

Factors Affecting Farming

Farmers make decisions about what to grow, what animals to keep, the level and type of inputs and the methods they will use. Their decisions are based upon

- Social & Economic
- Environmental
- Farmers' attitudes
- Level of knowledge.

- When plants of the same kind are grown and cultivated at one place on a large scale, it is called a **crop**
- Activities
 - Preparing the soil
 - Sowing
 - Adding manure and fertilisers
 - Irrigation
 - Plant Protection
 - Harvesting
 - Storage

Classification of Crops

Classification based on

- Climate
- Growing season
- Use/Agronomic classification
 - Cereals
 - Pulses
 - Oil Seeds
 - Vegetables
 - Forage
 - Fiber
 - Root
 - Tuber
 - Spices & condiments
 - Green manure crop
 - Medicinal & aromatic crops
- Duration of crops
 - Seasonal
 - Annual
 - Biennial
 - Perennial

Classification based on

- Cultural method/water
 - Rain fed
 - Irrigated crops
- Economic importance
 - Cash crop
 - Foodcrop
- Photosynthesis
 - C3 - Rice, soybeans, wheat, cotton, potato
 - C4 - Sorghum, Maize etc
 - Cam plants – Pineapple, sisal
- Length of photoperiod
 - Short-day plants
 - Rice, Jowar, green gram, black gram etc
 - Long-day plants
 - Wheat, Barley
 - Day neutral plants
 - Cotton, sunflower
- According to Taxonomy

Some Important Terms

- Crop calendar
- Crop rotation
 - Temporal land use pattern
- Cropping pattern
 - Spatial land distribution amongst crops
 - Monocropping
 - Multiple Cropping
 - number of crops in a year
 - » double, triple or quadruple cropping
 - Intercropping
 - Row intercropping
 - Strip Intercropping
 - Mixed intercropping
 - Relay intercropping

Crop Calendar and Major Producing states of India														
Season	S Sowing time					H Harvesting time					Growth period	Major Producing States		
	Kharif					Rabi							Zaid	
Crops ↓	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	April	May		
Soybean	S	S			H	H								MP, MH, Raj
Cotton (Kapas)	S	S	S			H	H							Guj, MH, AP, MP, Kar
Turmeric	S	S	S					H	H	H	H			AP, TN, Or, WB, Kar, MH
Castorseed		S	S					H	H	H	H			Guj, AP, Raj
Guarseed [Cluster bean]		S	S			H	H							Rajasthan, Haryana, Punj.
Chilli (Kharif)			S					H	H					AP, Kar, Or, MH, WB, Raj
Chilli (summer)				H								S		AP, Kar, Or, MH, WB, Raj
Maize (Kharif) [Corn]	S	S	S	H										Kar, AP, MH, MP, UP
Potato (Kharif)	S	S			H	H								Karnataka, AP, TN
Potato (Rabi)				S	S	S		H	H	H				UP, WB, Punjab, Bihar, Orissa
Wheat					S	S	S			H	H	H		UP, MP, Punjab, Haryana
Maize (Rabi) [Corn]					S	S			H	H	H	H		Bihar, AP, TN, Kar
Rmseed					S	S				H	H			Raj, UP, Punj. Har, MP, WB, Guj
Chana [Gram/chickpea]					S	S				H	H			MP, UP, Raj
Barley					S	S				H	H			Rajasthan
Jeera [Cumin]					S	S				H	H			Gujarat, Rajasthan
Dhaniya [Coriander]					S	S	S			H	H	H		Rajasthan, MP, AP
Black Pepper				S	S			H	H	H	H			Kerala, Karnataka
Mentha	H	H							S	S		H		UP
Cardamom (Perennial Herb)					H	H	H	H	H					Kerala, Karnataka, TN
Potato (North Hills)		H	H	H	H				S	S	S			HP, Uttrakhand
Sugarcane (summer)						H	H	H	H	H	S	S		North India
Sugarcane (spring)						H	H	H	H	S	S			North India
Sugarcane (winter)				S	S		H	H	H	H				North India
Sugarcane (South India)		S				H	H	H	S	S	S			South India, Maharashtra

Some Important Terms.....

