

## Project Reports

### *Amarakośa* – A Biological Assessment\*

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The project aims to make a biological assessment of *Amarakośa* with respect to classifying the information pertaining to ecology, biodiversity, agriculture, economic botany and systematics particularly with reference to plants preparing a list of plants/ animals with all their synonyms. It also plans for etymological analysis of names of plants/ animals mentioned in different commentaries and interpreting those explanations in terms of botanical/ zoological characters.

The work was planned under the following chapters.

- I. Introduction
- II. Methodology of study
- III. Discussion and findings
- IV. Conclusion
- V. Reference and bibliography

#### 1. INTRODUCTION

Sanskrit literature abounds in lexicons. There are references to various lexicons such as those of *Kātyāyana*, *Vācaspati*, *Vyāḍi*, *Vararuci*, *Bhāguri*, *Dhanvantari*, *Amarasiṃha*, etc., in many ancient Sanskrit texts, but none of these except for *Dhanvantari*'s and *Amarasiṃha*'s are extant. Between the two the latter's work *Nāmalingānuśāsana* popularly known as *Amarakośa* is very familiar to every student of Sanskrit. It is of great interest to note that though the book is the production of a Buddhist, it has been universally accepted as an authority by Brahmins and Jains as well. The fact that the Chinese and Tibetan translations of *Amarakośa*

have been recently discovered bears eloquent testimony to its acceptability and universal popularity. There are many commentaries on *Amarakośa*, the commentators being *Maheśvara*, *Vyākhyāsudhā*, *Bhānuji Dīkṣita*, *Kṣīrasvāmin*, *Mallinātha* etc. The commentaries are as follows:

- a. Kṣ hīrasvāmin's commentary called *Amarakośodghāṭana* ( K G Oka)
- b. Bhānuji Dīkṣita's *Vyākhyāsudhā* or *Rāmāśramī commentary* of *Amarakośa*
- c. *Amarakośa* English translation by HT Coelbroke (1891)
- d. *Maṇiprabhā* commentary of *amarakośa* by Haragovindaśāstrī.

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- e. *Maheśvari* commentary (R G Bhandakar)
- f. *Amarakośa* with *Rasālākhyā* commentary by Śaktidhara Śāstrī
- g. *Ratnaprabhā* commentary of *Amarakośa* by Brahmānanda Tripāthī
- h. *Amarakośa* with *Nāmacandrikā* commentary by Viṣṇudatta Śarmā

Among the above from the point of view of biological terms commentaries of Kṣīrasvāmin and Rāmāśramī commentary are supposed to be highly informative.

### 1.1 Date and life of Amarasimha

Very little is known about the date and life of Amarasimha. The following Subhāṣita points out that Amarasimha was one among the nine gems (*Navaratnāni*) in the court of King Vikramāditya. It is believed that the Vikramāditya mentioned in the Subhāṣita is none other than the Candragupta II Vikramāditya of the 4<sup>th</sup> century A D. On the basis of all these, it seems fair to assign a date around 450 A. D. for Amarasimha. According to M.S. Katre ( 1948 ), however Amarasimha's date is not certain.

### 1.2 Basic outlines of the book

The book, though popularly known as *Amarakośa* is entitled *Nāmaliṅgānuśāsana* by Amarasimha, meaning a lexicon dealing with names and their genders. In order to help remember it easily the entire matter is rendered in the form of *ślokas* as was in vogue at that time. The book is divided into three *kāṇḍas* (parts). Every *kāṇḍa* is divided into *vargas* (chapters) depending on the matter they deal with. The first part (*prathama kāṇḍa*) deals with matters concerned with *Svarga* (heavens), *Vyoma* (space), *Dik* (directions), *Vāri* (water) etc., and has twelve *vargas*. The second part (*dvītiya kāṇḍa*) has ten *vargas* and deals with matters like *Bhūmi* (earth), *Pura* (town), *Śaila* (mountains), *Vanaushadhi* (wild plants), *Vaiśya*

(commerce), *Manuṣya* (man) etc. The third part (*Trītiya kāṇḍa*) deals with grammatical matters and has 38 *vargas*. The total number of *ślokas* in *Amarakośa* vary according to different versions. It is not certain how many were originally written by Amarasimha and how many have been interpolated at a later stage. Kṣīrasvāmin's commentary (Oka, K G 1913) mentions 1498 *ślokas* as original and 58 as interpolations. Rice (Balasubramanyam, 1970) includes 1540 as original *ślokas* without any interpolations.

