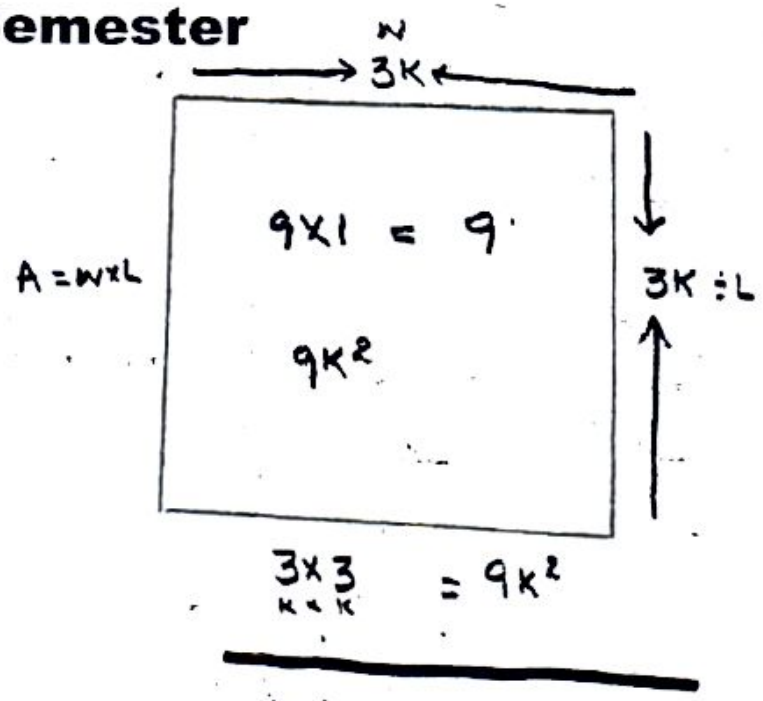
AGRONOMY 101 Practical

(1) => Animal Science =>

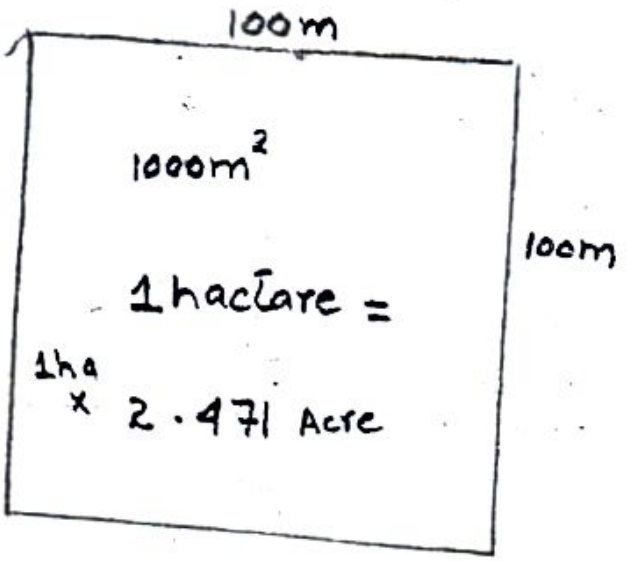
1st Semester

sq K =

K sq =



The difference b/w the Acre & hactare:



LAND MEASURING UNITS OF PAKISTAN

CONVENTIONAL System*:-

1 Square = 25 Acre

★ It is the biggest Unit

1 Acre = 198 ft x 220 ft

width (198) length (220)

AREA = width x length

Area of 1 acre = 43560 ft^2

= 1110 K

1 KARAM = 5.5 ft = (two normal foot step)

When.

198/5.5 = 220/5.5

36 Karam = 40 Karam.

★ 1 Acre = 160 Marlas

= 8 Kanals

= 2 Begas

8 Kanal = 160 Marlas

1 Kanal = 20 Marlas

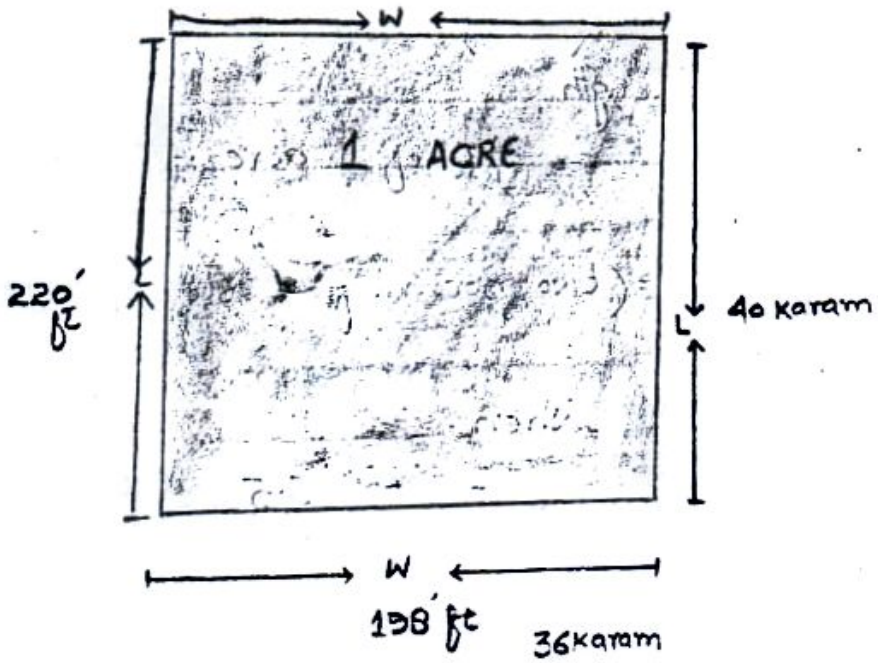
1 Kanal = $\frac{160}{8}$ = 20 Marlas

★ 1 Marla = 9 (Karam)^2

= 9(5.5)^2

= 9(5.5 x 5.5)

DIAGRAM OF IDEAL ACRE.



1 Acre = 2 Bega

1 Bega = 4 kanals

= 80 marlas

* Area of Acre (1 Bega) = $1440/2$ K^2 = $720 K^2$

* 1 Bega = Half Acre = $21780 ft^2$

* 1 Marla = 9 Sarsahi = (smalest unit)

= 9 $(karam)^2$

1 Sarsahi = 1 $(karam)^2$

= $(5.5)^2$

= $30.25 ft^2$

* 1 Kanal = 20 Marlas

160 Marlas = 8 kanals

= $43560/8$ = $5445 ft^2$

* 1 Acre = $43560 ft^2$

1 Acre = 8 kanals (both are equal)

*:- All the units are acre, Sarsahi are used in Sub continent. $20(272.25) = 5445 ft^2$

It is the 2nd method, By this method we calculate it easily

1 Bega = 4 kanals

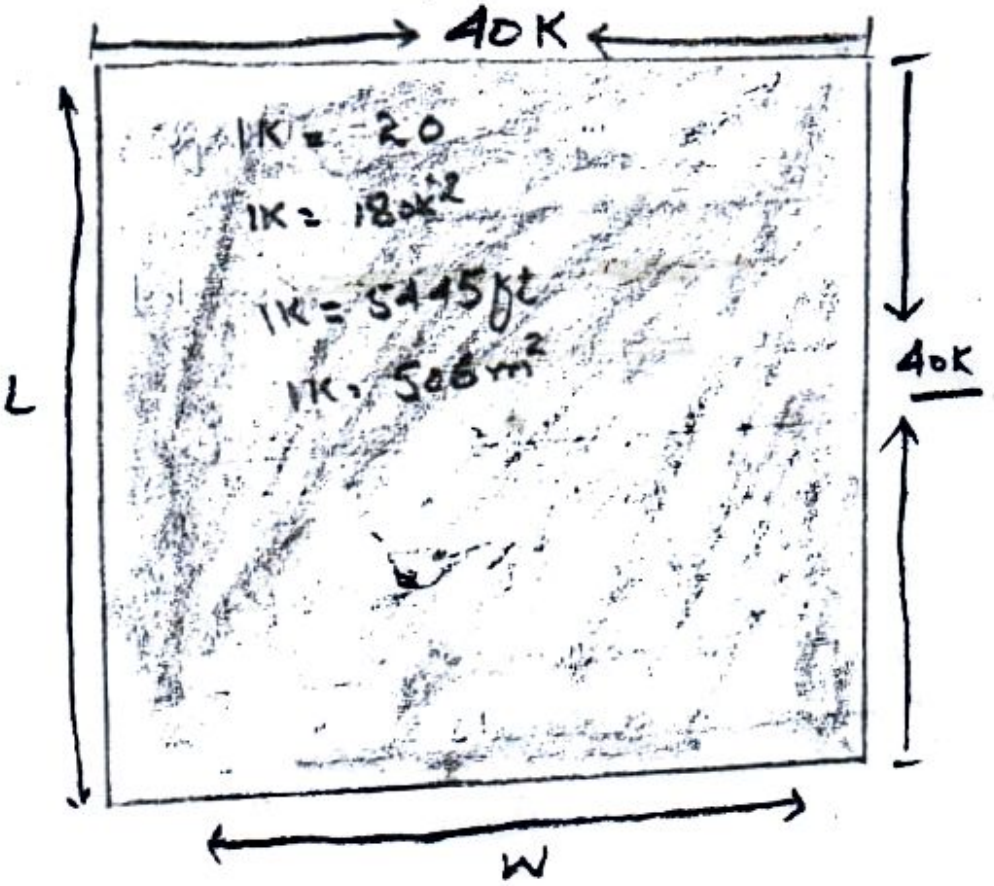
(i) $4(5445)$ (ii) $80(272.25)$

(iii) $43560/2$

By these three methods, we calculate the same value.

