

# **Plants, Stars [i.e., *VrikSHa nakSHatrANi*] for Voluntary Afforestation and Ecological Conservation**

---

**Venkappayya R. Desai\*, Anirban Dhar, Sanjay K. Ray**

Professor, Assoc. Prof. & Former Ph.D. Scholar

Civil Engineering Department

Indian Institute of Technology (IIT), Kharagpur, W. Bengal

\* Corresponding Author; Email:- [venkapd@civil.iitkgp.ac.in](mailto:venkapd@civil.iitkgp.ac.in); [venkapd@gmail.com](mailto:venkapd@gmail.com)

# Background

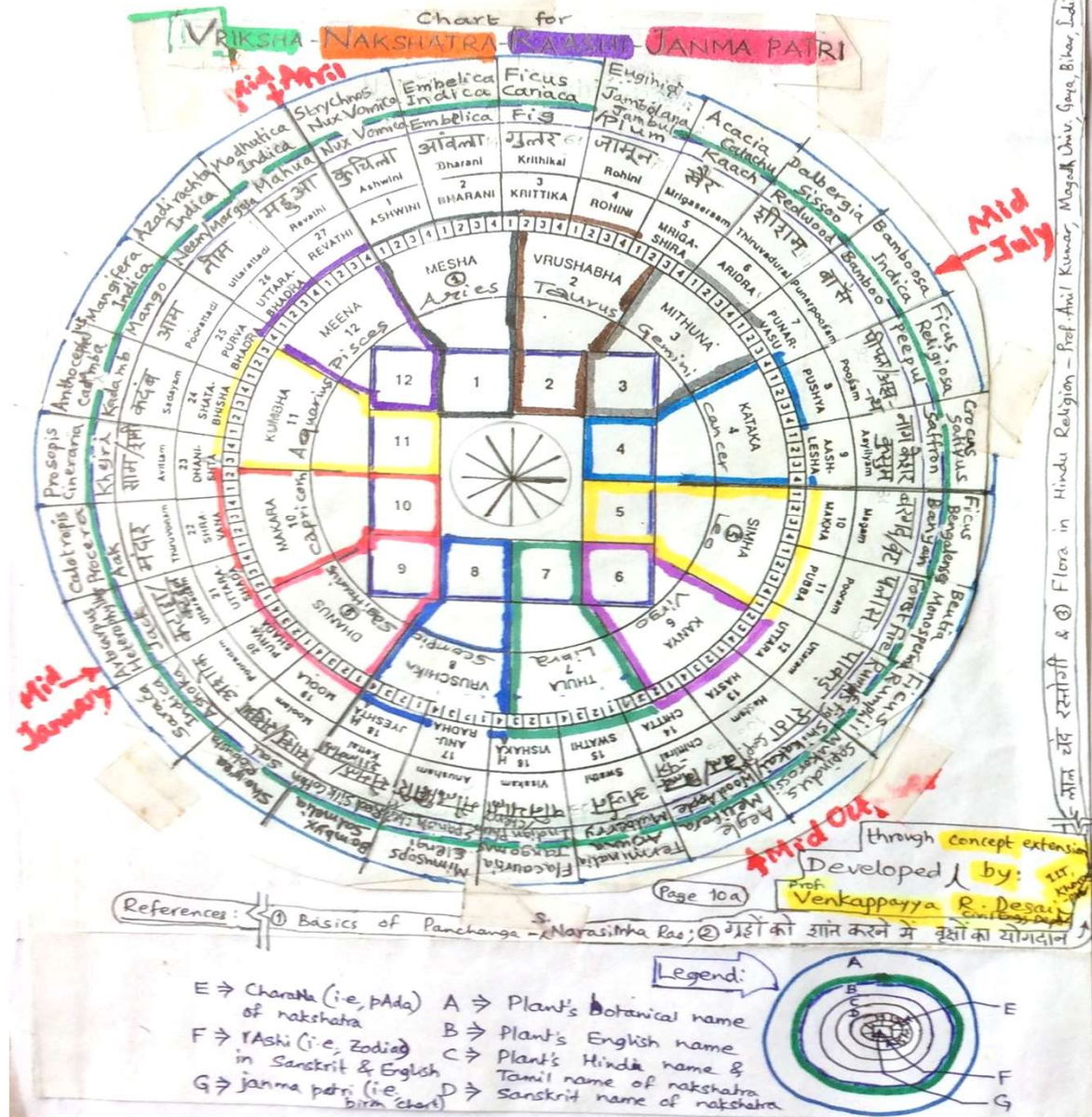
- Water is life. For ensuring sustainable water resources mgt., Integrated watershed mgt. (IWM) & resource conservation are essential.
- IWM mainly involves:-
  - ✓ Soil conservation [i.e., *Prithivih shAntih*, as per *YajurvEda ShAnti Mantra*],
  - ✓ water conservation [i.e., *Apah shAntih*, as per *YajurvEda ShAnti Mantra*] &
  - ✓ vegetation conservation [i.e., *OSHadhayah shAntih*, as per *YajurvEda ShAnti Mantra*].
- Role of vegetation/ forests in ensuring IWM & in maintaining ecological balance is well established.
- In general, there is a continuous decrease in vegetation cover, which is also resulting in the loss of animal habitat over the past several decades -due to deforestation etc.
- In general, there is also a steady increase in green house gas (GHG) release.
- Currently Bhutan is the only carbon –ve country in the World.
- This study utilizes traditional Indian Knowledge on precipitation constellations (i.e., *VarSHA nakSHatrANi*) for aiming at sustainable water resources mgt.
- Our final objective is to achieve sustainable water, other major natural resources mgt. & also to create additional carbon –ve/ carbon neutral regions/ nations.

