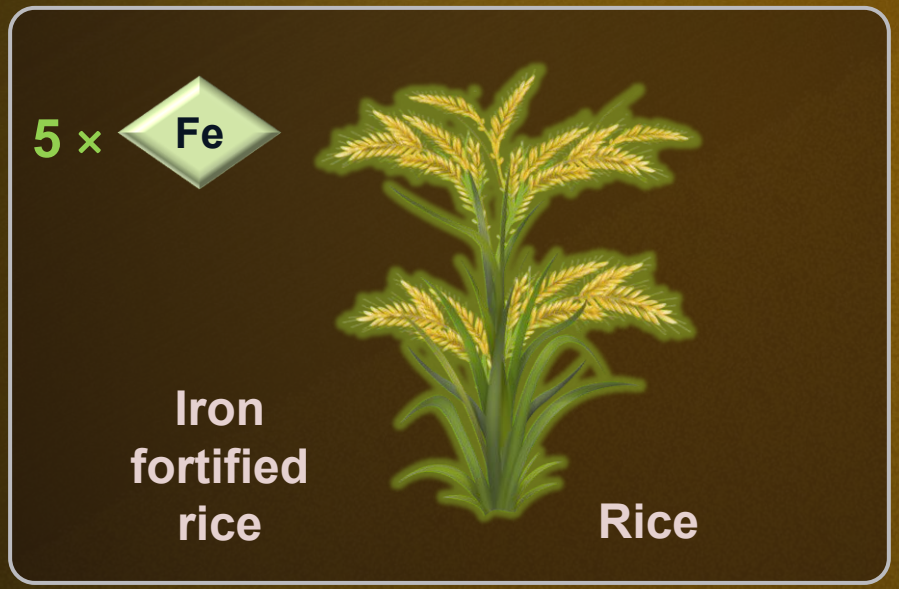
Biofortification

Objectives

- Protein Content and Quality
- Oil Content and Quality
- Vitamin C Content
- **Micronutrient, Mineral Content**

Improved Micronutrient and Mineral Content

Iron fortified rice was developed with over **5 times** the iron content.