* 1 Killa = $220' \times 220'$

Acre = $48400 ft^2$


40K
1K = 20
1K = 180k²
1K = 5445ft
1K = 506m²
L
40K
W

Difference = 48400 - 43560

= 4840 ft^2

= 4840 / 272.25 = 17.777 marlas

* (48400) 1 killa = 8 Kanals + 17 Marlas

~~= 43560 + 1 Sarsahi~~

~~= 0.777 x 9 = 6.993~~

* 4840 ft^2 • 272.25 ft^2 = 1 Marla, = 1 x 4840 / 272.25 = 17.777 marlas.
* Area of 1 killa = 48400 - 43560 = 4840

1 Marlas = 9 Sarsahi

0.7777 = 9 x / 0.7777

These are all the units = 7.6002

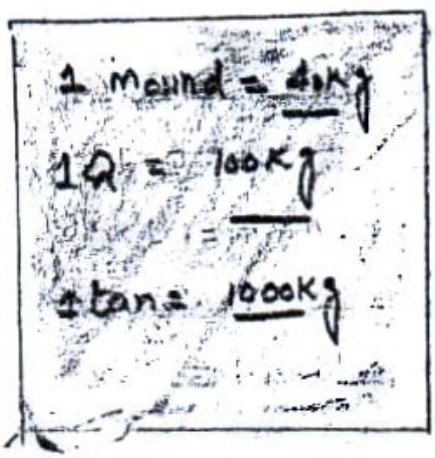
which are used as Local Units

1 Square = 25 Acre

// Metric System //

In this system we calculate the area in Square

The difference b/w The Mound (بن) &
Quantam & ton :-



1 m = 3.28 feet

1 foot = 12 inch.

1 inch = 2.54 cm

1 Karam = 5.5'

In Convergeon these units are used & one unit is Converted in To another in numerical's.

* 1 hectare = 2.471 acres

= 1000 m^2 = 10800 ft^2 = 1000 $(3.3)^2$ = 10890 ft^2

If (1m = 3.28') then the Answer will be 107584 ft^2

---

* 1 Acre = 8 Kanal = 4000/8 = 500 m^2

= Kanal

= 160 marlas = 4000/160 = 25 m^2

= 2 Bigas = 4000/2 = 2000 m^2 Bigas

1 Ka = 1000 m^2

1 Karam = 5.5/3.28 m

= 1.67 m

No of Karam direct convert into meters.

1 Karam = 5.5'

1 m = 3.28'

1' = 12"

Hand Tools

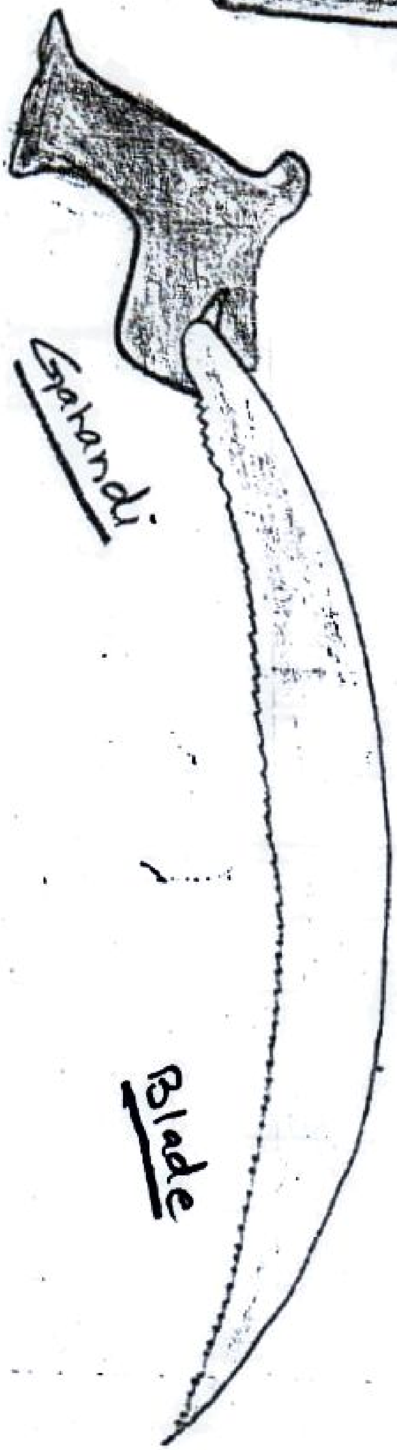
1

Sickle:-

It is used for folder cutting & harvesting of different crops.

e.g :- whet, Rice or juwar etc.

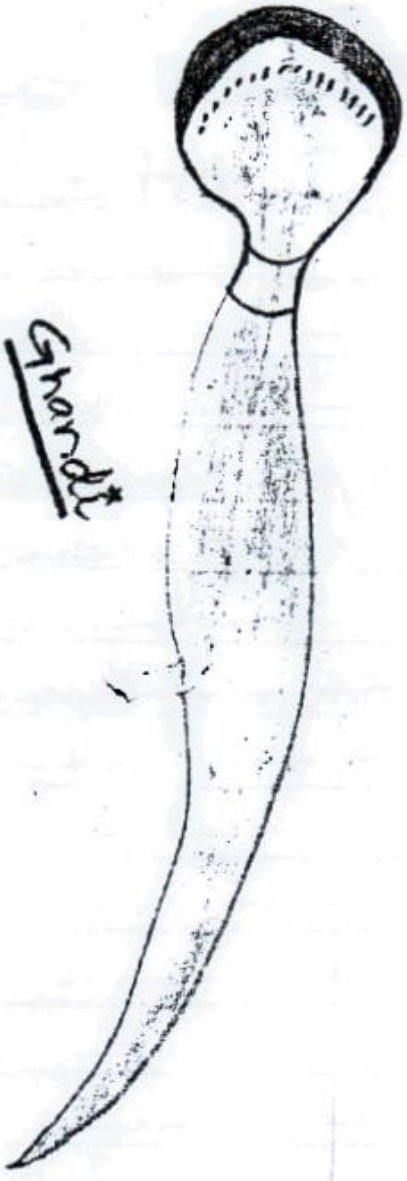
Sickle



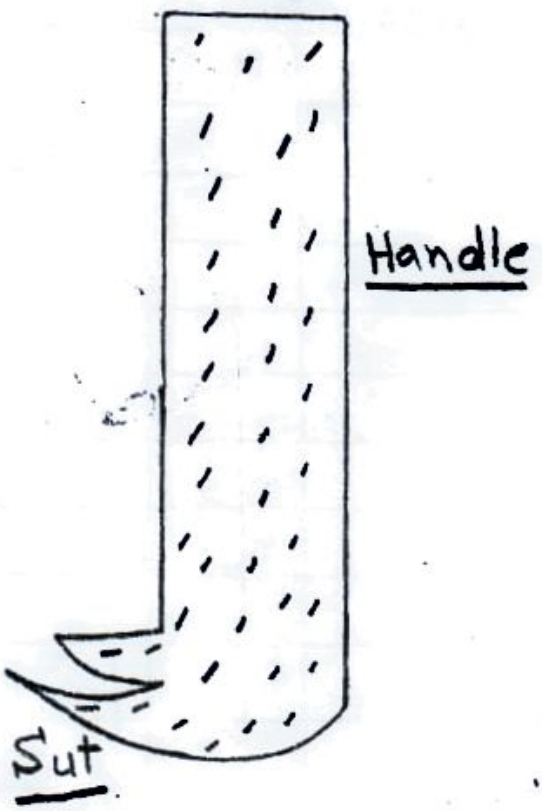
Pelchi Datri :-

- It is used for removing trashes (dry leaves) and tops of sugar cane.