## 2. ECOLOGY

There is no direct reference in *Amarakośa* either to ecological principles or the effect of environment on plants and animals. However various physiographic features and a basic classification of the land provided.

### 2.1 Abiotic factors

Abiotic factors of the environment such as rivers, mountains and such other aspects are mentioned in *Vārivarga*, *Bhūvarga*, *Puravarga* and *Śailavarga*. The following rivers find a mention – Gaṅgā, Yamunā, Narmadā, Karatoyā, Bahuda, Śatadru, Vipāśā, Śone, Śarāvātī, Vetravātī, Candrabhaga, Sarasvatī, Godāvarī, Bhīmarathī, Kṣṇavenī, Gautamī and Kāverī.

### 2.2 Biotic factors

The *Vārivarga* mentions various types of water plants that grow in different regions. Various types of water lilies are mentioned- Saugandhikā – light red; Rakta sandhyaka – red lily; Kumuda – white lily; Puṣkara, Rājīva – lotus; Pundarīka – white lotus. Besides Algae are also mentioned with two names – Jalanīlī and Śaivala. Different types of places are mentioned where various plants grow. The *Bhūvarga* gives an account of places where plants of different types grow. These are - *Naḍvān*, *Naḍvala* - Place where reeds grow; *Kumudvā* - Place where lotuses grow; *Vetasvān*- Place where

elephant grass grows; *Śādvala*-Place abounding in grasses (probably grassland); *pañkila* - Place full of silt - muddy country; *Anūpa* - Place with plenty of water probably where hydrophytes grow and *Kaccha* - Swampy or marshy land.

There is also a mention of fields where irrigated (*naḍīmāṭṛka*) and non-irrigated - rain fed - (*devamāṭṛka*) crops are grown.

### 2.3 Biodiversity

*Amarakośa* gives a vivid account of flora and fauna that were available to Amarakośa. The description in *Amarakośa* is by no means a comprehensive one and cannot be taken as a true depiction of the total flora and fauna.

#### 2.3.1 Plant biodiversity

*Amarakośa* includes water plants in *Vārivarga* while wild plants are listed with their synonyms in *Vanaśadhi varga*. Plants of commerce find place in *Vaiśya varga*. *Manuśya varga* includes herbs used in perfumery and cosmetics. *Vanaśadhi varga* totally includes about 300 plants with their synonyms.

#### 2.3.2 Animal biodiversity

Animals are listed in *Vārivarga* (aquatic) and in *Siṃhādi varga* which also includes birds. The following is an account of animals

##### Animals in *Siṃhādi varga*

This chapter lists the various synonyms of animals, birds and their parts. Most of the animals listed are wild. Approximately about 80-90 animals are included in this chapter. A few of them are given below.

1. Lion: *Siṃha*, *Mṛgendra*, *Panchāsya*, *Haryakṣa*, *Kesarī*, *Hari*, *Kanṭhīra*, *Gajaripu*, *Piṅgaḍṣṭi*, *Mṛgādhipa* (10 names).
2. Tiger: *Punḍarīka*, *Pañcanakha*, *Citrakāya*, *Mṛgadviśa*, *Śārdūla*, *Dvīpin*, *Vyāghra* (7 names).

