RESEARCH REVIEW JOURNALS
Volume-04
Issue-01
January -2019

ISSN: 2455-3085 (Online)
RESEARCH REVIEW International Journal of Multidisciplinary
www.rrjournals.com [UGC Listed Journal]

Seed Collection & Identification of Forest Trees of South Kashmir, (J&K): India

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ARTICLE DETAILS

Article History
Published Online: 20 January 2019

Keywords
Forest, seeds, study, collection, identification.

ABSTRACT

The trees and other plants in a large density wooded area are referred as forest. The present study is oriented towards collection and identification of seeds in forest areas of South Kashmir region of Jammu and Kashmir. The forests of district Anantnag, Kulgam ,Shopian and Pulwama has been scrutinized for the data collection. The forests possess great variety of trees. like Deodar or Himalayan cedar Kairo or Blue pine, Abies webbiana or the Himalayan silver fir, Celtis australis, Birch, Maple, Hazel, Wild Oak, Beech, Fir and Pine etc. The seeds of forests have been collected with great care and identified accurately using proper taxonomic techniques. Seeds of about 15 forest tress belonging to four families have been selected for study from the area. The keys developed for work are based on the seed morphology.

1. Introduction

According to **Anon** (1966) "Forest is an area set aside for the production of timber and other forest produce, or maintained under woody vegetation for certain indirect benefits which it provides e.g. climate or productively" Benefits of Forest to humankind and to environment maintenance are innumerable. A very significant input for plantation and regeneration of forests seed analysis & testing is necessary. In order to restore retain and increase forest wealth, natural as well as artificial methods of forest establishment are necessary. Since plants propagate by seeds, therefore seed collection remained one of main occupations of man from past times and it took concrete form when men sowed seed to harvest food and retained some of them to provide bases for crops for the following year. Therefore attempts are being made to collect the seeds in large quantities to reforest the area

In order to maintain valuable seed quality, various efforts at national and international level were taken .A set of rules were framed to maintain standard of quality control in forest seeds have been developed by *International Seed Testing Association* (ISTA) of North America, *the federation of international due commerce des senesces* (FIS) and *Forests Research institute*, Dehradun in India. **Anon (1979)** stated that production, testing and distribution of high quality seed need to be regulated by strict quality control through seed certification. Therefore number of initiatives under guidance of trained and experienced persons was taken for launching the seed certification programmers like collection, field inspections, processing, sampling, testing and identification of seeds. Proper taxonomic procedure is utilized for seed Identification which helps in management of forest and crop improvement. In modern agriculture and farming, seed reorganization is of prime important to adopt perfect methods of growing plants of interest. In order to meet the problems of labeling of agriculture, forestry and other seeds, a specialized area of botany called **'Seed Identification'** has been developed. As there are botanical manuals for the identification of plants there are number of organized treatments for the identification of seeds. According to **Kozlowski** and **Gunn 1972,** "Basic knowledge of fruit and seed morphology is essential for anyone involved in seed supply both in order to identify seeds and fruits

The selection of seed source is the most important aspect of nursery seedling and identification purpose (**McMillan**, **1979; Dirr** and **Heuser**, **1987).**The guidelines may be followed to select the tree for seeds (**Stein *et al***, **1974**). For collection of seeds and fruits a great variety of method and equipments are available (**Robbins *et al* 1981**). Care must be taken to avoid collection of insect infected seeds at the time of seed collection **(Harsh and Joshi, 1993).** Almost all the tree seeds attain best quality only when allowed to ripe fully on the trees (**Wakety**, **1938).**Seed identification is the area of botany that has concerned with labeling forestry seeds, agriculture seeds, vegetable seeds etc. In seed identification variation in seed size, shape, and color are important.

Materials and Methods: Plastic bags, tag slips, storage containers like glass jars, camera & measuring scale. The method used field surveys. A guided field walks with help of informants and field assistant were conducted with patience to create an opportunity to observe and write down note on habitat, morphology and characteristics of seeds and plants.

2. Data Analysis

- **ACERACEAE**

***1. Acer caesium* Wall *ex.* Brandis.(Fig. I)**

Local name**:** Tilpatra;Common name: Bluish grey maple.

