



Phenology in practice:

Observing, recording and reporting



Site selection



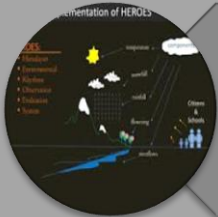
Species selection



Mark selected site and species



Observing and recording



Submit the recorded observation





Site Selection

Types

Representation

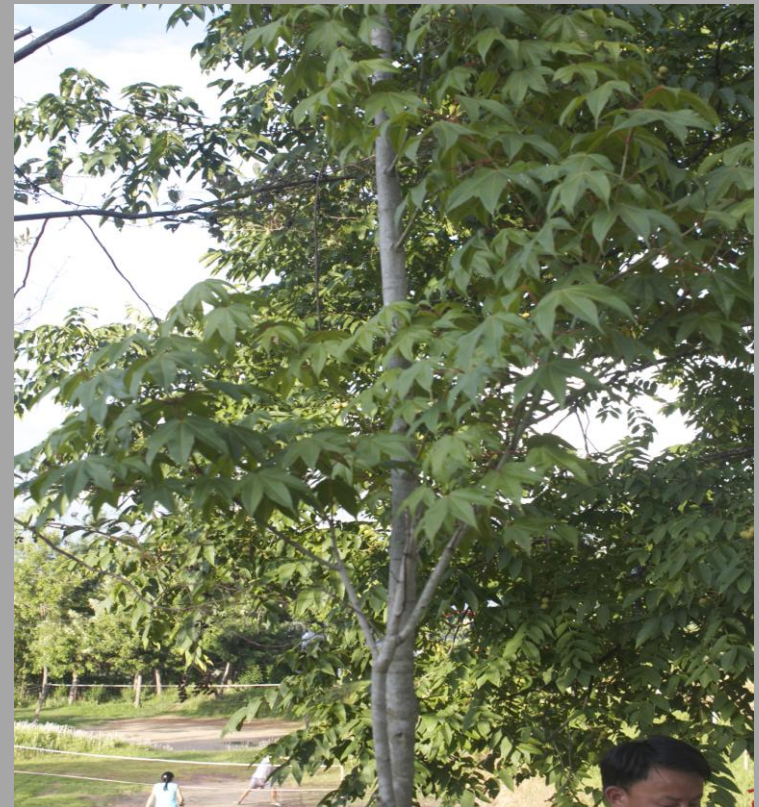
Replication

Area

Plot/Patch



Single Tree





Site Selection

Types

Representation

Replication

Convenience

- Select site that represent local environment
 - Flat/gently sloping area
 - Not excessively dry or wet
 - Forest: Similar to nearby forest
 - Uniform condition
 - Appropriate size: for animal





Site Selection

Types

Representation

Replication

Convenience



If you are observing individual species more than at one site, make sure they are not direct neighbors . They should have similar site condition