- Weed
- Pest
- Crop growth stages
- Crop nutrition
- Critical stages

Crops	Critical Stages
Rice	Initial tillering, flowering
Wheat	Most critical stage: Crown root initiation, tillering, jointing, booting, flowering, milk and dough stages
Wheat	Boot stage; dough stage
Pulses	Flowering and podding.
Peas	Pre bloom stage.
Berseem	After each cutting.
Gram	Pre flowering and flowering.
Pigeonpea	Flower initiation, pod filling.
Sorghum	Initial seedling, pre flowering, flowering, grain formation.
Barley	Boot stage, dough stage
Maize	Early vegetative, tasselling and silking stage.

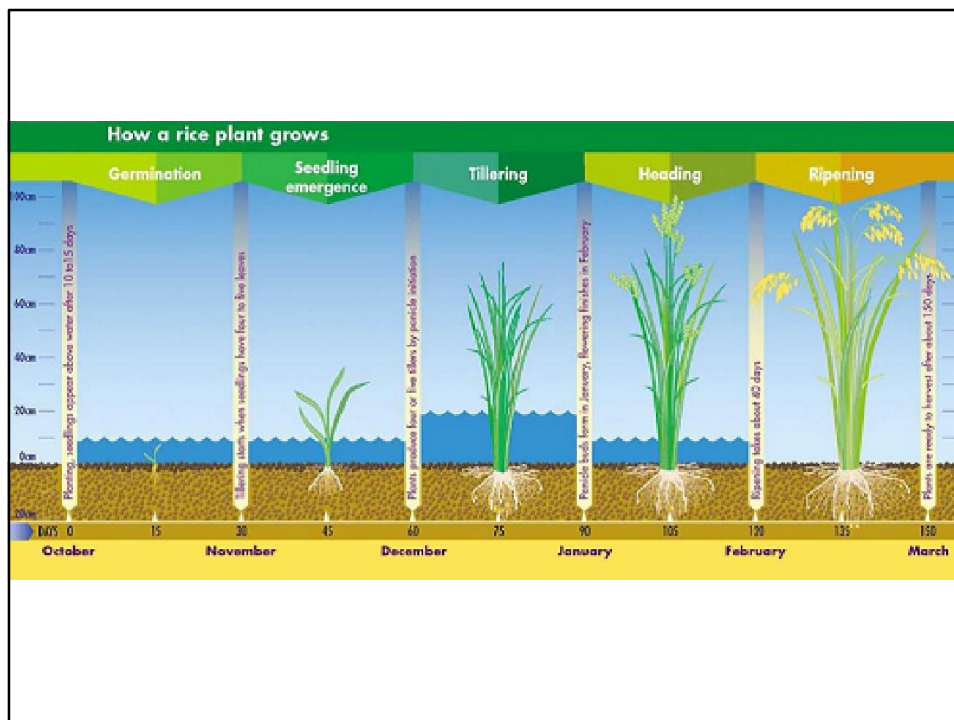
Stages of Crop

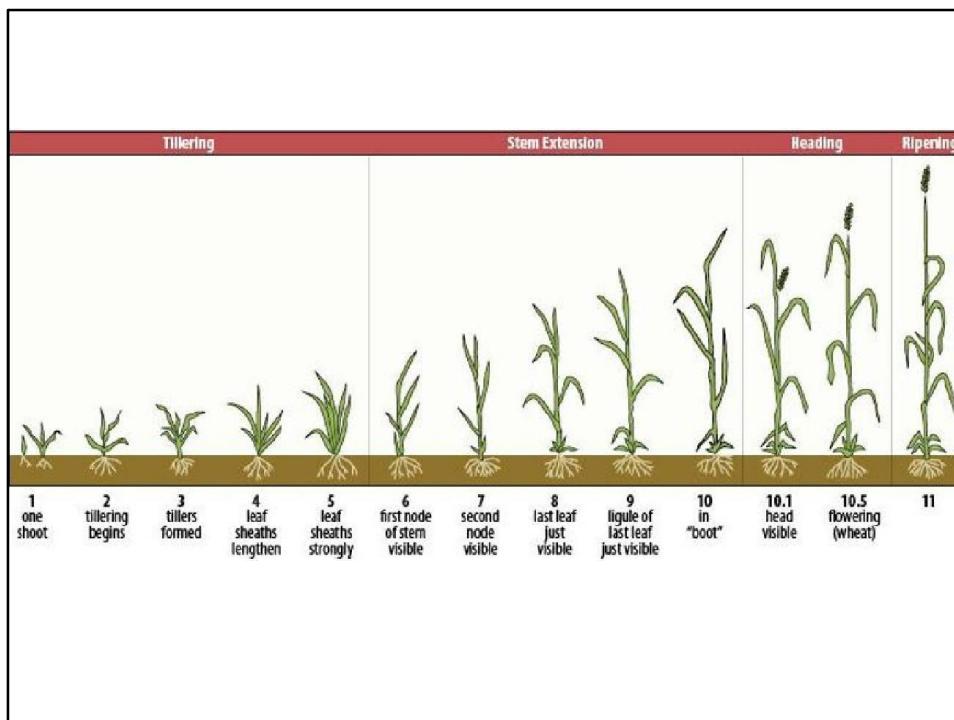
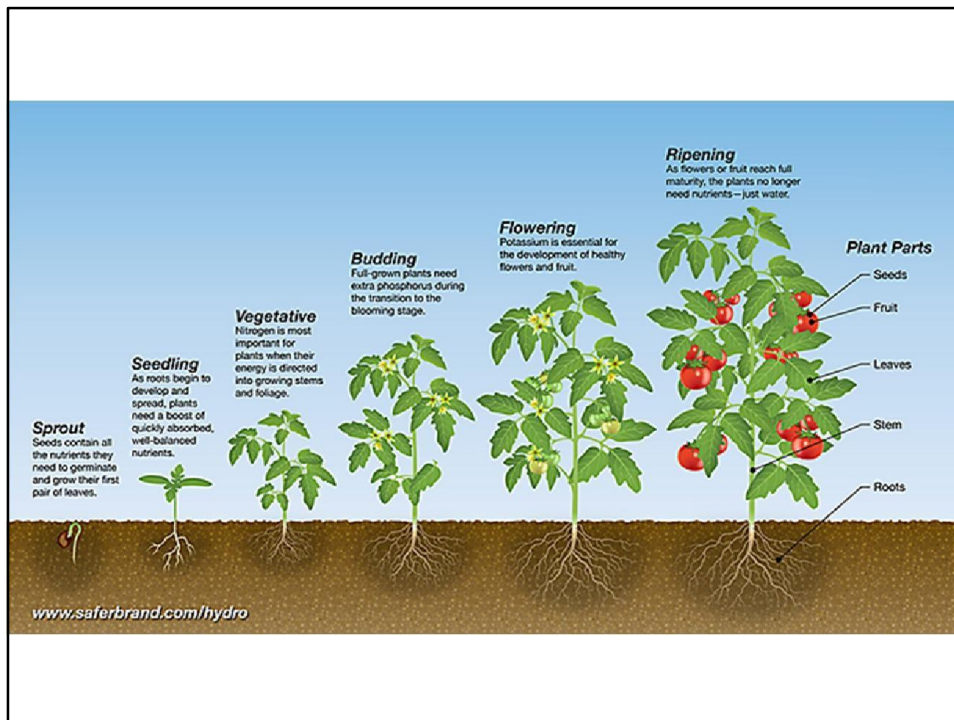
Cereal crops