Distribution: - Phelgam, Pir Panjal

Description: Deciduous tree; large sized, pale grey bark, sometimes dark with slivery patches. Leaves serrate pale-beneath. Flowers are yellowish green, appearing with the young leaves. Fl. & Fr: - March-April; Oct.-Nov

Seed characters: Seeds gibbous, dark brown, L x B= (2.6 X 2-3) mm

***2. Acer pentaponicum* Stewart. . (Fig. E)**

Local name: Trikan, Common name…Maple

Distribution: Mountain ranges of Verinag.

Description: Deciduous tree; grey bark .Leaves with truncate base, broader then long, sometimes 3-5 lobed, and 3

prominent pennivenid nerves.Fruit short corymbs, wing erect or divergent, and semi ovate. Fl. & Fr: April-May; Aug-Sep.

Seed characters: Seeds thin, compressed, dull brown, Lx B= (11 mm X, 5mm)

3. Acer pictum Thunb. **. (Fig. N)**

Local name: Trikan. Commen name: Yellow paint Maple

Distribution:- Phelgam valley.

Description;-

Deciduous, medium sized tree; pale grey or slivery brown bark, fairly smooth with sallow cracks. Leaves acuminate; Flowers greenish yellow; pentamerous. Fruit: glabrous, nuts.

Fl. April- May; Fr. June-July

Seed characters: Seeds strong brown, thin, compressed, L x B= 10 mm x 5mm

• FAMILY BETULACEAE

4. Alnus nitida **Endl.(Fig. J)**

Local name: Champ-Kul. Commen name: Western Himalayan Alder

Distribution:- Jhellum vally,Lidder Valley,Aharbal mountain range

Description:-Large deciduous tree; dark brown bark; deeply furrowed; Branch-lets pubescent; Leaves entire or obscurely crenate, glabrous, elliptic or elliptic-ovate, acuminate. Fruit spikes. Fl; Sep-Oct; Fr; Nov-Dec.

Seed characters:Nuts yellowish red with a thickened margin,; wings of nutlets thick leathery;

L x B= 3mm 1 mm

5. Betula utilis **D.Don.** (Plate-**)**

Local name: Burz-kul, bhojpatra. Common name: Himalayan Siliver birch.

Distribution: Common at high attitudes Pir Panchal

Description: Deciduous tree; medium size, bark white, peeling off in papery layers.Leaves serrate, ovate, acute, base broadly rounded or cuneate. Fl-May-June ; Fr- Sept.-Oct.

Seed characters: Seeds yellow; elliptic, compressed, L x B=, 2-3 mm x 1mm

• FAMILY PINACEAE

6. Abies pindrow **Royle .(Fig. A)**

Local name: Badul.Commom name: Western Himalayan Siliver Fir.

Distribution: Mountains of Kokernag valley

Description: Evergreen tall trees with a narrow cylindrical crown of drooping branches; grayish brown or dark grey bark, become more or less furrowed with maturity. Leaves spirally arranged, linear, flattened, length-2-4 cm .Cones -cylindrical or erect. Fl-April, cones ripen in Sep-Oct.

Seed Characters:

Seeds brown shining, naked, winged, seed wings twice the length of seed. , Lx B= (1-1.2cm) x (2.5-3.2 cm),

7. Abies spectabilis **(D.Don) Spach**

Local name: Kaucb-badul.Common name: Himalayan Siliver Fir.

Distribution: Mountains of Kokernag valley

Description: Evergreen tall tree with dense cylindrical crown of pendulous branches; blackish and less deep fissured bark. Shoots hairy. Leaves flat,narrow- linear, 1-2 in number.Cone cylindrical or erect. Fl.-April cones ripen in Sep-Oct

Seed characters: Seeds shining brown, winged, scaly, oblong, obovoid, L x B= (8 mm) x (4-5mm)

8. Juniperus communis **Linn. .(Fig. L)**

Local name: Betar. Common name: Common juniper, red cedar

Distribution, Jhelum Valley

Description:Small tree; stem procumbent. Leaves sharply pointed, linear, in whorls of 3.Flowers yellow, auxiliary,. Fruit blue black berry, oblong, sub-glubose, Fl. May-June; Fr. Aug-Oct of second year.

Seed characters: Seeds brown in color, 3 corned with depressions between, elongated, ovoid,

L x B = (8-10 mm) x (6-8 mm).