Pilchi Datri

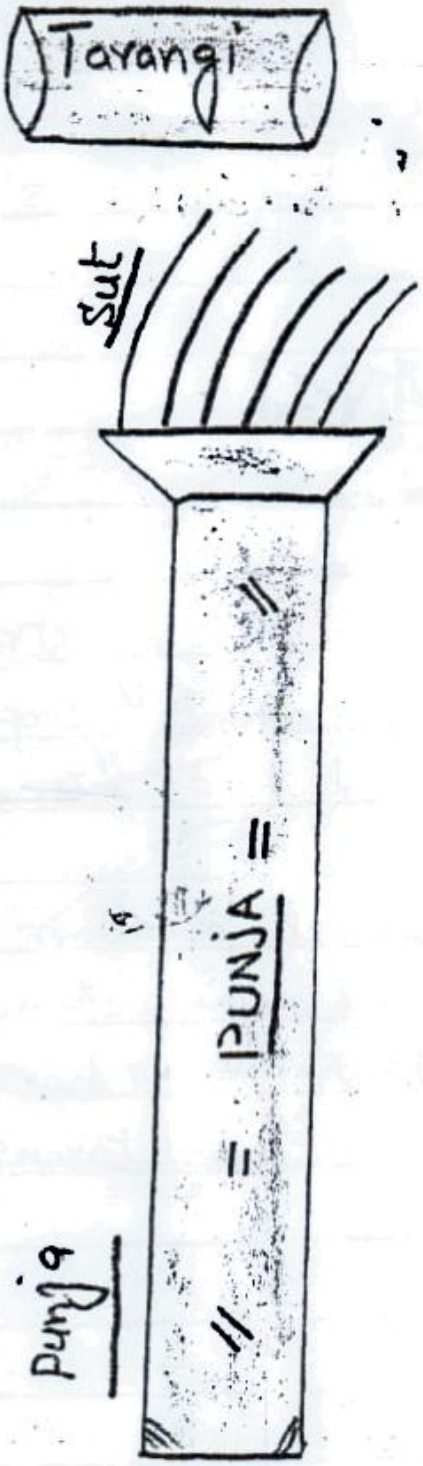

Ghandi


Sanga


Handle
Sut

SANGA:-

It is used for uplifting of bundles at the time of thrashing.

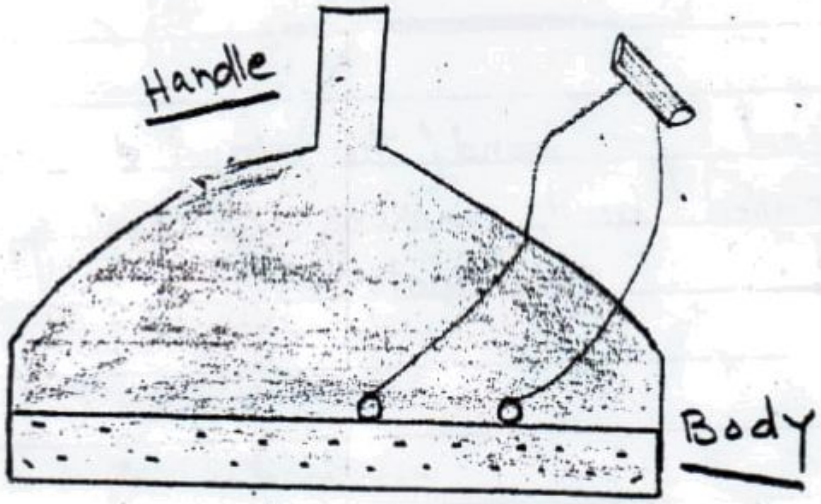

Tarangi
Sut
PUNJA
Punja

TARANGI

It is used for collection of straw (leaves & straw portion) when wheat crop is harvest. Through it is used as ~~cutting~~ collecting

So, the raw material obtained from the wheat stems & head after removing the wheat product through thresher or harvesting machine is also collect through tarangi.

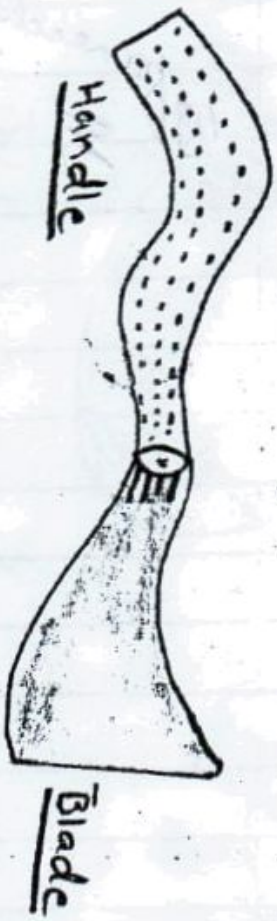

Jundra


Handle
Body

JUNIDRA :-

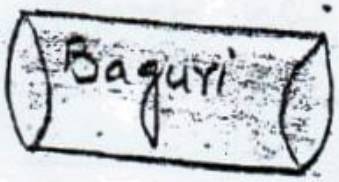
It is used for bund (the diving division of one acre is called bund) making & leveling of small plots.


Khurpa


Handle
Blade

KHURPA :-

It is used for removing of weeds and hoeing (removal of unwanted plants)

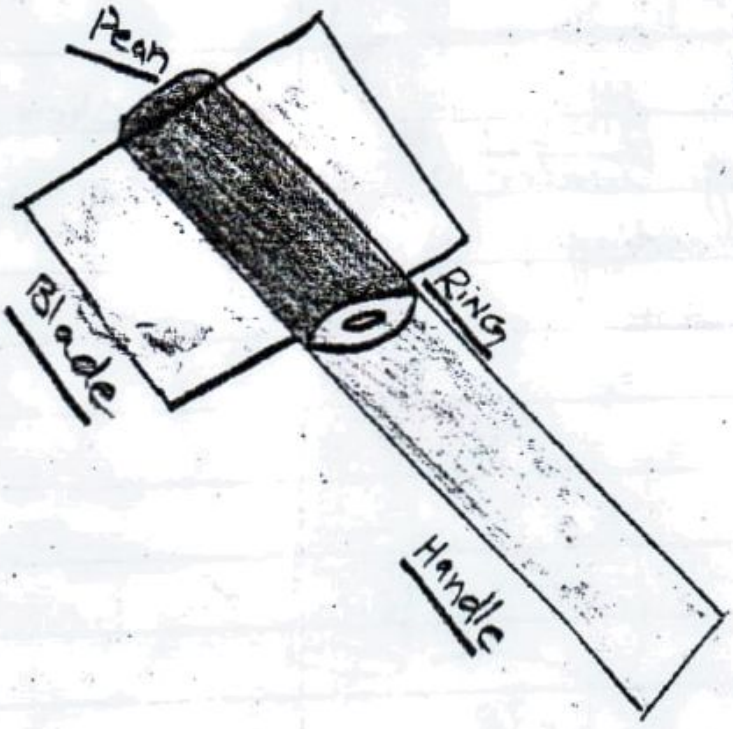

Baguri


Handle
Blade

BAGURI

It is used for blind sowing in Sugarcane. It is done in Sugar Handle Cane & after sowing & before germination by vegetative growth in 3-4 weeks is used for germination.

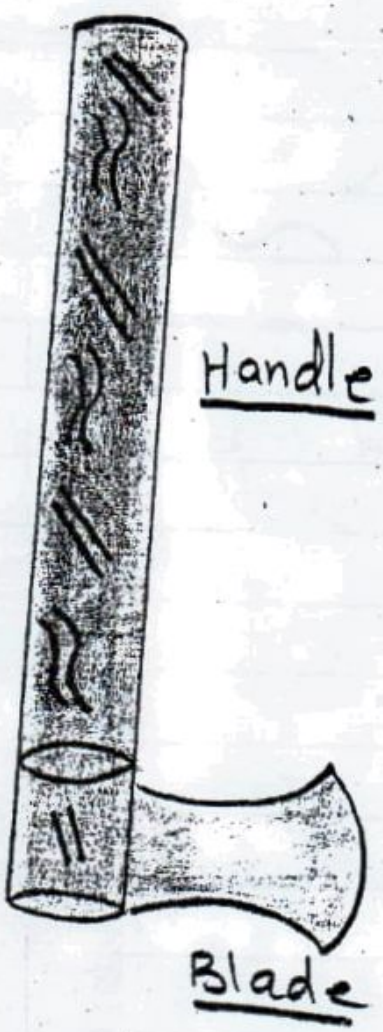
Spade



SPADE :-

It is used for making water channels, cleaning of water channels & hoeing removal of spreading of manures.