# Indian traditional knowledge on Resource Conservation & Mgt.

- The number 108 is very significant in Indian tradition.
- Note that,  $108 = (1^1) \times (2^2) \times (3^3) = (1) \times (4) \times (27)$ . Here, 1 represents annual cycle, 4 represents # of quarters & 27 represents # of nakSHatraNi (i.e., constellations).
- Thus, 108 represents the total # of Precipitation Constellations (PCs) in a year, with the 1<sup>st</sup> one starting on the Indian Solar New Year (i.e., HindU SouramAna nava VarSHa), occurring on April  $14 \pm 1$ , every year.
- There are 12 solar months [i.e., RAshi/ Zodiacs] & the # of PCs in a solar month = 9. So, the total # of PCs in a year =  $12 \times 9 = 108$ .
- Avg. duration of any PC ( $T_{PC}$ , d) =  $365.25 \text{ d} / 108 = 3.38 \text{ d}$ .
- A PC is identical to a rainy day, wherein there'll be some form of pptn., which can meet all the water requirements like those for agriculture, drinking, cooking, etc.
- To ensure this through out the year, imagine the amount of vegetation that we all need to be collectively responsible for planting and/or preserving everywhere!
- Vegetation conservation of this magnitude was normally happening till the middle of 20<sup>th</sup> Century –aided by religious beliefs & less human damage to Nature.
- nArada PurANa mentions about a plant linked to each of the 27 constellations.