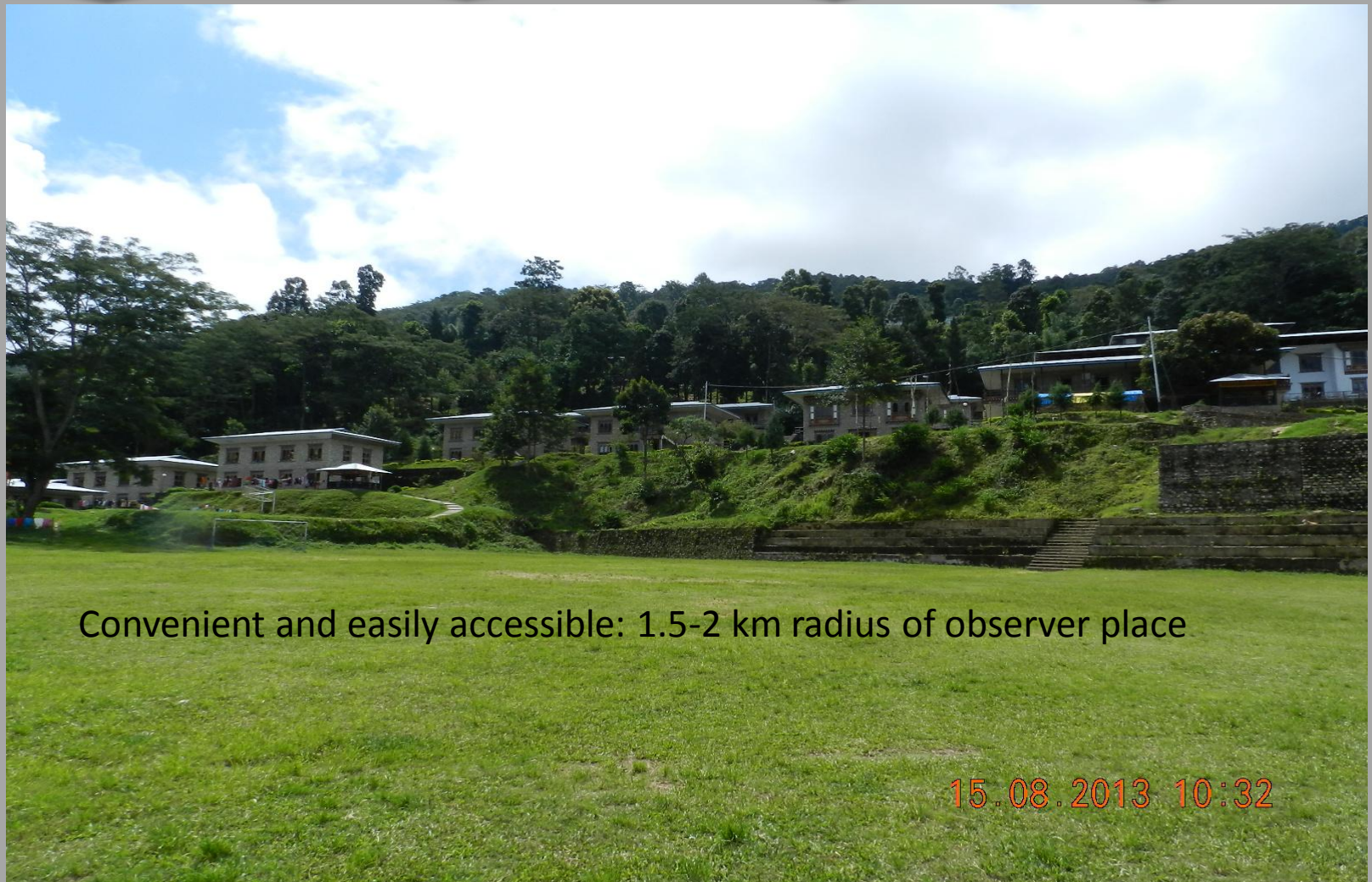
Site Selection

Types

Representation

Replication

Convenience



Convenient and easily accessible: 1.5-2 km radius of observer place

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Species Selection

Objectives

Vegetation Zone

Phenophase

Distribution

Identification



Rubus ellipticus



Prunus persica



Bombax ceiba



Juglans regia



Species Selection

Objectives	Vegetation Zone	Phenophase	Distribution	Identification
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Sl	Elevation Range (m)	Trees	Shrubs	Herbs
1	<1000	<i>Bombax ceiba</i> , <i>Gmelina arborea</i> , <i>Albizia procera</i>	<i>Lantana camera</i> <i>Justicia adhatoda</i> <i>Jartropa carcus</i>	<i>Ageratum conyzoides</i> <i>Thysanolanea maxima</i> <i>Dendrobium</i> <i>densiflorum</i>
2	1000-2000	<i>Prunus persica</i> <i>Juglans regia</i> <i>Pinus roxburghii</i>	<i>Woodfordia fruticosa</i> <i>Laculia gratissima</i> <i>Melastoma malabathricum</i>	<i>Cymbidium</i> <i>hookerianum</i> <i>Cymopogan khasianum</i> <i>Astible rivularis</i>
3	2000-3000	<i>Quercus grifithii</i> <i>Rhododendron arboreum</i> <i>Symplocos paniculata</i>	<i>Elaegnus parviflora</i> <i>Rosa brononii</i> <i>Berberis aristata (option)</i>	<i>Primula denticulate</i> <i>Fragaria nubicola</i> <i>Fagopyrum esculentum</i>
4	3000-4000	<i>Rhododendron arboreum</i> <i>Larix griffithii</i> <i>Acer cambelii</i>	<i>Cotoneaster microphyllus</i> <i>Rubus nebbia</i> <i>Berberis angulosa</i>	<i>Sericium falconari</i> <i>Podophylum hexadrum</i> <i>Cypripedium tibeticum</i>

Species Selection

Objectives

Vegetation Zone

Phenophase

Distribution

Identification



Select species with:

- Distinct phenophase
- Complete phenophase in one year
- Healthy, free of pest and diseases





Species Selection

Objectives

Vegetation Zone

Phenophase


Distribution

Identification

Species with :

- Wide distribution range
- Also, known as calibration species





Species Selection

Objectives

Vegetation Zone

Phenophase

Distribution

Identification



Plant that is familiar,
easy to identify.

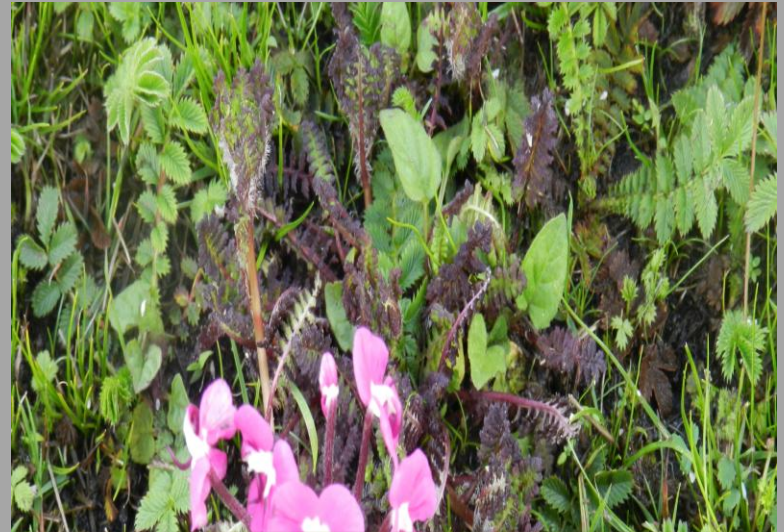




Mark selected species



Botanical name: *Prunus persica*
Common name: Peach
Plant ID:



Botanical name: *Primula denticulata*
Common name: Red Cotton Tree
Plant ID:





Observe and record the observation

What to observe?