Improved Micronutrient and Mineral Content

Iron and calcium enriched spinach and bathua were developed

Spinach

Bathua

Improved Micronutrient and Mineral Content

Zinc enriched crops

Wheat

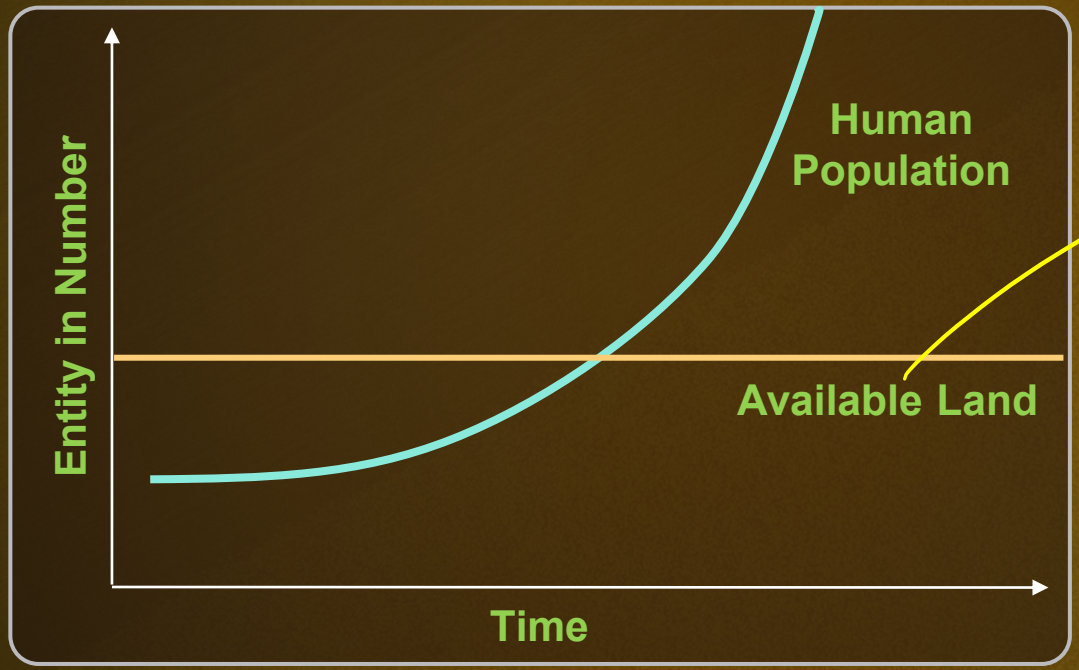
Maize

Rice

Beans

Population Trend

Population Trend



fertility ↓

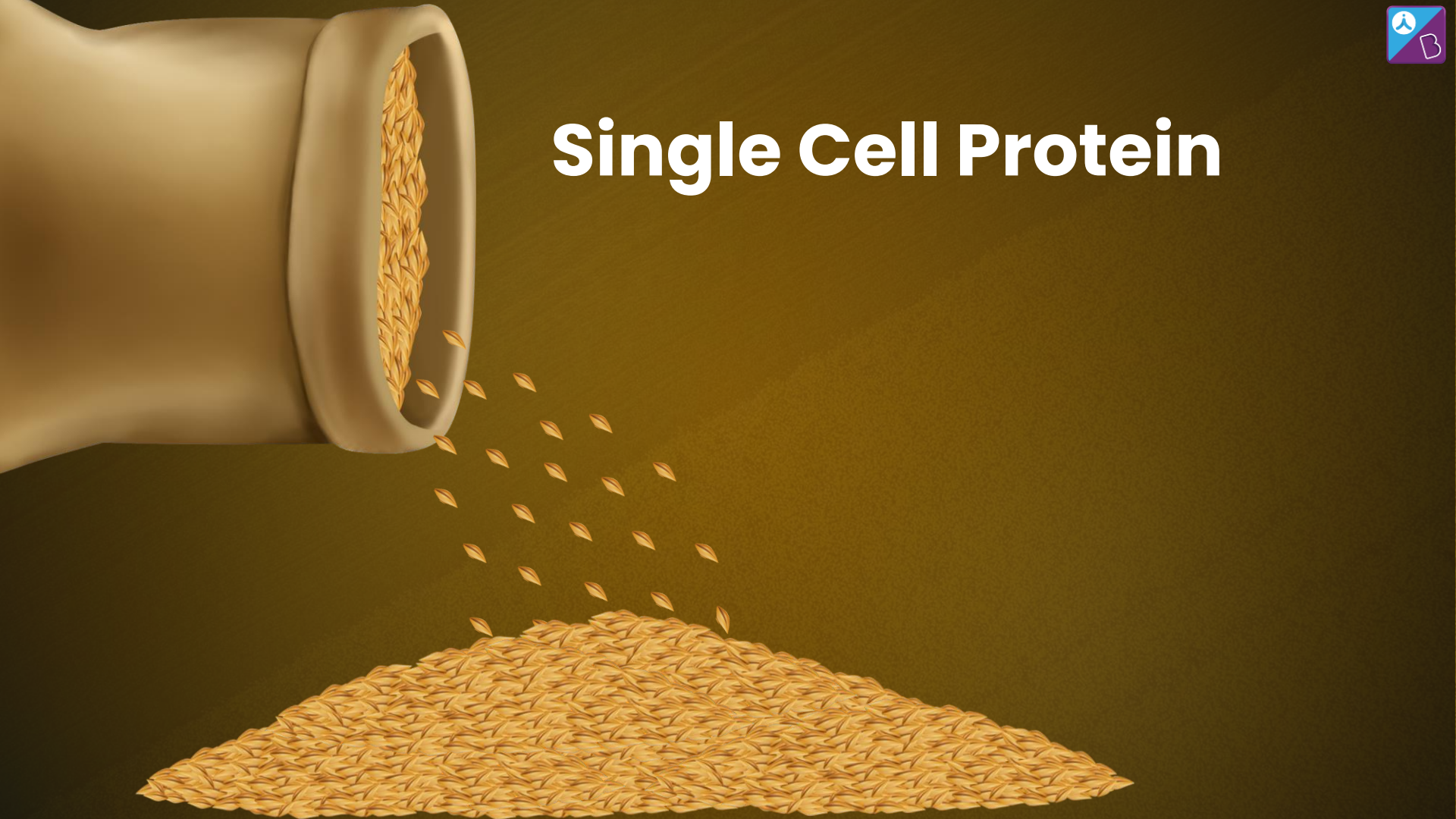
Did You Know ?