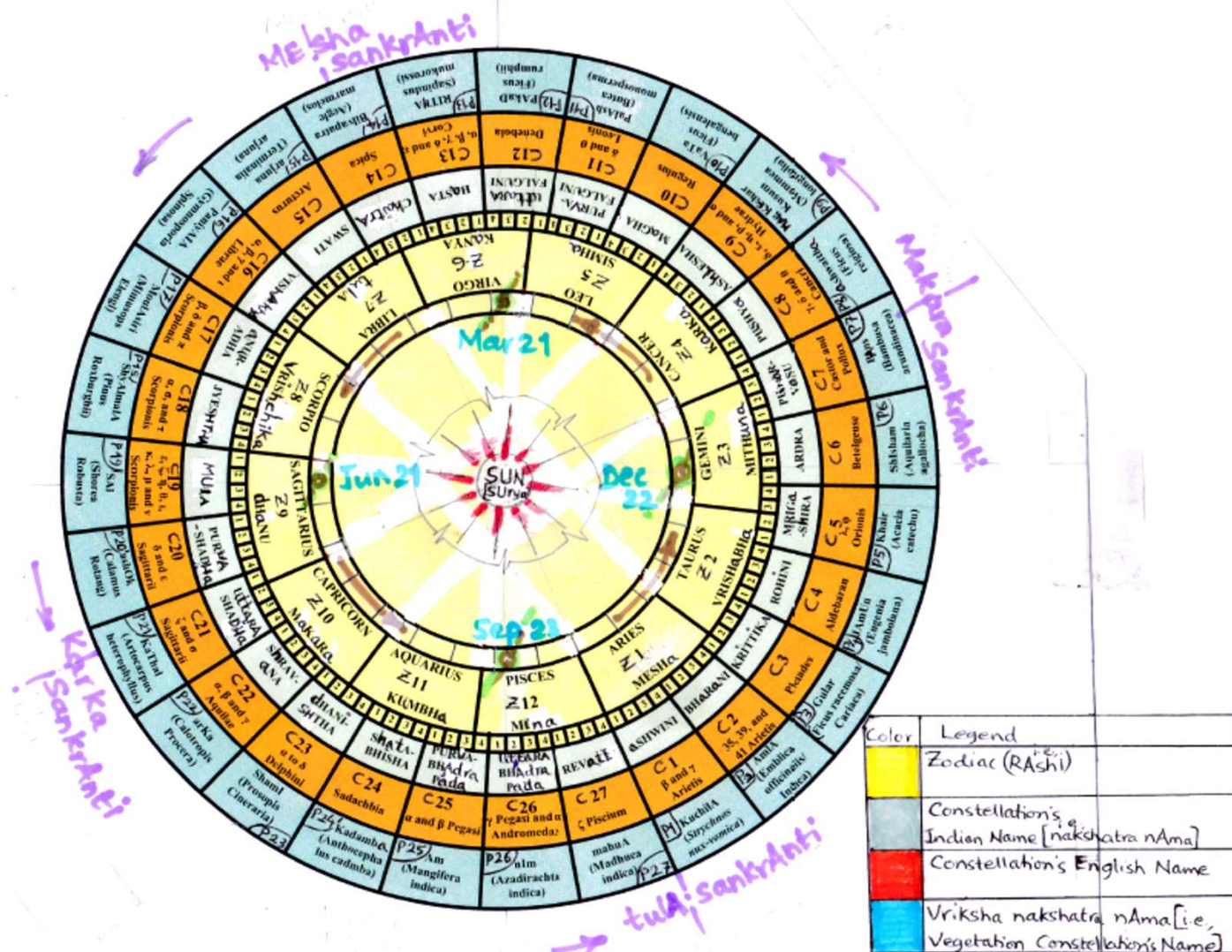


# VEGETATION-CONSTELLATION-ZODIAC-BIRTH CHART

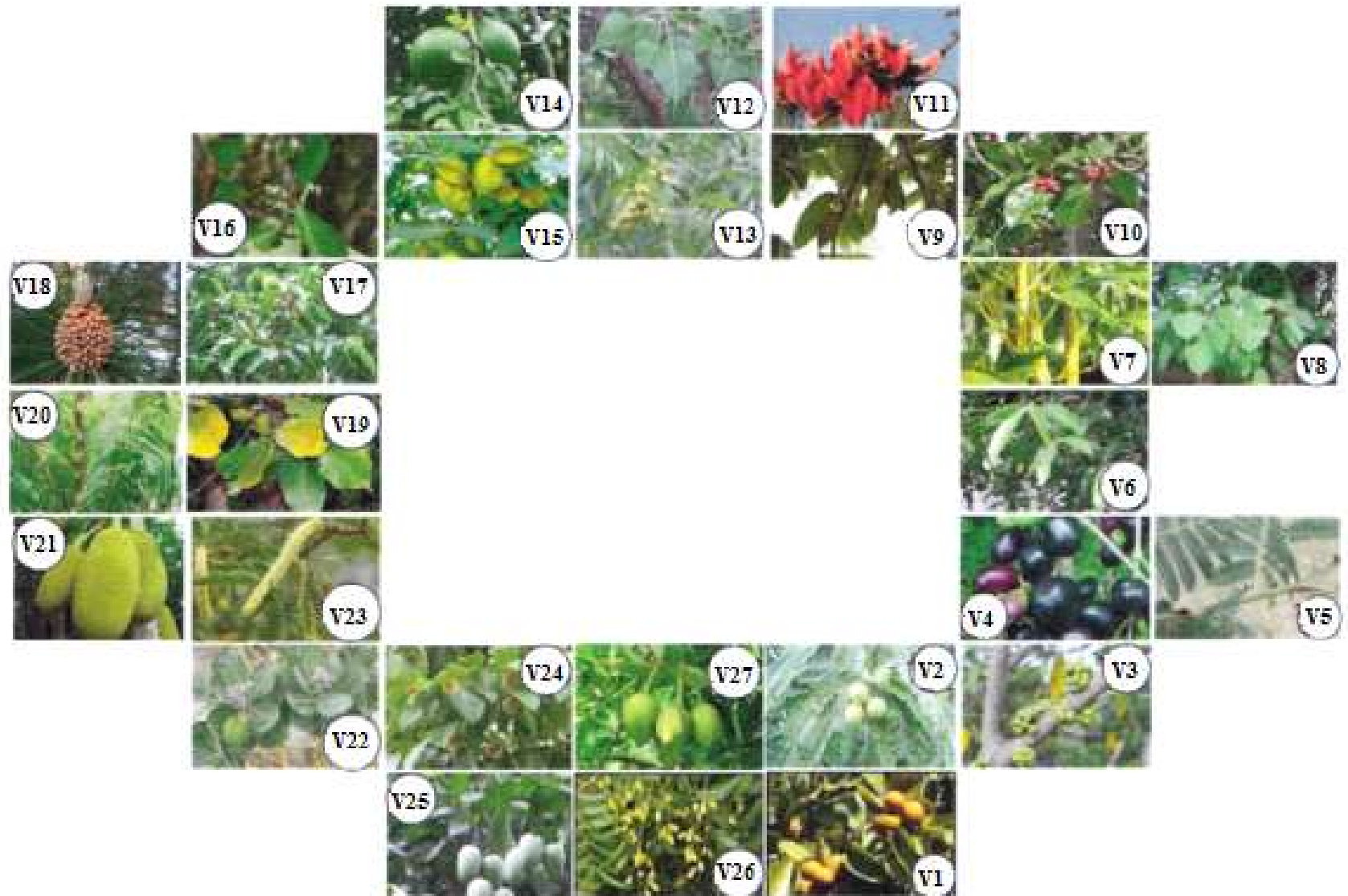




# Plant-Constellation-Zodiac-Sun-Earth