Axe



Axe :-

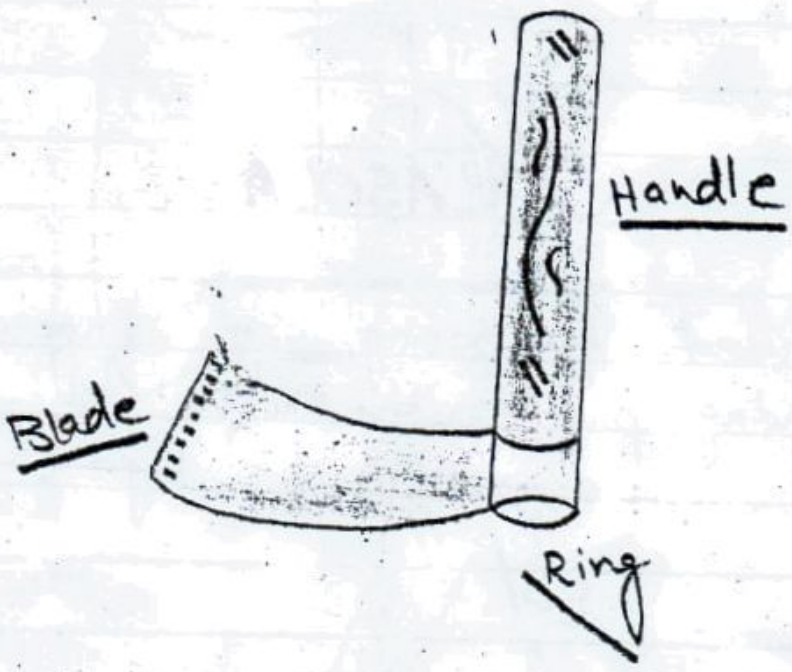
It is used for wood cutting.

Gandalg

GANDALA.

It is used for making holes.

Kasola

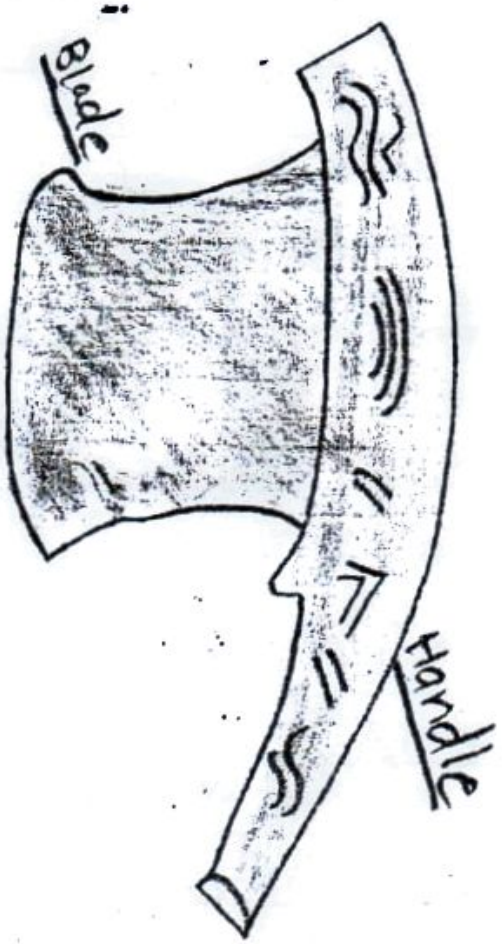


KASOLA:-

It is used for hoeing of different crops by standing position by Khurpa.

~~by sit sitting.~~

Hand Toka



Hand Toka:-

It is used for harvesting of different crops making salts of Sugar cane & chapping of fodder.

At the time of Sugarcane cutting. Hand toka is used for this purpose.
It harvest the Sugar cane at the bottom of Sugar cane & above the Surface of Soil or earth. So, it is beneficial for the Sugarcane producer because as that method, the cutting or harvest Sugar cane crop again capacity to produce from 2-3 times again & again.

2009-ag-2909.

Numericals

Question 1:

Calculate the area in kanals when length of plot is 50 karam and width is 41m?

1K = 5.5ft

1m = 3.28

Length = 50 karam

= 50 × 5.5 = 275ft = 83.84m.

3.28

Width = 41m.

Area = Length x Width.

= 83.84 × 41

= 3437.5 m^2

500 m

= 6.85 Kanals.

3437.5 / 500

1 Acre = 8 Kanal

1 Acre = 4000m^2

2nd Method

Question 2:-

Calculate the area of a plot in kanals when length is 135 ft and width is 25m?

Length = 135 ft

Width = 25 m

Area = Kanal?

Width = 25×3.28 $1m = 3.28 ft$

= 82 ft

Area = 135×82

= 11070 ft^2

$1 Acre = \frac{43560 ft^{-2}}{8}$ = 11070 Since 1 kanal = 5445 ft^2

= 5445

= 2.03 Kanals.

Question 3:-

Calculate the area in marlas, kanals, acres and hacters when length is 150 Karam and width is 100 ft? Or in Bega.

Length = $150K \times 5.5 ft$

= 825 ft.

Width = 100 ft

Area = 825×100

= 82500 ft^2

Marlas = $\frac{82500}{272.25 ft^{-2}}$ = 303.03 Marlas.

$1M = 272.25 ft^{-2}$

2009-ag-2909

Kanals = 303.03 / 20

1K = 20 Marla.

= 15.15 Kanals.

Acre = 15.15 / 8

= 1.89 Acre.

Hacters = 1.89 / 2.471

= 0.76.

Bega = 1.89 / 2

= 0.945 begas.

Question 4.

Calculate the area in marlas, Kanals, acre and hacter when length is 440 ft and width is 36 Karam?

Length = 440 ft

Width = 36 Karam

= 36 x 5.5 ft

= 198 ft

Area = 440 x 198

= 87120 ft²

Marla = 87120
272.25
= 320 Marla.

Kanal = 320
20
= 16 Kanal

Acre = 16
8
= 2 Acre.

Hacter = 2
2.471
= 0.809 ha.

Bega = 2
2
= 1 bega.

⇒ Question 5.

Calculate the area in marlas, Kanals, acre, ha and bega when length is 190m and width is 190 ft?

Length = 190m
Width = 190ft ✓
= 190 = 57.92 m.
3.28

5.5
16.5ft
1m = 3.28ft
3.28ft = 1m
16.5ft = 1/3.28 × 16.5
5
5

2009-ag-2909.

Area = 190 x 57.92

= 11006.2 m^2

Marla = 11006.09

25

= 440.24 Marla.

Kanal = 1100609

500

= 220.1 Kanal.

Acre = 11006.09

4000

= 2.75 acre.

Ha = 11006.09.

10000

= 1.100609 ha.

Bega = 11006.09

2000

= 5.503 bega.

2nd Method:

Marlas: 11006.09 = 440.2 Marlas.

25

Kanals: 440.2 = 22.01 Kanals.

20

Acres: 22.01 = 2.75. Acres.

8

Ha: 2.75 = 1.11 ha.

2.471

Question 6:-

Calculate the width of a plot when an area is 1ha and length is 150m?

Area = 1ha

= 10000 m² ∵ 1ha = 10000 m².

length = 150m

Area = length × width.

width = Area / length

= 10000 / 150m

= 66.67m.

OR = 66.67 × 3.28 (m → ft)

= 218.67 ft.

Question 7:-

Calculate the width of a plot in Karam when area is 2 acre and length is 220ft?

∵ 1 Acre = 43560 ft

Area = 2 Acre

= 2 × 43560

= 87120 ft.

Width = 87120 / 220

= 396 ft

2009-ag-2909.

= 396

5.5

= 72 Kanam.

Question 8.

Calculate the length of a plot, when an area is 96 Kanals and width is 100m?

Area = 96 Kanals.

= 96 × 500

= 48000 m²

Width = 100m

Length = Area / Width

= 48000 / 100

= 480m.