3. Hyena: *Tarakṣu*, *Mrgādana*.
4. Boar: *Varāha*, *Sūkara*, *Ghrṣṭi*, *Kola*, *Potrī*, *Kiri*, *Kiṭi*, *Damṣṭrī*, *Ghoṇī*, *Stabhdharomā*, *Kroḍo*, *Bhūdara* (12 names).
5. Monkey: *Kapi*, *Plavaṅga*, *Plavaga*, *Shākhāmṛga*, *Valīmukha*, *Markaṭa*, *Vānara*, *Kīśa*, *Vanaukas*.
6. Bear: *Ṛkṣa*, *Accha*, *Bhalluka*, *Bhalla*.
7. Rhinoceros: *Gaṇḍaka*, *Khadga* (one horned), *Khadgī* (double horned).
8. Bison: *Lulāya*, *Mahiṣa*, *Vāhadviṣat*, *Kāsara*, *Sairibha* (5 names).
9. Jackal: *Śivā*, *Bhūrimaya*, *Gomāyu*, *Mṛgadhūrtaka*, *Śṛgāla*, *Vañchaka*, *Kroṣṭu*, *Pheru*, *Pherava*, *Jambuka* (10 names).
10. Cat: *Otu*, *Biḍāla*, *Mārjāla*, *Vṛṣadamśaka*, *Ākhubhuk* (5 names).
11. Iguana: (a type of big lizard) *Gaudhera*, *Gaudhāra*, *Gaudheya* (3 names).
12. Gecko: (garden lizard): *Saraṭa*, *Kṛkalāsa* (2 names).
13. House lizard: *Musalī*, *Gṛhagodhikā* (2 names)
14. Dove: *Pārāvata*, *Kalarava*, *Kapota* (3 names)
15. Hawk: *Śaśādana*, *Patrī*, *Śyena* (3 names)
16. Owl: *Ulūka*, *Vāyasārati*, *Pecakau* (3 names)
17. Heron: *Lohapṛṣṭa*, *Kaṅka* (2 names)
18. Woodpecker: *Śatapattraka*, *Dārvāghāṭa* (2 names).
19. Parrot: *Kīra*, *Śuka* (2 names).
20. Peacock: *Mayūra*, *Barhina*, *Barhī*, *Nīlakaṇṭha*, *Bhujaṃgabhuk*, *Śikhāvala*, *Śikhī*, *Kekī*, *Meghanāda*, *Anulāsya* (10 names).

##### Aquatic animals (including fishes)

The *Vārivarga* or the chapter on water deals with all aspects both biological and non-biological pertaining to water – various rivers, boats, ships,

navigator, fisherman etc. The following are a few of the aquatic animals mentioned in *Vārivarga*.

**Fish** : *Pr̥thuroma*, *Jhaṣa*, *Matsya*, *Mīna*, *Vaisāriṇa*, *Aṇḍaja*, *Visāra*, *Śakulī*; **Fishlings**: *Gaḍaka*, *Śakula*. **Sheat fish**: *sahasradamṣṭraḥ*, *Pāṭhīna* **Porpoise**: *Ulūpī*, *Śīśuka*; **Fish found in seas**: *Nalamīna*, *Cilicīma*; **Flying fish**: *Proṣṭhī*, *Śapharī*; **Alligator**: *Makara*; **Otter**: *Śimśuma*;

#### Snakes and Poisonous substances (*Bhogivarga*):

The *Bhogivarga* gives an account of different types of serpents both aquatic and terrestrial. The following are some of the terms with reference to serpents:

**Huge serpent**: *Nāga*, *Kādraveya*; **King of serpents**: *Ādiśeṣa*, *Ananta*; **Boa constrictor**: *Gonasa*, *Tilitsa*; **Water snake**: *Alagarda*, *Jalavyāla* ; **Snakes**: *Sarpa*, *Pr̥dāku*, *Bhujaga*, *Bhujāṅga*, *Bhujāṅgama*, *Aśīviṣa*, *Viṣadhara*, *Cakrī*, *Vyāla*, *Sarīṣra* etc.

### 3. BOTANICAL ASPECTS

#### 3.1 Phytography

Various parts of the plant have been described in *Vanauśadhivarga*. The following are some of them.

#### Plant parts

The *Vanauśadhi varga* as well as *Vārivarga* mention different plant parts. These are :

*Nāla*- The stalk of the lotus flower.

*Mṛṇāla*, *Bisa* - The tubular petioles of lotus.

*Karahāta*, *Śiphākanda*- Rhizome of lotus.

*Kiñjalka*, *Kesara*- Androecium

*Samvartikā*, *Navadala* - Leaf buds - young leaves.