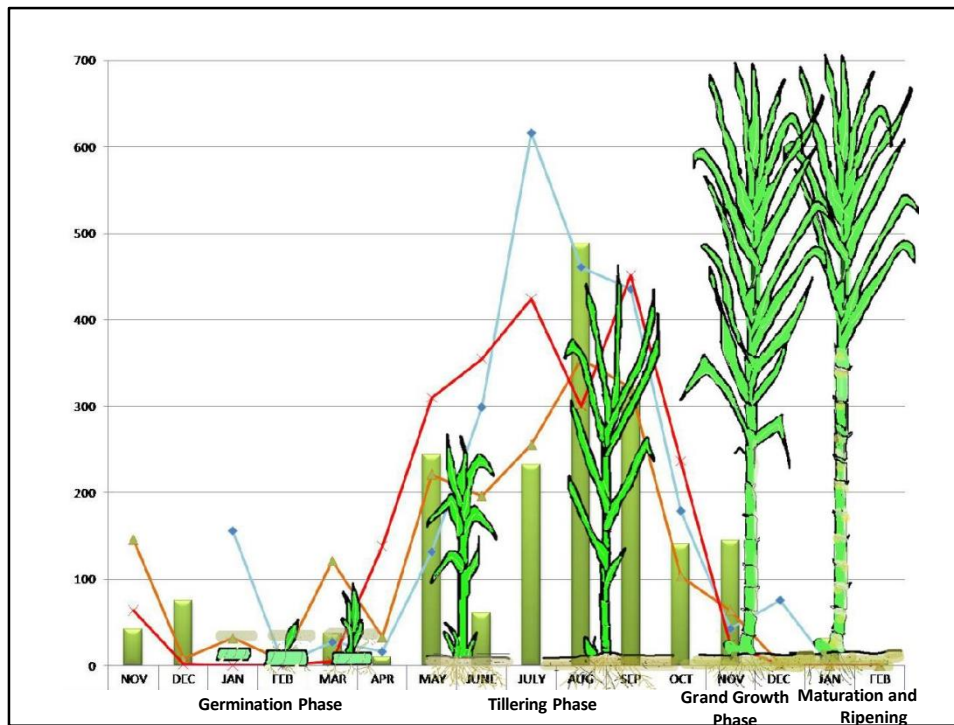
- Vegetative stage
- Stem elongation stage
- Booting stage
- Heading stage
- Anthesis stage
- Milking stage
- Dough stage
- Ripe seed stage

Legume crops

- Late vegetative
- Early bud
- Mid bud
- Late bud
- First bloom
- Mid bloom
- Full bloom







Principles of Crop Rotation

1. Area under Individual plots: The areas of individual plot for each crop should be approximately same year after year. Unless price variation.
2. Number of Plots: The number of plots should be equal to the duration or multiple of it. When the total duration of rotation in cropping scheme is 4, then the number of plots may be 4 or minimum of it. i.e 8, 12, 16 and so on.
3. Selection of crops: Cropping Scheme is related to the profitable use of productive resources and management.
4. Profitable crops: the rotation should be planted around most profitable around most profitable crops.
5. Meet the requirement: The cropping scheme should be so planned as to provide maintenance of soil fertility and other physical chemical properties.
6. The scheme should have one leguminous crop in year in its rotation for the maintenance of soil fertility and other physical chemical properties.

Selection of Crops

Selection of crops depends on the situation of the farm to obtain maximum profit.

- a) **Near a city:** Farm is near the city, farmer should grow vegetable on at least 60% of the net cultivable area remaining 10-15% under fodder.

- a) **Near a processing unit**
 - a) **Sugar factory:** 60% areas under sugarcane or under sugar beet remaining are on 60% area remaining area of orchards.
 - b) **Oil mill:** farmer should grow oil seed crops –g.nut,sunflowers.

- c) **Near dairy farm:** The farmer should grow fodder crops. 10-15% area under oil seeds and pulses in order to supply concentrate to the dairy cattle along with fodder.

- d) **Near cold storage:** Farmer should grow potatoes onion, vegetable, etc.