Question 9.

Calculate the width when an area of a plot is 1/80 acre and length is 36 ft.

Area = 1 Acres / 80

= 1 × 43560 / 80

= 544.5 ft².

length = 36 ft.

Width = 544.5 / 36 = 15.12 ft.

Question 10:-

Calculate the length in meters when an area is 1/15 ha and width is 45 ft?

Area = 1 ha.
15

= 1 × 108900 ft²
15

= 7260 ft²

Width = 45 ft

length = 7260
45

= 161.33 ft

= 161.33 (ft → m)
3.29

= 49.18 m.

"Assignment"

2009-ag-2909.

1, Calculate the area in marlas, kanals, acre, ha and bega when length is 180m and width is 170 ft?

Length = 180m

Width = 170ft

$= \frac{170}{3.28}$

$= 51.82m$

Area = 180×51.82

$= 9327.6$

Marla = $\frac{9327.6}{25}$

$= 373.10$ marla

Kanal = $\frac{373.10}{20}$

$= 18.65$ Kanal

Acre = $\frac{18.65}{8}$

$= 2.33$ Acre

ha = $\frac{2.33}{2.471}$

$= 0.94$ ha

Bega = $\frac{2.33}{2} = 1.165$ Bega

(2) Calculate the area in marlas, Kanals, acre, ha and bega when length is 150m and width is 150 ft?

Length = 150m.
Width = 150ft.
= 150
3.28
= 45.73m.
Area = 150 × 45.73.
= 6859.5 m^2

Marla = 6859.5
25
= 274.38 Marla.

Kanal = 274.38
20
= 13.71 Kanal.

Acre = 13.71
8
= 1.714 Acre.

ha = 1.714
2.471

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(3) Calculate the area in marlas, Kanals, acre, hacter and bega. When length is 320 ft and width is 38 karam?

Length = 320 ft

Width = 38 karam

= 38 × 5.5

= 209 ft.

Area = 320 × 209

= 66880 ft²

Marla = 66880 / 272.25

= 245.6 Marlas.

Kanal = 245.6 / 20

= 12.28 Kanals.

Acre = 12.28 / 8

= 1.535 Acres.

ha = 1.535 / 2.471

= ~~0.809~~ ha.

.621

Bega = 1.535 / 2 = 0.7675 begas.

4:- Calculate the area in marlas, Kanals, acre, ha and bega when length is 90m and width is 95 ft.

Length = 90m.

Width = 95ft

$= \frac{95}{3.28}$

$= 28.96$ m.

Area $= 90 \times 28.96$

$= 2606.4 m^2$

Marla $= \frac{2606.4}{25}$

$= 104.2$ Marlas.

Kanal $= \frac{104.2}{20}$

$= 5.212$ Kanals.

Acre $= \frac{5.212}{8}$

$= 0.6515$ Acres.

Ha $= \frac{0.6515}{2.471}$

$= 0.2636$ ha.

Bega $= \frac{0.6515}{2} = 0.32575$ begas.

5. Calculate the area in marlas, kanals, acres, ha and begas when length is 250 ft and width is 32 Karam? 2009-ag-2909.

Length = 250ft.

Width = 32 × 5.5

= 176ft.

Area = 176 × 250

= 44000 ft²

Marlas :- 44000

272.25

= 161.6 marlas.

Kanals :- 161.6

20

= 8.08 Kanal.

Acre :- 8.08

8

= 1.010 Acres.

ha :- 1.010

2.471

= 0.408 ha.

Bega :- 1.010 = 0.505 Bega.

2

6. In a field crops are present in the 40% of the total area. These crops are cotton on 3.2 Acre, Sugar cane on 5 acres, Fodder on 1.8 acres, Rice on 3 acres. Calculate total area?

Sol. (a)

Total area = ?

40% area contains acres = 3.2 + 1.9 + 5.3

= 13.

1% area contains acres = $\frac{12.7}{40}$

100% area contains acres = $\frac{12.7}{40} \times 100$

= 31.75 Acres.

(b) Find the remaining area?

40% Crops contain acre = 12.7

1% Crops contain acre = $\frac{12.7}{40}$

60% Crops Contain acre = $\frac{12.7}{40} \times 60$

= 19.05 acres.

Units.

1 Tonn = 1000kg.

1 Quintal = 100kg.

2009-09-2909

1 Moand = 40kg.
1 tonn = 10 Quintal = 25 Moand.

7- Calculate the yield of cotton for an area 1 Aixe, 2 Kanals, 7 Marlas, when the given yield as 0.5 kg/m².

Area = 1 Acre, 2 Kanals, 7 Marlas
0.5 kg/m²
Yield = ?

Soln:-

Area = 4000 + 2(500) + 7(25)
= 5175 m²
1 m² yield = 0.5
5.175 m² = 0.5 × 5.175
= 25.875
If we convert it in to quartium
25.87.
If we convert it in to tonns.
2.587 Tonns.

سٹوڈنٹ فوٹوسٹیٹ
لیاقت ہال زرعی یونیورسٹی فیصل آباد
0300-669 سلیم چوہدری

Calculate the wheat yield in Quantil. when area is 2 Acre, while given yield 10kg/Marla.

Sol:-

Area = 2 Acre. 1 Acre = 160 Marlas.

Given yield = 10 kg/Marla

Total wheat yield = ?

1 marla yield = 10kg.

160 marla yield = 1600 kg.

So,

1 Acre yield = 16 Quantil

2 Acre yield = 16×2

= 32 Quantil.

Wheat 4.5 Acre, Rice on 3.6 Acre, Fodder on 1.3 Acre, cotton 3 Acre. 35% is area. Total area?

Area = 1.3 + 3 + 3.6 + 4.5

= 12.8

35% crops contain acre = 12.8.

1% crops contain acre = $\frac{12.8}{35}$

100% crops contain acre = $\frac{12.8 \times 100}{35}$

= 36.5 Acre.

Remaining Area = ?

35% crops contain acre = 12.8

1 " " " = $\frac{12.8}{35}$

2009-ag-2709.

65:1 crops contain acre = $\frac{12.8}{35} \times 65$

= 23.77.

Calculate the rice yield in Quantil when Area is 4 Acre, while given yield is 30 kg/Marla?

Area = 4 Acres.
Given yield = 30 kg/Marla.
Total wheat yield = 30 kg

1 Marla yield = 30 kg
160 " " " " = 30 × 160
= 4800 kg.

So, (In Quantil)
1 Acre yield = 48 Quantils
2 Acre yield on total area = 48 × 4
= 192 Quantil

Calculate the yield of cotton for the area 1 Acre, 3 kanals and 6 Marla. When given yield is 0.4 kg/~~Marla~~ m^2

Area = 1 Acre, 3 Kanal, 6 Marla
= 160 + 60 + 6
= 226 × 25
= 5650 ~~marla~~ m^2

Yield = 0.4kg

565 marla yield = 0.4 x 565

= 2260 kg

= 22.6 Quantil.

Calculate the yield of wheat when area is 1 Acre, 4 kanals and 5 marlas when the given yield = 0.6 kg/marla

Area = 1 Acre, 4 Kanals, 5 Marlas

= 160 + 80 + 5

= 245 x 25 = 6125 m.

Yield = 0.6 kg/marla.

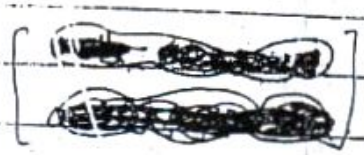
Total wheat yield = ?

1 marla yield = 0.6kg.

6125 " " " = 0.6 x 6125

= 3675 kg.

In Quantil = 36.75 Quantil.



17) Soil Moisture Determination

Methods:-

The methods which are used for the determination of water requirements are:-

i. Gravimeteric method.
ii. Sun dry method.
iii. Feel and appearance method.
iv. Tensiometer method
v. Neutron prob/ Neutron scattering
vi. Gypsum block method
vii. Speedy moisture tests.

Gravimeteric method:-

The first method which is being used in gravimeteric. This method is on weight bases.

★:- Take a can and weigh it carefully (W1)

★:- Put a known quantity of soil sample in this can and once again weigh it (W2).

★:- Place it in an oven at a temperature of 100°C:- 105°C (to dry the sample) for 24 hours.

★:- Weigh the can and dry sample (W3) and calculate the amount of moisture by following formula.

$$W = \frac{W_2 - W_3}{W_3 - W_1} \times 100$$

where

W= Amount of moisture.