*Bījakosa*, *Varāṭaka*- The fruit of the lotus.

*Praphulla*, *Uṭphulla*, *Samphulla*, *Vyākośa*, *Vikaca*, *Sphuta*, *Phulla*, *Vikasita*. - Open flower.

*Sthānu*, *Śaṅku*- The trunk of a tree where branches are removed

*Kṣupa* - Dwarf tree.

*Sthamba*, *Gulma* - Shrubs

*Vallī*, *Latā*- Creepers.

*Vṛkṣa*, *Mahīruha*, *Śākhī*, *Viṭapī*, *Pādapa*, *Taru*, *Anokaha*, *Kuṭa*, *Śāla*, *Palāśī*, *Dru*, *Druma*, *Āgama*- Trees

*Prakāṇḍa*, *Skandha*- Shoot

*Śākhā*, *Latā*- Branches

*Skandhaśākhā*, *Śālā*- The main or principal branch of a tree.

*Śiphajāta*- Fasciculated roots

*Avaroha*- Prop roots (as in Banyan tree )

*Śirogra*, *Śikhara*- Apex of the plant

*Mūla*, *Budhna*, *Aṅghri* - Roots

*Sāra*, *Majjā* - Heartwood inclusive of pith

*Tvak*, *Valka*, *Valkala*- Bark, rind or periderm

*Vallarā*, *Manjari* - A cluster, either of leaves or of flowers.

*Patra*, *Palasa*, *Chadana*

*Dala*, *Parṇa*, *Chada*- Leaf

*Pallava*, *Kisalaya*- A sprout (the term could be used for leaf bud also)

*Vistara*, *Vitapa*- Small branches and branchlets

*Sasya*- Fruit or grain

*Vṛnta*, *Prasavabandhana*-Pedicel, petiole, peduncle, rachis

*Śalāṭu*- Unripe fruit

*Vāna*- Dispersed (withered ) fruit

*Kṣāraka*, *Jālaka*- Ovary

*Kalikā*, *Koraka*- Ovary immediately after fertilization.

*Gucchaka*, *Stabaka*- Inflorescence

*Kuñmalo, Mukula*- Floral bud

*Sumanasa, Puṣpa, Prasūna, Kusuma, Suma*- Flower

*Makaranda, Puṣparasa*- Nectar

*Parāga, Sumanoraja*- Pollen grains

*Āśvattha, Vaiṇava, Plākṣa, Naiyagrodha, Aiṅgudam, Bārghata*- Hypanthodium

(Inflorescence cum fruit of plants of the family Moraceae)

### Forest - Garden types

The classification of forests into small forests (*Aranya* etc) and large forests (*Mahāranya* etc ) is given right in the beginning of *Vanauśadhi varga* thus :

*Āṭavyāranyaṃ vipinaṃ gahanam kānanaṃ vanaṃ*

*Mahāranyaṃ aranyaṇi.....*

The cultivated gardens are of the following types:

*Grihārāma, Niṣkuṭa*-Kitchen garden; *Ārāma, Upavana*- Public park; *Kṛtrimavan*- A grove with a thick growth of plants resembling a small forest; *Vṛkṣavāṭikā* - A pleasure grove; *Kṛḍḍodiyāna* - Royal garden; *Pramadavana*- Royal garden attached to harem.

### List of plants

A list of more than 220 plants are mentioned with all the synonyms in the four *Vargas viz., Vārivarga, Vanauśadhi varga, Manuṣya varga* and *Vaiśya varga*.

**Vārivarga** (water plants): The *Vārivarga* mentions different types of lotuses and water lilies as follows : *Indīvara, Kuvalaya* etc.-*Nelumbo nucifera* (Nymphaeaceae) Gaertn.; *Padma, Nalina, Pundarīka* etc.-*Nymphaea nonchali* (Nymphaeaceae) Burn.

**Vanauśadhi Varga** (wild plants): This *Varga* consists of a list of more than 220 plants. It is beyond the scope of this summary to list all the

plants. In general, the plants mentioned are all wild ones except for a few like coconut, date palm, areca palm etc. In the beginning, trees are mentioned followed by shrubs, herbs, creepers and then lastly the grasses. A few representatives may be mentioned here.