Pictorial



# Plant-Constellation ensemble



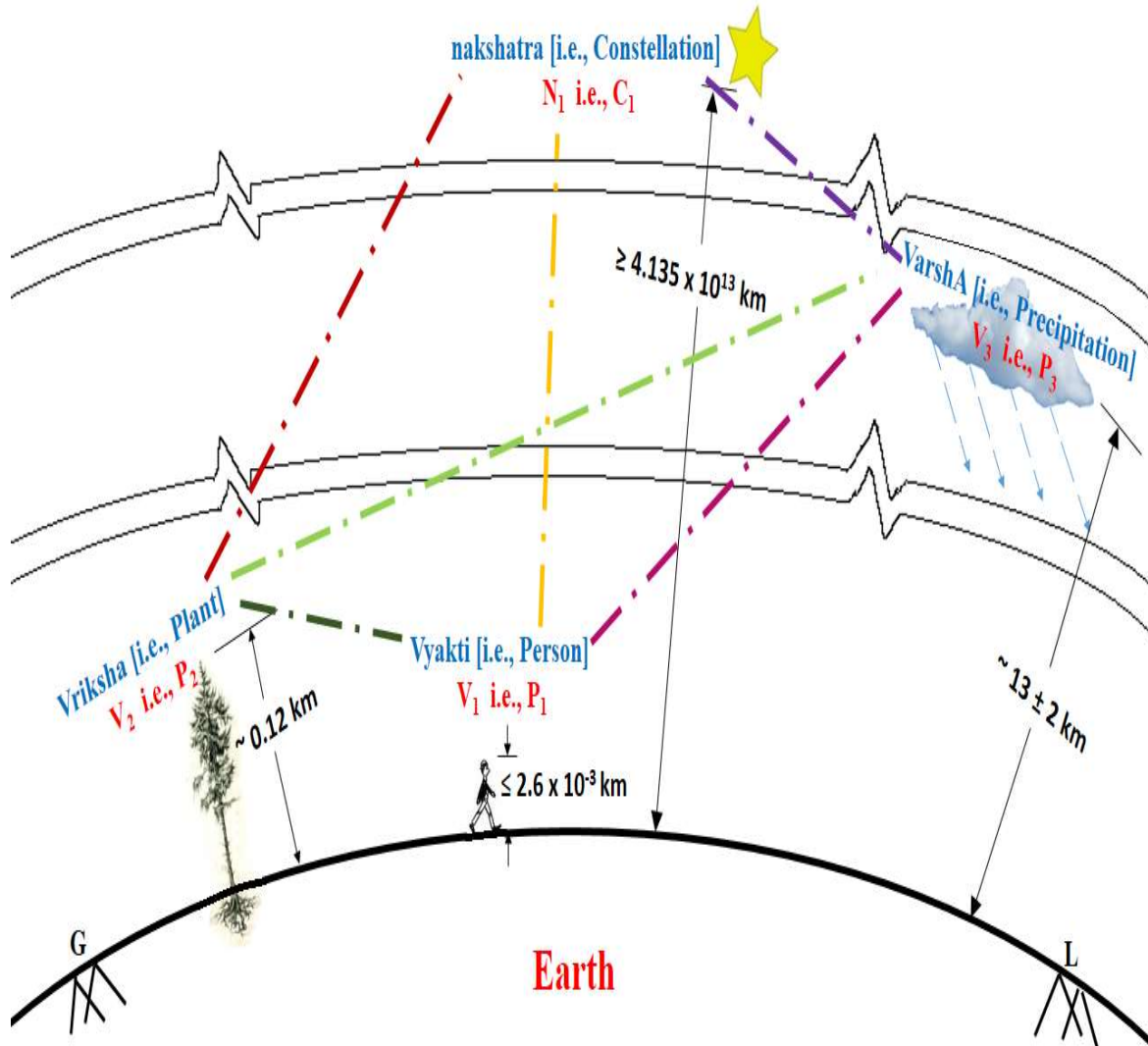
# Constellation & Vegetation names in Sanskrit & English

