Student's Note

$1000\ cm^3 = 1\ lit$

10 mm of rain per square mtr
= 10 liter/m^2

Student's Note

For Rice & Maize

Water requirement for rice crop at different stages

State of growth	Avg water req. (mm)	% of water req.
(i) Nursery	50-60	5
(ii) Main field preparat	200-250	20
(iii) Planting to P.I.	400-550	40
(iv) P.I. to flowering	400-450	30
(v) Flowering to maturity	100-150	5
	1200-1460	100

It takes 27,154 gallons (102789. ltr) of water to irrigate one acre of land with an inch of water

1 inch = 25.4 mm
1 acre = 4045 square meter

Student's Note

Depth of water to be maintained during different crop growth stages of the rice

At transplanting	Shallow (2-3 cm)
After transplanting	(4-5)
During tillering	Shallow (2-3) cm

water flow rate = 5 Ltr / second.

Land = 1 acre = 4045 sq. meter

water required = 1027430 Ltr.

Time it would take = 20558 sec
= 342 min
= 5.7 hour

Student's Note

Transpiration & Humidity.

Transpiration is the process by which moisture is carried through plants from roots to small pores on the underside of the leaves, where it changes to vapour and released to atmosphere.

* 10 % of the moisture found in the air is released by plants through transpiration.

* Plants put roots in the soil & drain water and nutrients up into the stem and leaves.

Factors affecting :

Temperature

Transpiration rates goes up as the temperature goes up, especially during the growing season. High temperature cause the stomata to open, whereas colder temperature causes the opening to close.

Student's Note

Relative Humidity

When relative humidity of the air surrounding the plant rises the transpiration falls.

It is easier for the water to evaporate in drier air than into more saturated air.

Wind and air movement :

Increased movement of the air around a plant will result in higher transpiration rate.

Soil moisture availability

When moisture is lacking, plants can begin to senesce (premature aging, which can result in leaf loss) and transpire less water.

Requirements —

Student's Note

(1) Optimum humidity for rice 50 + 80 %

Classification of suitability classes of maximum temperature and relative humidity.

Classes of max temperature (°C)	Classes of RH	Suitability class
27-32	60-80	Highly suitable
	80-85	Highly suitable
	>85	Suitable
32-35	60-80	Moderately suitable
	80-85	Moderately suitable
	>85	Marginally suitable
>35	60-80	Marginally suitable
	80-85	Not suitable
	>85	Not suitable

Operations user can perform

Student's Note

Turn on water [ON]

↓

[Choose the state of growth ▽]

1. Nursery
2. Main field preparation
3. Planting to panicle initiation
4. PI to flowering
5. Flowering to maturity.

If (4) is selected

↓

If no rainfall is expected in next 3 days

State → [PI to flowering] Exp RF [0 mm]

Req → [400-500 mm] (Recommended)

[Change to Default] [Click to change]

[Okay]

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Student's Note

Control Servlet (Inner function)

req_in_mm = 400

req_in_inch = $\frac{1}{25.4} * req\_in\_mm$

flow rate = 5 // 5 ltr/sec

water_requirement = 102790 * req_in_inch

expected time = $\frac{water\_requirement}{flow\ rate}$

else if rainfall is expected

exp_rainfall = value // in mm

amt_to_reduce = 4045 * exp_rainfall

water_requirent = (102790 * req_in_inch) - (amt_to_reduce)

// Create the form

Student's Note

Rainfall of "value" mm is expected in next 'n' days

Req | K% = water - requirement | (Recomm

| Set to default | | click to change |

| okay |

Prompt an alert box when recommended value is altered

Tomato

Student's Note

1.	Establishment	25-35
2.	Vegetative	20-25
3.	Flowering	20-30
4.	Yield formation	20-30
5.	Ripening	15-20

Total time — 100-140 days.

* Prolonged severe water deficit limits growth and reduces yields which can't be corrected by heavy watering later on
* Water requirement → 1 – 1½ inches of water per week.
* most critical periods for irrigation are during flowering

Potato.

Student's Note

Stages	water req.
Sprout	0.4 mm
Vegetative Growth	2.4 mm ~~3.2 mm~~
Tuber Initiation	5.4 mm
Tuber bulking	6.8 mm
Maturation	4.9 mm

https www.agric.gov.ab.ca/$department/deptdocs.nsf/all/agdex13571

1-Select stage -

Sprout (0.4 mm)
Veg. Growth (~~3.2 mm~~) 2.4 mm
Tuber Initiate (5.4)
Tuber bulking 6.8 mm
Maturation 4.9 mm