9. Juniperus recurva **Buch-Ham.(Fig. M)**

Local name: Haulber. Common name: Weeping blue juniper

Distribution: Pir Panchal ranges of south Kashmir.

Description: Evergreen small tree. Leaves bluish green, flat above and curved beneath, awl shaped, overlapping in whorls of three. Flowers monoecious or dioecious. Fruit blue black berry. Fl. June- July; Fr. Aug-Oct. of the second year.

Seed characters: Seeds dark brown in color, solitary, ovoid and pitted, L x B= (8-10 x 6-8) mm

10 ***Pinus wallichiana*** **Jacks.**

Local name: Kair, yari. Common name: Himalayan blue pine

Distribution: All mountain ranges of South Kashmir

Description: Evergreen large tree; greenish grey-pinkish, brown smooth bark; Scales woody slightly with obtuse tips. Leaves in bundles of 5. Cones solitary 2-5 together Fl. Feb-Apr; Fr. Sep-Oct. of next year.

Seed Characters:

Seeds blackish in color, egg shaped, acute, compressed, obliquely truncate; L x B= (6.5-9 mm x 3.5-5 mm).

• FAMILY ROSACEAE

11. Prunus armeniaca **Linn. .(Fig. B)**

Local name: cheir.Common name: Apricot

Distribution: Pir Panchal range

Description:Small deciduous tree; leaves broad-ovate; flowers pinkish or white; fruit stony, smooth yellow; Fl- April; Fr. -July-Aug.

Seed characters:

Seeds yellowish red, smooth with sulcate margins, ovoid, L x B =(20-25 mm) x (20 mm)**,**

12. Prunus cerasus **Linn. .(Fig. D)**

Local name: Aulch,Common name: Sour cherry.

Distribution:Shopian and Pulwama Districts.

Description:Small deciduous tree. Leaves 2-3, crenate, serrate, ovate, elliptic, abruptly acuminate, Flowers white, on long slender peduncles .Fruit smooth shining, drupe, globose . Fl. April-May; Fr. Aug.-Sept

Seed characters: Seeds Light gray in color, globose, rounded, smooth, L x B =(5-8 mm x 4-6 mm)**,**.

***13. Prunus cerasifera* Ehrh. .(Fig. O)**

Local name: Gurdol. Common name: Myroblan plum.

Distribution: All areas of South Kashmir

Description:Deciduous tree; dark grey bark. Leaves more or less rounded, purple. Flowers pink-white. Fruit red or yellow colored. Fl. April-May; Fr. Sep-Oct.

Seed characters: Seeds light brown, ovoid or ovate-ovoid, whitish with scarious or smooth surface, L x B = (15 mm x 8-10 mm).

14*. Populus ciliata* Wall. *ex* Royle.(Fig. H)

Local name: Panjeeb/ Parim phras.Common name: Himalayan poplar.

Distribution: Throughout South Kashmir

Description: Large Deciduous large tree; brown, vertically deep-fissured bark, smooth on young trees. Leaves cordate, alternate broadly acute. Fruit ovoid, capsule. Fl. and Fr. March-May

Seed characters: Seeds slightly black, enclosed in a long silky hair, spherical in shape. 1-2 mm in length.

***15. Populus nigra* Linn. .(Fig. F)**

Local name: Kashur phras. Common name: Italian poplar

Distribution: Throughout South Kashmir

Description: Deciduous large tree with viscid buds & narrow pyramidal crown; grey, rough, deeply furrowed bark. Leaves ovate to rhomboid. Flowers greenish. Fl. and fr. April.-May

Seed characters: Seed comparatively much broader than long.

3. Results

KEYS TO SEED IDENTIFICATION

1a. Seeds smooth
- 2a.Seed round — *Prunus cerasus*
- 2b.Seeds ovoid — *Prunus armeniaca*

1b. Seeds rough
- 3a.Seeds pitted — *Juniperua recurva*
- 3b.Seeds hairy — *Populus ciliate*

4a. Seeds enclosed
- 5a. Seeds less than 10mm — *Acer caesium*
- 5b. Seeds equal to 10 mm — *Acer pictum*

4b. Seeds naked
- 6a. Seeds winged — *Abies pindrow*
  - 7a. Seeds shinning brown — *Abies spectabilis*
  - 7b. Seeds yellowish — *Alnus nitida*
- 6b.Seeds without wings