### Trees

Important and familiar trees like sacred fig, pongamia, lemon, mango, silk cotton, sal, teak, fig (wild), dita etc., are mentioned.

**Sacred fig** (*Ficus religiosa*-Moraceae): *Bodhidruma, Caladala, Pippala, kuñjarāśana, Āśvattha, Pongamia (*Pongamia pinnata* - Fabaceae): *Cirabilva, Naktamāla, Karaja, karañjake*; **Mango** (*Mangifera indica* - Anacardiaceae): *Āmra, cūta, Rasāla*; **Silk cotton** (*Bombax malabaricum*-Bombacaceae): *Picchilā, Pūraṇī, Mocā, Cirāyu, Śālmali*; **Sal** (*Shorea robusta*- Dipterocarpaceae): *Sāla, Sarja, Āśvakarṇa, Samvara*; **Teak** (*Tectona grandis*- Verbenaceae): *Śrīparṇikā, Kumudikā, Kumbūi, Kaiṭarya, Kaṭphala.*; **Wild fig** (*Ficus glomerata* - Moraceae): *Udumbara, Jantuphala, yajñāṅgo, Hemadugdhaka*; **Dita tree** (*Alstonia scholaris*- Apocyanaceae): *Saptaparna, Viśālatvak, Śārada, Viṣamacchada*.*

### Shrubs, Herbs, etc .

**Chaste plant** (*Vitex negundo*-Verbenaceae): *Sinduvāra, Indrasurasa, Nirguṇḍī, Indrāñikā.*; **Jasmine** (*Jasminum grandiflorum*-Oleaceae): *Sumanā, Mālatī, Jāti.*; **Bell flower** (*Datura stramonium*-Solanaceae): *Unmatta, Kitava, Dhūrta.*; **Poppy plant** (*Argemone mexicana*-Papaveraceae): *Dhattūra, Kanakāhvaya, Mātula, Madana.*; **Cowage plant** (*Mucuna pruriens* - Fabaceae): *Atmaguptā, Jaha, Vyāṇḍa, Kaṇḍūrā, Prāvṛṣāyanī, Rṣyapuktā, Śukāsimbi, Kapikacchu, Markaṭī.*

### Creepers, Climbers etc.

**Moon plant** (*Tinospora cordifolia* Menispermaceae): *Vatsādanī, Chinnaruhā, Guḍūcī,*

*Tantrikā, Amritā, Jīvantikā, Soma vallī, Viśalyā, Madhuparnī.*; **Ichneumon plant** (*Aristolochia indica*-Aristolochiaceae): *Nakulī, Surasā, Naga, Sugandhā, Gandhanākulī, Nakuleṣṭa, bhujamṅākṣī, Chatrākī, Suvahā.*

### Grasses

Different types of grasses like Kus kus (*Andropogon muricatus*), Sacrificial grass - *Kuśa* (*Poa cynosuroides*) are mentioned. Bamboo (*Bamboosa arundanacea*) also finds a place among the grasses. Coconut (*Cocos nucifera*), Date palm (*Phoenix dactylifera*), Arecanut (*Areca catechu*) etc., are also included along with the grasses and they are considered “*Tṛṇa druma*” meaning tree like grasses.

### Manuṣhya Varga

Plants that are generally used for incensing, perfumery and cosmetics are listed here. The list includes famous plants like cloves - *Lavaṅga* (*Eugenia caryophyllata*), aloe wood - *Agaru* (*Aguilaria agallocha*), camphor - *Karpūra* (*Cinnamomum camphora*), sandal - *Srigandha* (*Santalum album*), nutmeg - *jatiphala* (*Myristica fragrans*) etc.