Sun dry method:-

★:- Take a known sample and put it on a sheet paper of known weight

★:- Place the sheet in sunshine for 7 hours if season is cool and for 5 hours if season is hot

★:- We can determine the moisture by following formula

$$w = \frac{w_2 - w_3}{w_3 - w_1} \times 100$$

where:-

w = Soil moisture
w_1 = Weight of sheet
w_2 = Weight of sheet + Soil sample
w_3 = Weight of sheet + Dried sample

Feel and appearance method

It is very simple method

★:- Take some soil in hand. if you are successful in forming a ball of soil it means that there is sufficient amount of moisture and there is no need of irrigation.

Tensiometer method:-

★:- Take a porous cup. Fill it with water, keeping in view that no air bubbles are present in it. Then go to field, dig the soil upto a depth of 6 inches (15 cms) and put the porous cup in the soil.

★:- Put some soil around the porous cup. If concentration of water is more in the cup the water will come out from cup and will move towards the soil particle and vice versa

Neutron probe method:-

Neutron scattering is a technique for measuring total soil water content by volume

This method estimates the amount of water in a volume of soil by measuring the amount of hydrogen present. A neutron probe consists of fast or high energy neutron and a detector, both are housed in a unit which is lowered into an acess tube, installed in the soil.

The probe is connected by the cabel to a control unit which remains on the surface. Acess tubes should be installed at least to the depth of expected rooting zones.

The control unit includes electronics for time control, accounter, memory and other electronics for processing readings.

Fast neutrons emitted from the source and passing through the access tube into the surrounding soil gradually lose their energy through collisions with other atomic nuclear. Hydrogen molecules in the soil (mostly in soil water) are particularly effective in showing the fast neutrons. Since they are both of near equal mass, the result is a cloud of slow or thermalized neutrons. The size and density of cloud depends upon soil type and soil water content. Thermalized neutrons which pass through

the detector create a small electrical impulse. These electrical pulses are amplified and then counted.

The number of slow neutrons counted in a specific interval of time is linearly related to the total volumetenic soil water content. A higher counts indicate high soil water content & vice versa.

Gypsum blocks or electrical resistance block method:-

Resistance measurement of buried gypsum blocks in the soil is the most common method used to determine the soil moisture content.

★:- Saturate the gypsum blocks with water
★:- Make a hole of appropriate size in the soil to the required depth.
★:- Place the saturated gypsum blocks at specific depths. Keeping the wire terminals out of the soil, the moisture within the blocks and surrounding soil will tend to make an equilibrium by flowing out of the block into the soil.
★:- After the equilibrium is maintained (about 2 hours after installation)

★:- Connect the wire terminals to moisture meter and take readings.

This method describes the procedures for determing the moisture content of soils and other materials. The reaction of water with Calcium carbide produces acetylene gas which activates a pressure gauge that is calibrated to read as percent moisture.

Weather Forecasting

There is a variation in weather conditions at a particular time at a particular place. An advance indications to the probable weather conditions of a particular place is known as weather forecasting.

Methods of Weather Forecasting:-

1. The Weather Chart:-

The meteorological data viz: temperature, humidity, sunshine, wind direction, wind velocity, types of cloud, atmospheric pressure are being used for forecasting. There is a network of observations all over the country. The meteorological data from all parts of the country are sent to **Central Meteorological Office**, and charted on outline map in code word and abbreviations. These are called weather charts. The forecast of weather for next 24 hours made with the help of the prevailing weather data. For the example, if the atmospheric pressure is low, then there will be a tendency for the wind to blow from surrounding area to the low pressure.

A fall in atmospheric pressure indicates the chances of storm or cyclone.

2- Forecasting through Satellites:-

The forecasting through satellite is more accurate and reliable than the weather chart method. Satellite sends photographs and weather data. The forecast of weather made with the help of these informations.

The forecast information includes the occurrence of rains, prevalence of cloudy weather, the approach of high winds, storms or cyclones, the atmospheric temperature likely to prevail, fog etc.

There are two types of weather forecasting:

(i):- Short range forecast covers a period of not more than 24 hours ahead, and

(ii):- Long range forecast includes a period of 5 to 6 months.

Wheather forecasting and Crop Production:-

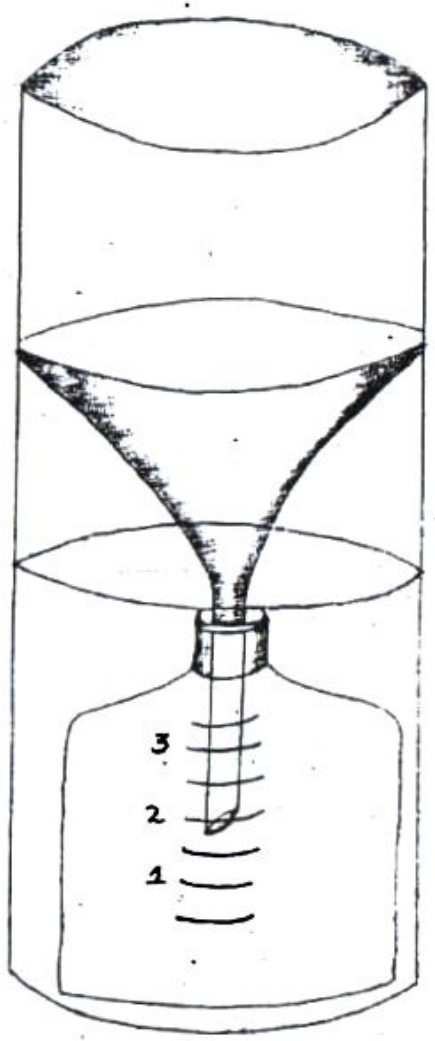
Crop growth and development are governed by weather conditions. Weather plays important role in every phase of agricultural activity. From field

preparation to harvesting and storage successful crop production can be achieved by taking appropriate decision in the light of weather conditions. Important agricultural practices such as time of sowing, transplanting, irrigation, fertilizer application, use of pesticides, harvesting, storage etc., may be modified according to the prediction made in advance.

The meteorological data are being used for forecasting the outbreaks of pests and diseases. The damage caused by pests and diseases can be minimized by timely and effects the control measures. The outbreaks of pests and pathogens depends upon the environmental factors. For example, late Blight of Potato disease generally appears in the last week of December or in the first week of January. If this period, disease may spread if minimum temperature and relative humidity will be more than 50F and 70% respectively.

Timely warning by weather forecasting agency about the coming out of a fruit can be mitigated by timely measures like arrangement of irrigation, smoky fires etc.

Forecast about scanty rainfall is being issued by weather forecasting



RAIN GUAGE

The commonest methods of combating drought are careful collection of rainfall water for table, mulching of surface soil and growing of flood tolerant varieties.

Damage to the crops owing to heavy rains or floods can be mitigated by farmers by making the drainage channels and growing of flood tolerant varieties.