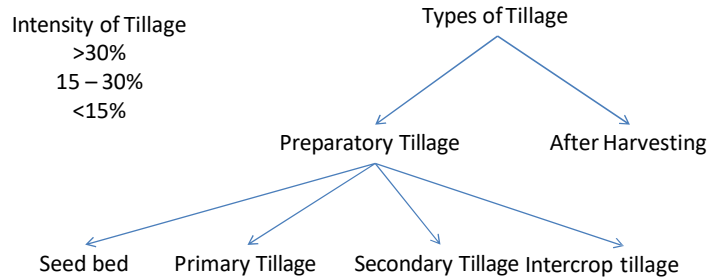
- e) **Near highway/ rain way station:** Farmer can cultivate perishable crops like vegetables.

Example

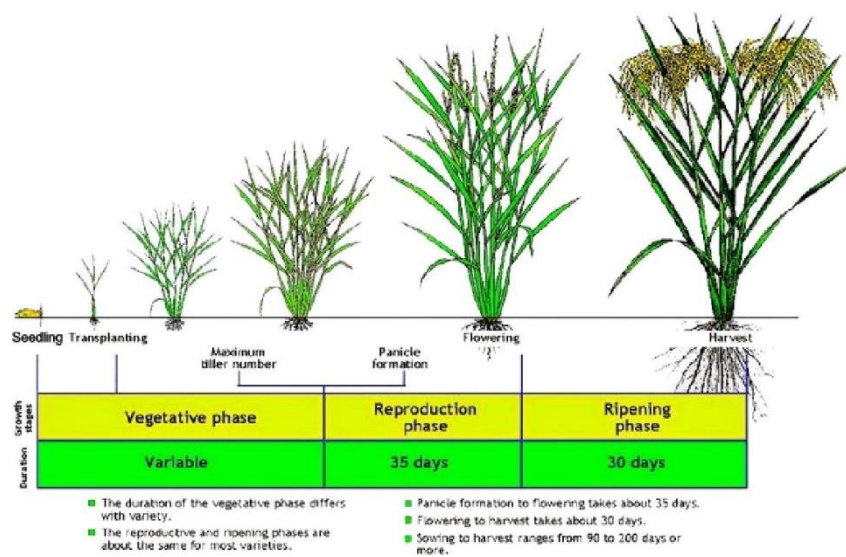
Plot No.	Kharif Crop	Ha	Rabi crop	Ha	Zaid Crops	Ha
1	Paddy	2	Potato	2	Sesamum	2
2	G.nut	2	Wheat	2	Moong	2
3	Brinjal	2	Cabbage	2	Chilli	2
4	Okra	2	Cauliflower	2	Watermelon	2
5	Bitter Gourd	1	Pea	1	Cucumber	1
	Total	9		9		9

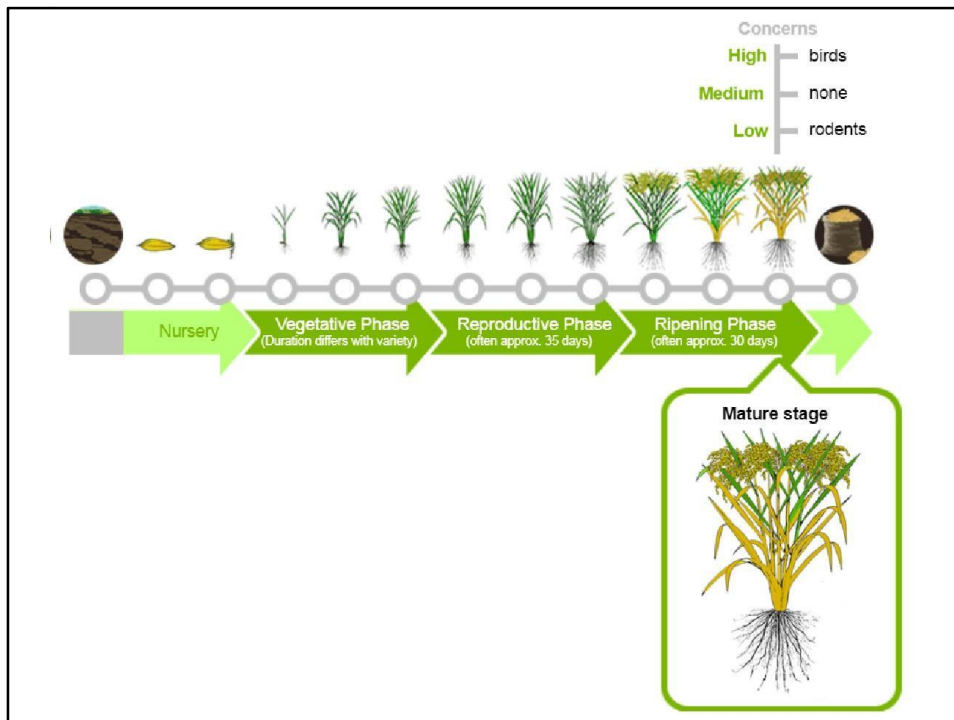
Tillage - Definition, Types, Function & Importance