How to observe?

When to observe?

How many times?

Phenophase:

1: Leaf bud burst

2: Young leaf

3: Flower bud

4: Open flower

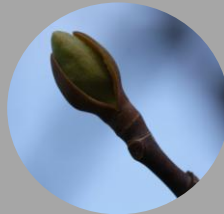
5: Fruit

6: Ripe fruit

7: Leaf fall



2



1



3



4



5



6



7



Observe and record the observation

What to observe?

How to observe?

When to observe?

How many times?



1. Leaf Bud Burst: Leaf bud burst is stage when;

1) Leaf tip is visible at the end of bud



2) But, before first leaf has unfolded to expose leaf petiole or leaf base





Observe and record the observation

What to observe?

How to observe?

When to observe?

How many times?



2. Young leaf: 'Young' and 'unfolded' leaf is stage when;

1. Its entire length has emerged from bud scale so its leaf stalk or petiole is visible at its point of attachment to stem
2. But, before leaf has reached its full length or turn dark green or mature





Observe and record the observation

What to observe?

How to observe?

When to observe?

How many times?



3. Flower bud : Flower bud is a stage when;

1. One or more fresh unopened flower are visible on the plant

2. But, before all the flower opens/
flowers parts separate from each others





Observe and record the observation

What to observe?

How to observe?

When to observe?

How many times?



4. Flower: 'Open' flower is a stage when;

1. Reproductive parts are visible between or within other floral parts(sepals and petals) or outer floral parts have separated from each others





Observe and record the observation

What to observe?

How to observe?

When to observe?

How many times?



5. Fruit: Fruit is considered as reproductive stage when;

1. It has not attained full maturity or reached full size



2. But, before it has changed color on maturity or readily drops from tree





Observe and record the observation

What to observe?

How to observe?

When to observe?

How many times?



6. Ripe Fruit: Ripe fruit is reproductive stage when;

1. Fruit has attained maximum size, has changed color from green to brown or yellow and readily drops from tree.





Observe and record the observation

What to observe?

How to observe?

When to observe?

How many times?



7. Leaf fall: Leaf fall is the stage when;

1. Leaf is falling or has recently fallen from the plant.

2. But, not the one which has fallen due to disturbance or before it has reached the maturity.





Observe and record the observation

What to observe?

How to observe?

When to observe?

How many times?

1	Get the necessary equipments: <ul style="list-style-type: none">• Phenophase definition & instruction• Datasheet, clipboard, pencil• Binoculars and camera
2	Visit the site as per the observation schedule: <ul style="list-style-type: none">• Check the plant phenophase for each plant• Crosscheck the phenophase at least from few position
3	Record the observation in the species datasheet: <ul style="list-style-type: none">• Date and time: Date and time of the observation• Species name: Species being observed• Yes(Y): If you saw that the phenophase is occurring• No(N): If you saw that phenophase is not occurring• Uncertain(?): If you are not sure about phenophase or haven't observed the phenophase.
4	Taking pictures <ul style="list-style-type: none">• Take picture of phenophase being observed• Take picture whole plants• Download and save as per the recommendation

Place Datasheet here



Observe and record the observation



What to observe?

How to observe?

When to observe?

How many times?

Winter			Spring			Summer			Autumn		
Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov

Mon	Tue	Wed	Thu	Fri	Sat	Sun

9 am	10 am	11 am	12	1 pm	2 pm	3 pm	4 pm



Observe and record the observation

What to observe?

How to observe?

When to observe?

How many times?

Days	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Tree	0000	0000	0000	0000	0000	0000	0000
Shrub	00000	00000	00000	00000	00000	00000	00000
Herb	000	000	000	000	000	000	000



Submit the observation



Sl	Options	Scenarios
1	Daily	Normal
2	Biweekly	If there is disruption of internet services
3	Weekly	If there is disruption of internet services If there is exam that might delay the submission
4	Monthly	If there is exam If there is vacation



Special cases

1. What if the plant that I observe dies?
2. Can I report 'leaf bud' burst even if I see 'young leaf' on the plant?
3. Can I report 'flower bud' even if I see 'open flower' on the plant?
4. What if I see flower before leaves?
5. What is If see any phenophase for second or third time in a season?
6. Why should look for phenophase when it has already occurred?
7. Why should record my observation when nothing seems to be happening?
8. What if i missed the phenophase?

THANK YOU