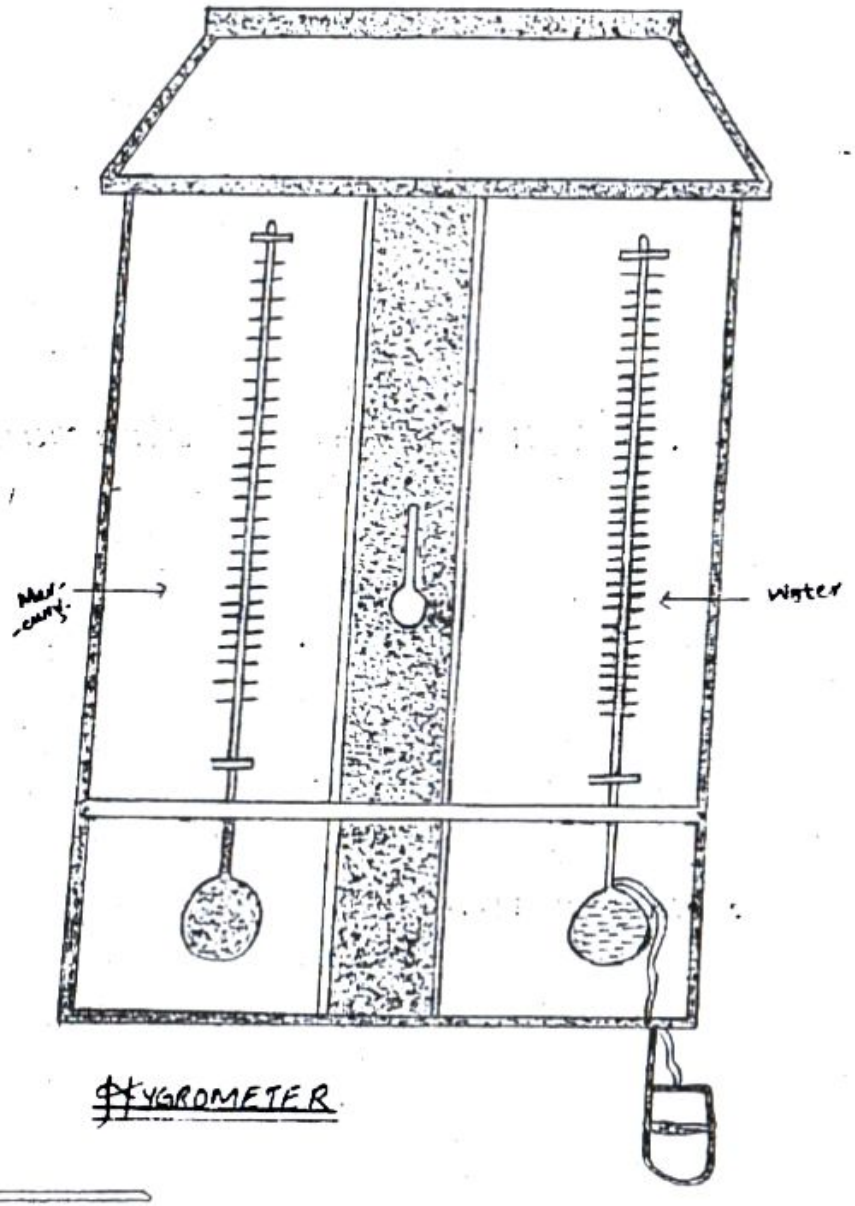
METEROLOGICAL INSTRUMENTS.

The most common weather instruments are:

1. rain guage
2. hygrometer
3. barometer
4. thermometers
5. wind vane
6. anemometer
7. Soil thermometer

Rain Guage:

It is used for measuring rainfall. A rain-guage is placed on the ground in an open space to recieve the rainfall. The depth of the water which has fallen into the container of a rain guage is measured in mm which

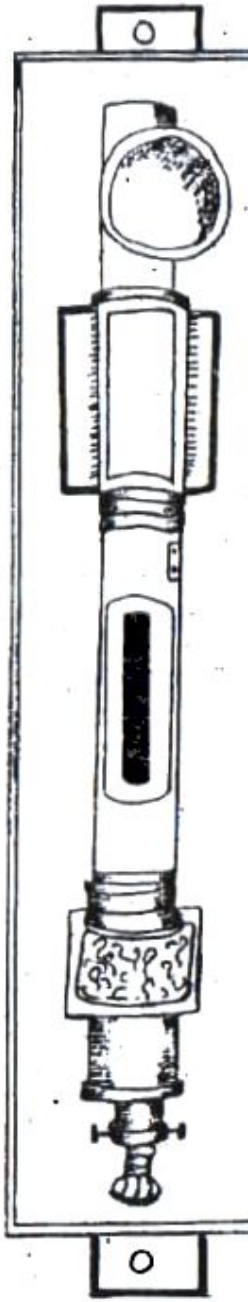


HYGROMETER

is the amount of water fallen in the previous 24 hours.

Hygrometers :-

Hygrometer are instruments which measure the humidity of surrounding air. The wet and dry bulb thermometer is the most common hygrometer. These two thermometers are placed vertically side by side and are graduated in absolute scale. The bulb of one other is dipped in distilled water. When air is not saturated evaporation takes place in the wet bulb thermometer. The greater the evaporation, the lower will be the temperature and hence the great difference between the temperatures of wet and the dry bulb thermometer. From these two thermometers humidity of air is calculated.



FORTIN'S BAROMETER

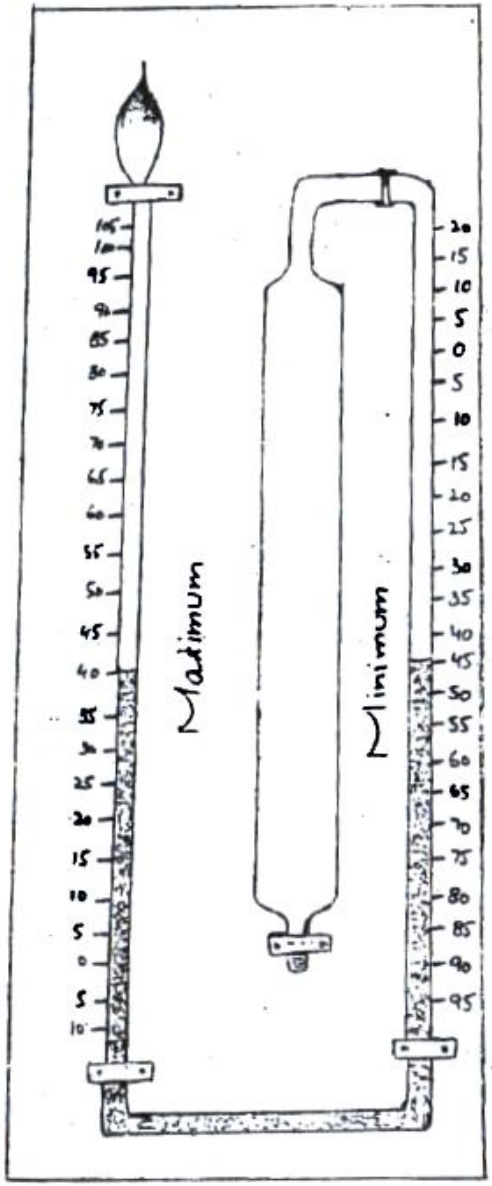
Barometer :-

It is used for recording the pressure of the atmosphere. There are two types of barometer,

(i) :- Fortin's barometer

(ii) :- Aneroid barometer

The most common type of barometer is the Fortin's barometer. This instrument consists of a tube having mercury. The tube is made to stand in an inverted position in a leather cup. The column of mercury in the tube is supported by the weight of the atmospheric air. As the pressure decreases, the column of the mercury in the tube also falls, and as the pressure increases, the column of the mercury rises.

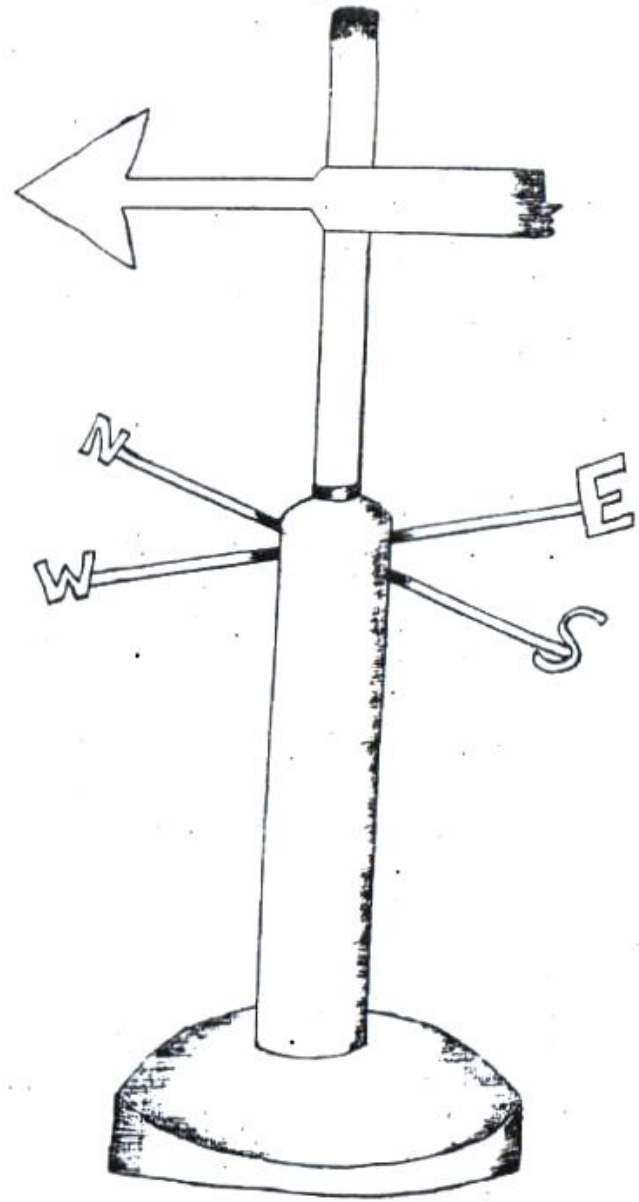


SIX'S MAXIMUM AND MINIMUM THERMOMETER

Thermometers:-

The maximum and minimum thermometers are used for recording maximum and minimum temperature of the air. Six's maximum and minimum thermometer is a combination of maximum and minimum thermometers in one.