3-10 kg of grains to produce 1 kg of animal meat

3-10 kg grain

1 kg animal meat

Single Cell Protein

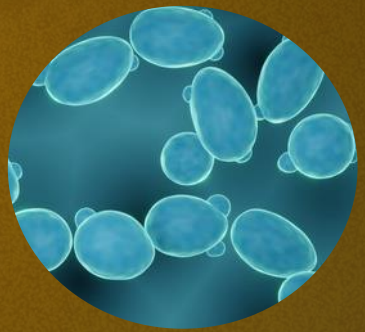


Single Cell Protein

Cells from microorganisms such as **bacteria, yeasts, filamentous algae** treated and used as **food**

Bacteria

Algae



Yeast

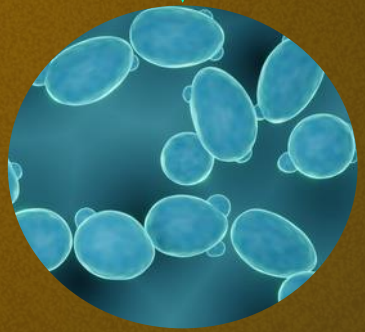
3:4

Microbes as food sources

Types of microbes

Algae

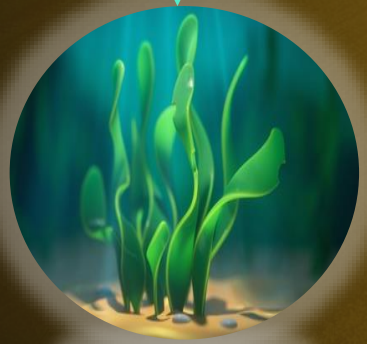
Bacteria



Fungi

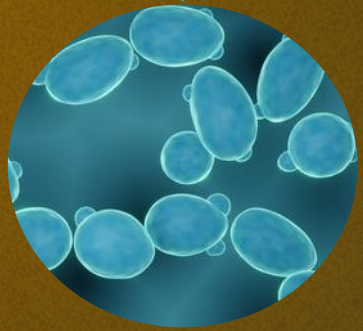
Microbes as food sources

Types of microbes



Algae

Bacteria

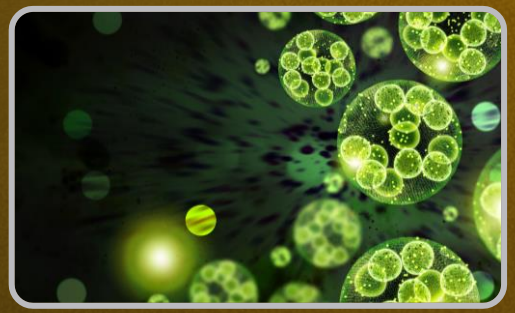


Fungi

Algae as food source!

Spirulina, Chlorella, Scenedesmus are the common algae used to produce **SCP**

Spirulina



Chlorella

Scenedesmus

Algae as food source!