Defined as mechanical modification of soil structure resulting in a soil tilth that is suitable for seed germination and plant growth.



Example - Paddy





Plant Nutrition

- 16 Essential elements
 - Macro - Primary
 - C, H & O
 - N, P & K
 - Macro - Secondary
 - Ca, S & Mg
 - Micro – Trace
 - Iron
 - Boron
 - Chlorine
 - Manganese
 - Zinc
 - Copper
 - Molybdenum

I N M

Pests & Diseases - Paddy

- Tungro disease
- Blast
- Brown spot
- False Smut
- Sheath Blight
- Sheath rot
- Stem rot
- Rice hispa
- Case worm
- Leaf folder
- Plant Hoppers (GLH/BHP/WBPH)
- Stem borer
- Swarming caterpillar/army worm
- Stink Bug

I P M

Pests & Diseases - Wheat

- Leaf Rust (Brown Rust)
- Stem Rust (Black Rust)
- Stripe Rust (Yellow Rust)
- Common and Dwarf Bunt (Stinking Smut)
- Karnal Bunt (Partial Bunt)
- Loose Smut
- Flag Smut
- Powdery Mildew
- Alternaria Leaf Blight
- Fusarium Leaf Blotch (Snow Mold)
- Scab (Head Blight)
- Ergot
- Downy Mildew
- Common Root Rot, Foot Rot, and Crown Rot
- Sclerotium Wilt (Southern Blight)
- Black Molds (Sooty Molds)
- Bacterial Diseases
- Viral Diseases
- Aphids
- Stink Bugs
- Armyworms, Cutworms, and Stalk Borers
- Cereal Leaf Beetle
- Thrips
- Hessian Fly
- Wheat Stem Maggot
- Sawfly
- White Grubs
- Wireworms
- Slugs, Snails, Grasshoppers, and Crickets
- Mites
- Nematodes

Stored Grain Pests

- Sources of infestation
 - Fields
 - Carried-over commodities, waste and rejects.
 - Agricultural machineries
 - Processing plants Farm grain stores and re-used sacks
 - Means of transportation
 - Alternative hibernation sites and hosts







Plant Protection Chemicals

- Herbicides
- Fungicides
- Insecticides
- Bio pesticide
- Other
 - Nematicides
 - Rodenticides
 - Bactericide


Classification

- A pesticide may be a
 - Chemical substance
 - Inorganic pesticides
 - Organic pesticides
 - Biological agent
 - Virus
 - Bacteria
 - Antimicrobial


- Pesticides can be grouped on the basis of:
 - Their target (the pests they control)
 - Their mode of action (the way they control the pest)
 - Their chemical structure
 - Their method of application
 - The timing of their application

Based on toxicity			
Extremely toxic	Highly toxic	Moderately toxic	Less toxic
Colour:- Red	Colour:-Yellow	Colour:- Blue	Colour:- Green
Toxicity:- Skull & Pison	Toxicity:- Pison	Toxicity:- Danger	Toxicity:- Caution
Oral LD50 :- 1-50	Oral LD50 - 51-500	Oral LD50 - 501-5000	Oral LD50 - >5000
DermalLD50 :- 1-200	DermalLD50 - 201-2000	DermalLD50 - 2001-20,000	DermalLD50 - >20,000
			


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