8a.Seeds compressed
- 9a.Seeds blackish — *Pinus wallichiana*
- 9b. Seeds dull brown — *Acer pentaponicum*

8b.Seeds non-compressed
- 10a. Seeds elliptic — *Betula utilis*
- 10b. Seeds ovoid — *Juniperus communis*

11a.Seeds less than 10mm *Populs nigra*

11b, Seeds greater than 10mm *Prunus cerasifera*

4. Discussion and conclusion

Literature does not have description or illustration of most of the Indian forest seed especially Kashmir forest seeds and the remaining forest tree species in India. The present work is concerned with identification clues of seed of forest trees of South Kashmir based on their morphology. The available description are not enough exhaustive, to help in the positive identification of the seed. The aim of this study is not to study the forest seed morphology aim to help their identification.. Need of forestry arose at a faster rate; therefore this work should prove to be helpful to botanists, foresters, seed analysts and seed traders. The species in the work are found in the South Kashmir forests. The seeds of tree species in this work are of different shapes viz flattish or compressed, with elliptic oval circular, or oblong outline. Seed coat is usually thin tough & smooth.

The keys developed for work are based on the seed morphology and is not necessary to be applicable to other seeds of the same families. However, the clues to distinguish one species from other, detailed description are also given in keys to species. It is believed that the detailed description will be helpful in identifying these seeds from those not included in the plan. The keys are accompanied by photographs and these are auxiliary to description. These will help to comphrend the clues to their identification. Botanical “Keys” are used for quick and easy identification of a seed of a species. Each species in the work has been given a dichotomous key by which a plant or seed can be identified properly.

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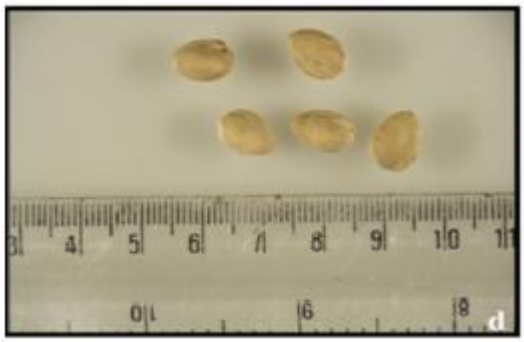
Prunus armeniaca Linn. FIG B

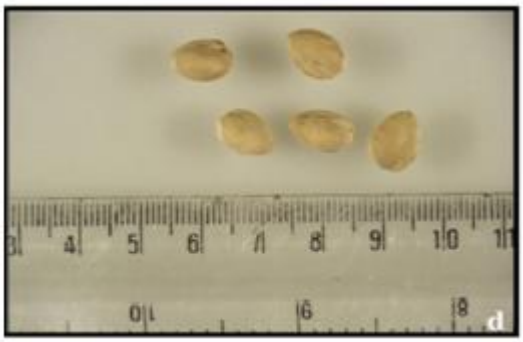
Abies pindrow ROYLE.FIG A

Prunus armeniaca Linn. FIG B



Abies pindrow ROYLE.FIG A

Abies spectabilis FIG C



Prunus cerasus FIG D

(Acer pentaponicum FIG E)

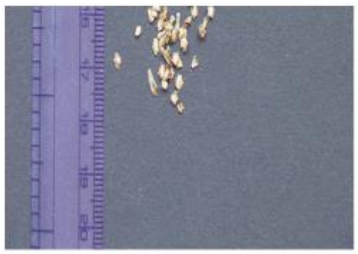
(Poplus nigra FIG F)

Pinus wallichiana Jacks Fig G

Populs ciliata Fig H

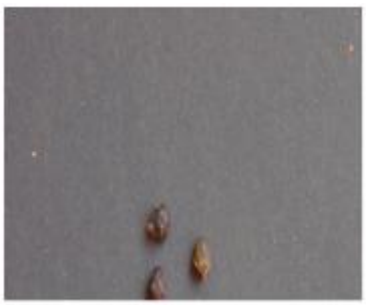
Acer caesium Fig I

Alnus nitida Fig J



Betula utilis FigK

Juniperus communis Linn Fig L



Juniperus recurva Buch-Ham. Fig M

Acer pictum Fig N

Prunus cerasifera Fig.O