**Plant & Constellation names in Sanskrit & English**

Plant (P) or VrikSHa (V)	Constellation's Sanskrit Name	Constellation Name in English	Plant Name in Sanskrit	Plant's Botanical Name
P <sub>1</sub> or V <sub>1</sub>	ashvinI	β and γ Arietis	Rasa VrikSHa	Strychnos nux vomica
P <sub>2</sub> or V <sub>2</sub>	BharaNI	35,39 and 41 Arietis	VriSHA VrikSHa	Embelica indica
P <sub>3</sub> or V <sub>3</sub>	KrittikA	Pleiades	Udumbara	Ficus racemosa
P <sub>4</sub> or V <sub>4</sub>	ROhiNI	Aldebaran	Jambu	Eugenia jambolana
P <sub>5</sub> or V <sub>5</sub>	MrigashirA	λ and φ Orionis	Khair	Acacia catachu
P <sub>6</sub> or V <sub>6</sub>	Ardra	Betelgeuse	Krishna PlakSHa	Dalbergia sissoo
P <sub>7</sub> or V <sub>7</sub>	Punarvasu	Castor and Pollux	VamshI	Bamboosa indica
P <sub>8</sub> or V <sub>8</sub>	PuSHya	γ, δ and θ Cancrī	ashvattha	Ficus religiosa
P <sub>9</sub> or V <sub>9</sub>	AshleSHA	δ, ε, η, ρ and σ Hydrae	nAga VrikSHa	Mammea longifolia
P <sub>10</sub> or V <sub>10</sub>	MaghA	Regulus	VaTa	Ficus bengalensis
P <sub>11</sub> or V <sub>11</sub>	PURva PhAlguNI	δ and θ Leonis	PaIAsha	Butea monosperma
P <sub>12</sub> or V <sub>12</sub>	uttarA PhAlguNI	Denebola	akSHa	Ficus rumphii
P <sub>13</sub> or V <sub>13</sub>	HastA	α, β, γ, δ and ε Corvi	ariSHTa	Sapindus mukorossi
P <sub>14</sub> or V <sub>14</sub>	Chaitra	Spica	Bilva	Aegle marmelos
P <sub>15</sub> or V <sub>15</sub>	SvAtI	Arcturus	arjuna	Terminalia arjuna
P <sub>16</sub> or V <sub>16</sub>	VishAkha	α, β, γ and ι Librae	Vikankata	Gymnosporia spinosa
P <sub>17</sub> or V <sub>17</sub>	anurAdha	β, δ and π Scorpionis	BakuLa	Mimusops elengi
P <sub>18</sub> or V <sub>18</sub>	JyESHThA	α, σ and τ Scorpionis	VESHTa	Pinus roxburghii
P <sub>19</sub> or V <sub>19</sub>	MUIA	ε, ζ, η, θ, ι, κ, λ, μ and ν Scorpionis	Sarjjya	Shorea robusta
P <sub>20</sub> or V <sub>20</sub>	PURvaASHADHa	δ and ε Sagittarii	ashOka	Saraca asoca
P <sub>21</sub> or V <sub>21</sub>	uttarASHADHa	ζ and σ Sagittarii	PaNasa	Atrocarpus heterophyllus
P <sub>22</sub> or V <sub>22</sub>	ShravaNA	α, β and γ Aquilae	arka or MandAra	Calotropis procera
P <sub>23</sub> or V <sub>23</sub>	dhaniSHTHA	α to δ Delphinus	ShamI	Prosopis specigera
P <sub>24</sub> or V <sub>24</sub>	ShatabhiSHA or ShatatArA	γ Aquarii	Kadamba	Anthocephalus cadamba
P <sub>25</sub> or V <sub>25</sub>	PURva BhAdrapada	α and β Pegasi	Amra	Mangifera indica
P <sub>26</sub> or V <sub>26</sub>	uttarA BhAdrapada	γ Pegasi and α Andromedae	nimba	Azadirachta indica
P <sub>27</sub> or V <sub>27</sub>	REvatI	ζ Piscium	Madhu	Madhuca indica