Raw material required

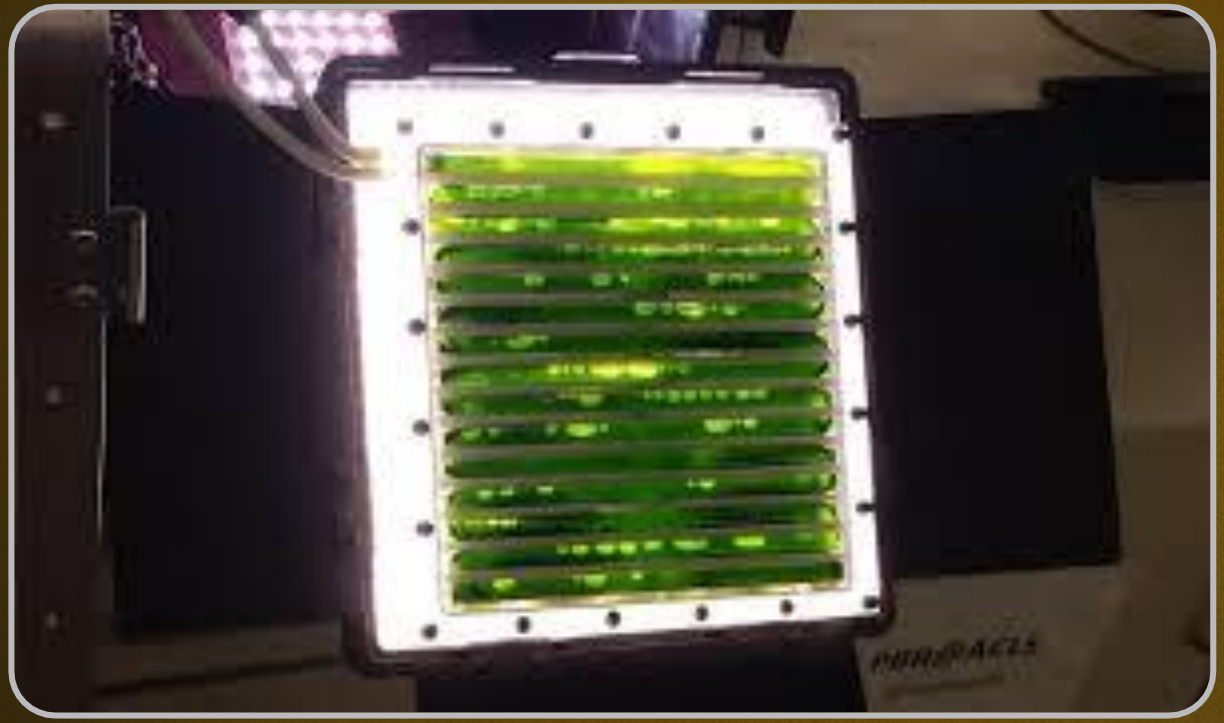
Waste water from potato processing plants

Straw

Animal manure

Sewage

Recall! Chlorella in space!

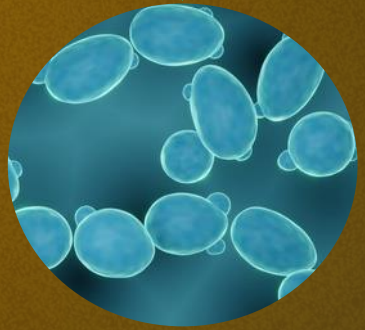


Microbes as food sources

Types of microbes

Algae

Bacteria



Fungi

Bacteria as food source!

Q.

250 kg → 200g protein

Methylophilus methylotropus is used to produce SCP

250 gm → 25 tonnes Protein

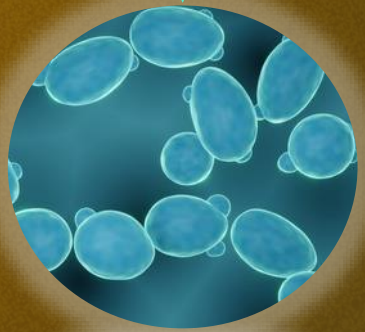
Methylophilus methylotropus

Microbes as food sources

Types of microbes

Algae

Bacteria

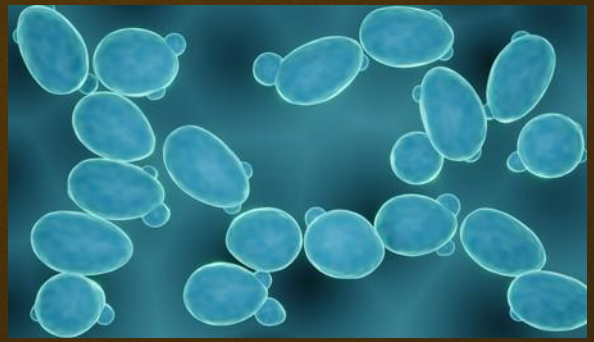


Fungi

Fungi as food source!