### Vaisya Varga

This *Varga* includes plants generally of commercial value. The list of plants consists of different types of cereals, pluses, spices, condiments and oil yielding plants. Some of these are :

**Cereals:** *Vrīhi*-Paddy (*Oryza sativa* -Poaceae). *Yava*-Barley (*Hordeum vulgare* - Poaceae) *Kodo* Millet (*Paspalum scorbiculatum*- Poaceae)

**Pulses:** *Tuvarikā*-Tur (*Cajanus indica* - Fabaceae), *Kulmāṣa*-Cowpea (*Vigna catjang* - Fabaceae), *Māṣa* - Black gram (*Phaseolus mungo* - Fabaceae), *Mudgara*-Green gram (*Phaseolus radiatus* - Fabaceae)

**Spices etc.:** *Marīca*-Pepper (*Piper chaba* - Piperaceae), *Jīraka*-Cumins (*Cuminum cyminum*

- Umbelliferae), *Tintriṇī* - Tamarind (*Tamarindus indica*-Fabaceae), *Kustumbarī*-Coriander (*Coriandrum sativum* Umbelliferae), *Sṛngabera*-Ginger (*Zingiber officinalis*-Zingiberaceae), *Haridra*-Turmeric (*Curcuma longa*-Zingiberaceae)

**Oil yielding plants:** *Harenū*-Peanut (*Arachis hypogea*- Fabaceae), *Jaltila* - Niger seed (*Gauzitia abyssinica* - Asteraceae ), *Tila* - Sesame (*Sesamum indicum*-Pedaliaceae), *Sarṣapa*- Mustard (*Brassica juncea* - Cruciferae ).

## 4. ETYMOLOGY AND PLANT CHARACTERS

A few examples perhaps will underscore the significance of the statement made above. For instance the tree *Alstonia scholaris* of the family Apocyanaceae has the following names: *Saptaparnī* - Seven leaves (leaflets); *Viśālatvak* - Wide and thick bark; *Śārada*-Flowers during Śaradṛtu (approximately during October and November); *Viṣamacchada*-The leaflets are unequal in size. The dissection into leaflets is unequal.

**Country Fig---***Ficus glomerata* of the family Moraceae has the following names: *Udumbara* - has a bark or skin that peels off.; *Jantuphala* - with flies inside the fruit; *yajñāṅgo*-The tree of branches form a part in the rituals in the sacrificial fire (*Yajna*); *Hemadugdhaka* - The tree on wounding yields golden coloured latex.

**Ficus religiosa ---** *Bodhidruma* – tree associated with *bodhisattva*, *Cala dala* – leaves oscillate even in slight breeze; *Pippala* – found in land Pippala; *Kunjarāśana* – food for elephant; *Aśvattha* – Horses tied to the tree (like a stable).

**Bauhinia galpini---** *Kovidāra* – spreads in ground; *Camarika* – copper coloured flower; *Yugapatraka* – twin leaflets.

**Cassia fistula---** *Āragvadha*- helps removing enemies; *Rajavr̥kṣa*– king among trees; *Samyaka* – like Sami tree because of fruit type; *Caturāṅgula*– four finger long fruits.

*Ficus benghalensis*--- *Nyagrodha*— refers to prop roots growing down; *Bahupāda* – has many roots.

Besides, giving the description of plants in the form of concise and pithy names and arranging them in easily chantable *ślokas*, is perhaps the best way of memorising them.

### Comparison of plants based on reproductive structures

Classifying, identifying, comparing and contrasting the plants based on their reproductive characters has a long tradition in the ancient Sanskrit literature. The term *Śimbī dhānya* for pulses (legume fruit) has been in use even in Kautilya's *Arthasāstra* (3rd century BC). It finds a mention in *Tulāmānapautavam* chapter while dealing with all the pulses like green gram, black gram etc. Again in *Carakasamhitā* (1st BC) the group of pulses which includes annual plants is given the name *Śamivarga*. *Śamī* is a wild tree (*Acacia ferugineana*). What is common between a wild tree and cultivated annuals (pulses)? Surely it cannot be the vegetative characters which widely differ. The only thing common between them is fruit/ flower character. On this basis the name *Śamivarga* is given to include all the pulses. Similarly in Parāśara's (1st BC) *Vṛkṣāyurveda* also, *Śamīganiya* is the name given for the family Leguminosae. Carrying this logic further, in *Amarakośa* in two instances the above mentioned points get further support. In the chapter *Vaiśya varga* while classifying grains – mention is made of *Śamīdhānya*, *Śukadhānya* and *Śāli*. Here *Śamīdhānya* refers to pulses, *Śukadhānya* for dry cereals and *Śāli* for wet land cereals. Surely if *Śamīdhānya* means only the seeds (grains) of *Śamī* tree why would it be used as an example of all pulses. Further it is mentioned that *Māsadhānya*, etc., (black grams and other pulses) constitute *Śamīdhānya*. After this there cannot be any doubt about the grouping based on fruit characters.