# Pictorial of Person, Plant, Precipitation & Constellation



## Legend

Potential Benifits	Triangles	Vertices
Voluntary Afforestation	T <sub>1</sub>	V <sub>1</sub> , V <sub>2</sub> , N <sub>1</sub>
Spatio-temporal study of seasonal precipitation	T <sub>2</sub>	V <sub>1</sub> , V <sub>2</sub> , V <sub>3</sub>
Constellation & precipitation impact on vegetation	T <sub>3</sub>	V <sub>2</sub> , V <sub>3</sub> , N <sub>1</sub>
Constellation & precipitation impact on persons	T <sub>4</sub>	V <sub>1</sub> , V <sub>3</sub> , N <sub>1</sub>



## Concluding remarks

- For sustainable water resources management, climate change needs to be combated effectively, for the all term benefit of humankind, other animals & plants.
- Indian traditional knowledge related to VrikSHa nakSHatra (i.e., vegetation constellation) –mentioned in nArada PurANa, has a great potential to promote voluntary afforestation & to combat climate change.
- Other traditional knowledge [e.g., neem trees in mosques, x-mas trees in Christian homes/ Churches, VaTa (i.e.,Banyan) & ashwattha (i.e., Peepal) trees in HindU/ Buddhist temples] can also complement in combating climate change.
- Modern practices like teaching vegetation care even under cold climate to children in Norway, swiftly and systematically shifting totally to renewable energy in Germany, rigorous bicycle training to build a strong army of soldiers in Switzerland, extensively using the drip irrigation to grow orchards in Israeli deserts, practically freezing the total number of vehicles causing pollution over the years in Singapore, also need to be replicated, wherever feasible.

## References

- 1) Balakrishna, A., 2008, *Secrets of Indian Herbs*, Divya Prakashan, Hardwar, Uttarakhand, India
- 2) Dershowitz, N. and Reingold, E. M., 2011, Indian calendrical calculations, *Ancient Indian leaps into Mathematics* [B. S. Yadav & M. Mohan, Eds.], 1-31, [www.birkhauser-science.com](http://www.birkhauser-science.com)
- 3) Gita Press, 2019, *संक्षिप्त नारद पुराण*, 352-353, Gita Press, Gorakhpur, UP, India
- 4) Jugnu, S., 2015, *वृक्षायुर्वेद*, Choukhamba Sanskrit Series Office, Varanasi, UP, India
- 5) Kumar, A., 2009, *Flora in Hindu Religion*, Magadh Univ., Gaya, Bihar, India
- 6) Nakshatra, [www.wikipedia.com](http://www.wikipedia.com)
- 7) Narasimha Rao, S., Basics of Panchanga, Chennai, TN, India
- 8) Rastogi, L. C., 1998, ग्रहों को शांत करने में वृक्षों का योगदान, 43-45.

-----

**Thank you for your time and attention!**

Questions please.