Candida **and** ***Saccharomyces*** **are the common fungi used to produce SCP**

Candida



Saccahromyces

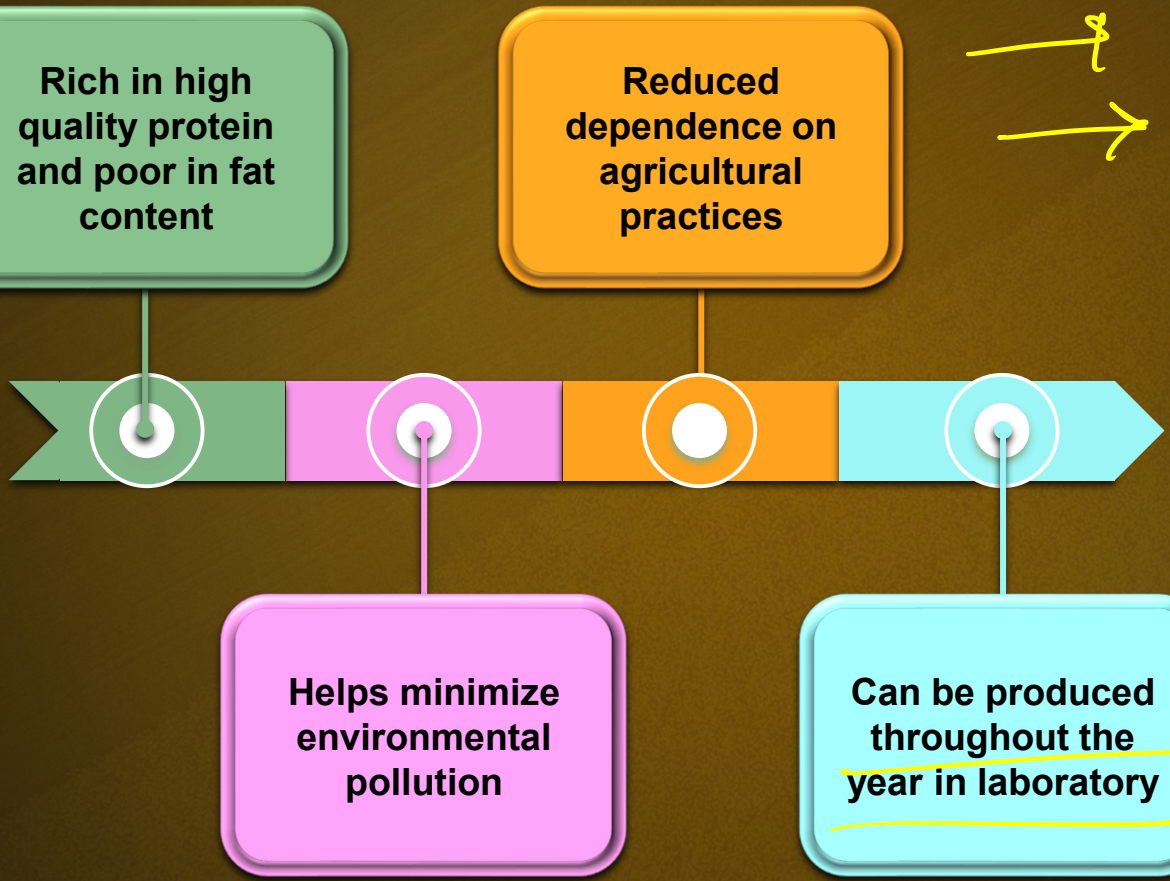
Did You Know ?

250 g of *M. methylotropus* produces 25 tonnes of protein

=

250 kg cow produces 200 g of protein

Advantages of SCP



Boards
Neet

Future of Nutrition

Imagine having these in your favourite flavours!

Keep Learning!