Another authentic example can be cited to bolster the above argument. In *Vanauṣadhi varga*, while describing the plant *Cassia fistula* (belonging to the family Leguminosae) one of the names used is *Śāmyaka* i.e., like *Śamī* tree which also belongs to family Leguminosae. What is *Śāmyaka* ? In what characters *Cassia fistula* is like *Acacia ferrugineana*? Kshiraswami makes it abundantly clear when he observes “*Śimbīphalatvāt Śāmyakaḥ*” (it is like *Śamī* because of legume fruit). This perhaps is a most conclusive evidence to show that the tradition of using fruit/flower characters in comparing and contrasting the plants has a long history of 800 years and not a flash in the pan.

### 5. CONCLUSION

The *Amarakośa* is by no means the oldest Sanskrit lexicon, though it is the oldest available one. As many commentators point out *Amarasimha* has borrowed information from the pre-existing lexicons. Unfortunately all of them (old lexicons) seem to be extinct now. The list of plants mentioned in *Amarakośa* is not comprehensive, in the sense it should not be taken as an indicator of the plants known to the people at that time. The lexicon includes only a selected few. From the modern botanical standpoint, the study of *Amarakośa* helps us to arrive at the following conclusions:

**Contribution to Scientific Terminology:** The various plant parts have been given exact and short scientific names. One of the present difficulties in Indian education, in switching over to Indian languages is said to be the paucity of exact and precise scientific terms. A perusal of *Amarakośa* however will clearly help us to collect proper scientific terminology with reference to plants in the present context. The precision with which the scientific terms are employed in *Amarakośa* to describe different parts of the plant becomes very evident when one comes across different terms for the different stages of growth of ovary

(*Kṣāraka*), ovary immediately after fertilization (*Koraka*), unripe fruit (*Śalātu*) and ripe fruit (*Phala*). Even the dried fruit that is dispersed is given a separate name (*Vāna*). This will not only indicate the precision and exactness with which the plant parts are described but also indicates that a detailed, systematic and scientific study of plants must have been a part and parcel of the education system at that time.

**Classification of plants based on the sex organs:**

The classification of plants into flowering and non-flowering indicates the emphasis laid on reproductive organs in the classification of plants. It is this system i.e., classification based on reproductive organs, that is followed even now in modern botany.

**Parasites and Epiphytes:** According to Seal (1915), *Vṛkṣādānī* and *Vṛkṣāruha* represent parasites and epiphytes respectively. This interpretation seems to be correct in view of the commentary of Kṣīrasvāmin (Oka, K G 1913). Commenting on *Vṛkṣādānī*, Kṣīrasvāmin observes-*Janma vṛkṣhamapi hanti iti vṛkṣādānī* meaning that which destroys the tree of origin. This surely must be a parasite. While *Vṛkṣāruha* according to Kṣīrasvāmin (*Vṛkṣe rohati iti Vṛkṣāruha*) is that which grows on the tree - meaning an epiphyte.

**Ecological knowledge:** The mention of different places like *Anupa*, *Pankila*, betrays a primitive knowledge of the importance given to the surroundings in the study of plants.

**Nomenclature and other Taxonomic aspects:**

As is true of a lexicon, *Amarakośa* collects all the synonyms for a plant and mentions them as referring to a single plant. Etymological analysis of these names indicate that they are based on different characters of the plant and perhaps were in use in different localities. The collection of all these names would in a way serve as a brief taxonomic description of a plant. The different names on etymological scrutiny not surprisingly reveal a close degree of understanding of the plant characters and are indicative of the observational capacity of botanists of that time.

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