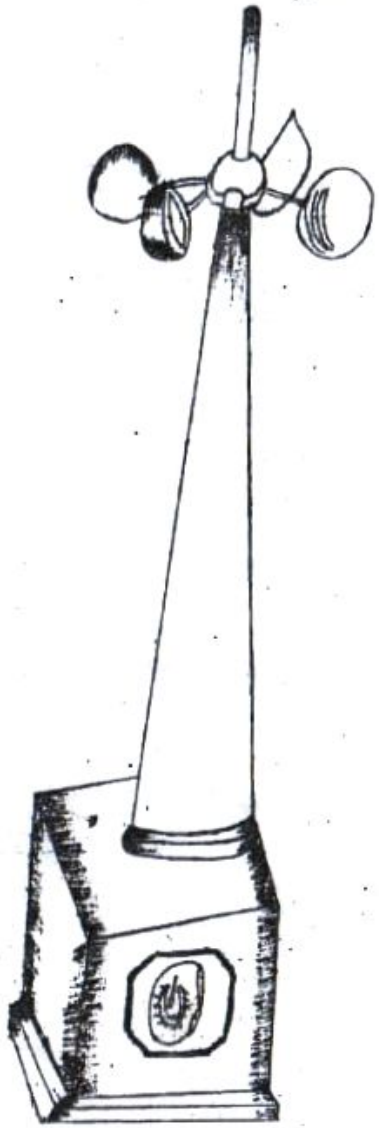
Thermometers are kept in Stevenson Screen. It allows air to pass freely but protects the thermometer from rain and sunshine. Stevenson Screen is a double-roofed shelter which is placed on a grass plot at a standard height.



WIND VANE

Wind Vane :-

It indicates the direction of wind. It consist essentially an arrow mounted on bell-bearing in the horizontal plane to enable the arrow to move freely. Four cross-arms are fixed rigidly below the arrow these 4 cross-arms are directed towards east, west, north and south. the arrow swings horizontally with a slight movement of the air and adjusts itself in position, showing the direction of wind. For example, a East Wind is one which blows from the East.



ANEMOMETER

Anemometer:-

It is an instrument to measure the velocity of wind. It consists of four cups fixed to the arm to a vertical shaft which moves when the cups are set in motion by wind the shaft is connected to a dial, on which the velocity of wind is recorded. The stronger the wind, the fast is the rotation of the cups which is recorded in the dial

Soil Thermometer:-

It is used to find the temperature of the soil at various depths. The depths for which temperature are taken are 15, 30 and 45 cms

Climate:-

The general kind of weather that a place has year after year is known as the climate. The study of climate is called climatology

Weather:-

The condition of the atmosphere at a certain time is called weather. Meterology is the study of weather

Elements:-

Elements are variable and may change quickly. For example, variation in temperature, humidity etc.

Factors:-

Factors are constant and permanent in nature. For instance, altitude, latitude etc.

Elements of Climate:-

1. The temperature of the air.
2. The pressure of the atmosphere
3. The direction and velocity of wind.
4. The humidity of the atmosphere
5. The clouds
6. The precipitation of rain

Factors of Climate:-

i. Latitude
ii. Altitude
iii. Distance from sea
iv. Mountains and their direction
v. Sea currents
vi. Direction of wind

vii. Vegetation viii. Slope of land
ix. Soil x. Snow

Elements of Weather:-

Primary elements are:-

1. Sun 2. Air 3. Water
4. Secondary elements are:-
   i. temperature ii. humidity
   iii. rainfall iv. atmospheric pressure
   v. clouds vi. wind.

Factors of Weather:-

1. The rotality of air
2. The rotation of the earth on its axis
3. The revolution of the earth around the sun.

Climate and Agricultural Relationship

- Climate and Crop relationship
  - Climate and Crop Production
    - Rainfall, temperature, wind, humidity, forest, structure
  - Climate & Crop distribution
    - Himalayan Region, Northern wheat region, Eastern Wheat Rice region, Western Wet region, Southern millet region.
- Climate and soil relationship
  - Red soil, Laterite Soil, Alluvial Soil, Forest and hill soil, Desert soil, Sea line & Alkaline soil, Peaty & Marshy soil

Report:-

Calculations:-

Given length (conventional unit) = 9 Karam

Given width (conventional unit) = 2 Karam

Conversion into metric system

Length = 9 x 5.5 = 49.5 ft
= 49.5/3.3 = 15 m

width = 2 x 5.5 = 11 ft
= 11/3.3 = 3.33 m

Observed readings:-

length = 47 ft = 47/3.3 = 14.24 m

width = 8.5 ft = 8.5/3.3 = 2.57 m

Difference:-

in length = 49.5 - 47 = 2.5 ft = 0.75 m

in width = 11 - 8.5 = 2.5 ft = 0.75 m

Conclusion:-

There is a difference between actual and observed readings & this is due to difference in foot steps of every person.

101 Agronomy Pg 5/=

One ton = 1000 kg = 25 mands
one mond = 40 kg
One quintal = 100 kg = 2.5 mands

NUMERICAL

Numerical No. 1:

Calculate the area of a plot in acres which has the following dimensions: L = 95 Karam W = 19 Karam also calculate the yeild of the plot if the per acre yeild is 100 kg

Calculations:

A = L x W = 19 x 95 = 1805 Sq. Karam
one acre = 1440 Sq. Karam
if 1440 Sq. Karam = 1 acre
1805 Sq. Karam = 1805/1440
= 1.25 acre
yeild per acre = 100 kg
" 1.25 = 100 x 1.25 = 125 kg

Numerical No. 2

Calculate the area of a plot which has following dimensions L = 30 Karam W = 8 Karam also calculate the yeild of the plot when yield is 160 kg per acre.

Calculations:

Area = L x W = 30 x 8 = 240 Sq. Karam
as 1 acre = 1440 Sq. Karam
1440 Sq. Karam = 1 acre
1 Sq. Karam = 1/1440 acre
240 Sq. Karam = 240/1440 acre
= 0.167 acre
yeild per acre = 160 kg
0.167 acre = 160 x 0.167 = 26.67 kg

Numerical No. 3

Area of a plot is 1/80 of an acre Calculate the length of this plot if width is 9 feet

Calculation:

Area = 1/80 acre
while 1 acre = 43560 Sq. ft
Area of the plot = 43560/80 = 544.5 Sq. ft
Length = Area / width
= 544.5/9
= 60.5 ft

Numerical No. 5:

Area of a plot is 1/20 acre calculate width if length is 30 feet

Calculation:

Area of a plot = 1/20 acre

1 acre = 43560 sq ft

Area = 43560/20 = 2178 sq ft

L = 30 ft

W = Area / length

W = 2178/30 = 72.6 ft

Numerical No. 6

Calculate the width of the plot if its width is 15 ft Area is 1/80 acre Also calculate the yield in kg if yeild is 5 tons/acre

Calculations:

1 acre = 43560 sq ft

Area of the plot = 43560/80 sq ft

= 544.5 sq ft

Length = Area / width = 544.5 / 15

= 36.3 ft

1 acre is producing = 5 tons = 5x1000

= 5,000 kg

544.5 sq ft is = 5,000 x 544.5 / 43560

Numerical no. 7.

A farm of 20 acre yeilded 150 tons of grains. Calculate the yeild of a plot measuring 50x15 feet.

Calculations:

Area = 50x15 = 750 sq ft.

1 acre = 43560 sq ft

Area = 750/43560 = 0.0172 acre

yeild per 20 acre = 150 tons

" " 1 acre = 150/20 = 7.5 tons

0.0172 acre produces = 7.5 x 0.0172

= 0.129 tons

1 ton is = 1000 kg

0.129 ton = 1000 x 0.129

= 129 kg.

Numerical No. 8.

A plot measuring 4.5x15 feet yeild 30 kg. Find out yeild per hectare.

Calculations:

AREA = 4.5 x 15 = 67.5 sq ft

1 acre = 43560 sq ft

43560 sq ft = 1 acre

67.5 sq ft = 67.5 / 43560 = 0.0155 acre