

Unit 2 - Tillage and Tilth

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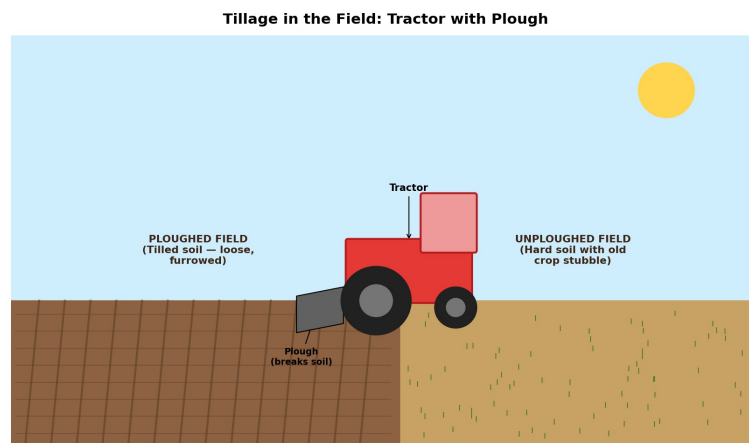
Topic 1: Objectives of Tillage

Tillage Kya Hai? (Introduction)

Tillage farming ka sabse purana aur sabse zaroori operation hai. Jab bhi hum kisi khet mein fasal lagana chahte hain, sabse pehle mitti ko mechanical tarike se manipulate karte hain — usko todte hain, palatte hain, aur barabar karte hain. Isi process ko tillage kehte hain.

Tillage ka maksad sirf mitti khodna nahi hai. Yah ek scientific aur planned activity hai jiska direct asar fasal ki growth, yield, aur quality par padta hai. Agar tillage sahi tarike se na ho, to chahe beej kitna bhi achha ho, fasal achhi nahi ho payegi. Isiliye agriculture students ke liye tillage ke objectives ko gehrai se samajhna bahut zaroori hai.

Niche diye gaye chitra mein aap dekh sakte hain ki tractor ke saath plough kaise use hota hai aur ploughed (tilled) field aur unploughed field mein kya farak hota hai:



Tillage in the field

Is image mein left side mein aap dekhenge ki mitti dheeli, furrowed aur tilled dikh rahi hai — yah wo field hai jahan tillage ho chuki hai. Right side mein purani stubble (fasal ke bache hue tinke) ke saath hard, untouched mitti hai. Yahi farak tillage ka basic kaam dikhata hai.

Tillage Ke Mukhya Uddeshya (Objectives) — Vistaar Se

1. Mitti Ko Dheela Karna (Loosening of Soil)

Compact ya hard mitti mein jadon (roots) ko failna bahut mushkil hota hai. Jab mitti hard hoti hai, to root system properly develop nahi ho pata, jisse plant kamzor rehta hai aur nutrients/water absorb karne mein dikkat hoti hai.

Tillage ke through mitti ke particles ke beech jagah ban jaati hai, jisse: - Roots aasani se neeche aur side mein fail sakti hain. - Plant ka anchorage (zameen mein pakad) majboot hota hai, jisse tez hawa ya barish mein plant girta nahi. - Root respiration (jadon ki saans lene ki process) behtar hoti hai, kyunki dheeli mitti mein oxygen aasani se pahunchti hai.

2. Kharpatwar (Weeds) Ka Control

Weeds wo anchahe paudhe hote hain jo crop ke saath competition karte hain — paani, sunlight, aur nutrients ke liye. Agar weeds control na kiye jaayein, to crop ki growth significantly kam ho jaati hai.

Tillage operation ke dauran: - Mojuda weeds ki jadein katti ya ukhad jaati hain, jisse weh dobara nahi ug paate. - Weeds ke beej mitti mein neeche dab jaate hain ya surface par aa jaate hain jahan dhoop unhe destroy kar deti hai. - Yeh ek mechanical aur chemical-free weed control method hai, jo eco-friendly bhi hai.

3. Khaad Aur Fertilizer Ka Mixing

Jab hum farm yard manure (FYM), compost, ya chemical fertilizers khet mein daalte hain, unhe sirf upar dalna kaafi nahi hota. Tillage ke through inhe mitti ke andar achhe se mix kiya jaata hai, jisse: - Nutrients pure root zone mein evenly distribute ho jaate hain. - Nutrients ka loss (jaise volatilization ya runoff se) kam hota hai. - Plant ko consistent nutrition milta rehta hai growth ke har stage par.

4. Paani Aur Hawa Ke Movement Ko Improve Karna

Soil structure jitni achhi hogi, paani aur hawa ka movement utna hi behtar hoga. Tillage mitti ki structure ko improve karti hai: - **Water infiltration** — dheeli mitti mein paani jaldi aur gehrai tak ja sakta hai, jisse runoff aur soil erosion kam hota hai. - **Aeration** — mitti mein hawa ka movement roots ko oxygen deta hai, jo respiration ke liye zaroori hai, aur saath hi beneficial soil microorganisms ke liye bhi favorable environment banata hai.

5. Hard Pan Ya Crust Todna

Kai baar, especially heavy rainfall ke baad ya continuous machinery use se, mitti ki upri ya neeche ki sata bahut sakht (compact) ho jaati hai. Isse: - Beej germinate nahi ho paate, kyunki seedling itni hard crust ko todh nahi paata. - Roots neeche penetrate nahi kar paate, jisse plant ka development ruk jaata hai. - Paani properly drain nahi hota, jisse waterlogging ho sakti hai.

Tillage (especially subsoiling jaisi deep tillage) is hard pan ko todhti hai aur soil profile ko healthy banati hai.

6. Smooth Aur Fine Seedbed Taiyar Karna

Sowing se pehle, mitti ko fine aur level (barabar) hona chahiye. Isse: - Beej ko uniform depth par rakha ja sakta hai. - Seed-to-soil contact achha hota hai, jo germination ke liye essential hai. - Pure field mein germination uniform hota hai, jisse crop stand bhi uniform hota hai aur management (irrigation, spraying) aasan ho jaata hai.

Tillage Ke Indirect Benefits

Upar diye gaye direct objectives ke alawa, tillage ke kuch indirect benefits bhi hote hain: - Soil-borne pests aur diseases ke life cycle mein disruption hota hai, kyunki unke hiding spots (jaise purani crop residue) disturb ho jaate hain. - Mitti mein organic matter ka decomposition tez hota hai, jisse nutrients jaldi available hote hain. - Soil temperature regulate hoti hai, especially spring tillage se, jisse mitti garmi mein jaldi warm hoti hai aur seed germination ke liye favorable temperature milta hai.

Conclusion — Yaad Rakhne Wali Baat

Tillage sirf mitti khodne ka kaam nahi hai — yah ek planned scientific process hai jiska maksad crop ke liye sabse best possible soil environment create karna hai. Agar tillage ke sabhi objectives ko dhyan mein rakh kar yeh operation kiya jaaye, to: - Germination achha hota hai. - Root development strong hota hai. - Weeds aur diseases ka pressure kam hota hai. - Overall, crop ki yield aur quality dono improve hoti hai.

Isiliye, har agriculture student ko tillage ke objectives ko sirf yaad nahi, balki gehrai se samajhna chahiye, taaki field mein practical decisions lene mein madad mile.