BREEDING PRACTICES AND SELECTION CRITERIA FOR DOMESTICATION OF ANIMALS

(Ms.) USHA V. MANDOKHOT

Department of Vety.
Public Health and Epidemiology
Haryana Agricultural University
Hisar 125004

The greatest gift of our ancients is the domestication of crops and animals. It took them thousand of years to identify the crops which they could cultivate in their backyards and the animals they could tame and domesticate. They learnt the relations between different body signs and their attributes through centuries of observations and experience. As a result, today we possess definite breeds of domestic animals . In the following text, efforts have been made to summarise the species-wise information available in ancient veterinary science literature regarding selection of different animals, breeding practices, and the characteristics considered desirable or undesirable in relation to various functions. The information is collected from various compilations[1,2] and translations, especially of *Śukranīti*[3] and *Aśvavaidyakam*.[4] Sizeable information of general breeding operations is also available in *Agni Purāṇa*,[5] *Viṣṇu Purāṇa*,[6] *Matsya Purāṇa*,[7] *Arthaśāstra*,[8] and *Mahābhārata*.[9]

Elephants

The elephants were allowed to breed in the natural habitat and trapped, as is the practice in present days also. In general the elephants with long cheeks, eyes, brow and forehead, swiftest speed and with auspicious marks on the body were considered to be the best. They were classified into four categories as given in Table 1.

Cattle :

Cattle breeding appeared to be one of the important aspects of the animal husbandry practices in ancient India. The administrative authorities appeared to be fully aware of its importance. The king was enjoined to preserve the breed of the cattle in the country[5] and a government officer called Superintendent of Cattle was entrusted with the exclusive task of supervising the livestock in the country, keeping census and ensuring their proper breeding and rearing.[8] He was also sup-

TABLE 1

Classification of Elephants.

Class	Body signs	Measurements
Bhadra	Honey coloured (not pure white but yellowish), strong well formed tusk, round and fat body, good face, and excellent limbs.	Height—seven cubits* Length—eight cubits Circumference of body—ten cubits
Mandra	Fat belly, lion like eyes, thick skin, throat and trunk, medium limbs and a long body.	Height—six cubits Length—seven to eight cubits. Circumference of body—nine cubits
Mṛga	Small or short throat, tusk, ears and trunk, big eyes and very short lips and genital organs and is dwarf.	Height—five cubits Length—six to seven cubits. Circumference of body—eight cubits
Miśra	Mixture of the above characteristics.	

*One cubit or *hasta* = 24 *aṅgulas*, One *aṅgula* = eight *yavas* (Barley grain).

posed to maintain a record (register) classifying the cattle as male calves, steers, tamable cows, draught oxen, yoke and breeding bulls, cattle fit for slaughter, buffaloes, female calves, heifers, pregnant cows, milch kine, barren cattle, *etc.* In *Mahābhārata*[9] also the cattle census and the pedigree registers are described.

The criteria detailed for the selection of bulls for breeding purposes can be grouped to indicate vigour, health, body conformation and freedom from congenital defects/infections as shown in Table 2. It may be noticed that these criteria are valid even in the present day context when the claim is made to have comprehensive understanding of the selection attributes. Information is also available about the

TABLE 2

Correspondence of Modern Equivalent to the Referred Selection Criteria for Bulls.

(a) Vigour :	Thundering roar, walk like infuriated elephent, capability to protect the herd.
(b) Health :	Shining eyes, neither wicked nor idle.
(c) Freedom from congenital disease : (Genetic attributes)	History of coming from milch cow with young ones living and not deficient of any limb.
(d) Conformation of body :	Well formed body, broad back, elevated shoulders, soft and straight tail with big tuft of hair, tender cheek, sharp horn, high stature hump.*

*Emphasis given on hump probably lead to the evolution of humped cattle.

particulars of the time of the service and the ratio of the males to the females to be maintained in the herd of cows and buffaloes.[8] Inclusion of four bulls in every herd of ten cows or buffaloes is recommended. In the case of cows the colour of the pigment of the skin was considered to be the index of the nutritive value of the milk.[2] The milk of black cow was considered to be the most nutritious, of the red next to it, and that of the white to be the least nutritive.

Horses

Direct reference to the breeding of horses like that available in the case of cattle could not be found in the literature available at this place. However, detailed descriptions regarding various body signs like colour and luster of the bodyr, marks and whorls present on the body, voice, odour, congenital habits, general appearance, body size, gait and motion are available.[3,4] These body signs have been linked with desirability or undesirability of the animals for auspicious reasons and luck through fulfilment of desires for wars/battle fields and prosperity and success. In reference to the present day knowledge, the utility of many of the body signs described may appear obsolete. They are summarised below for information.

Whorls :

Termed also as *Bhramara* or *Bhauri*, whorls have broadly been classified in categories like auspicious/praiseworthy, fair, and inauspicious.[3,4] In all, ninety six varieties depending upon their location, number and shape have been described of which twenty are said to be of good significance and the rest bad. If the horse is having both lucky and unlucky whorls, none of these is considered to be productive of any results. Whorls on head, forehead, nose, throat and the space between eyes and ears are considered to be good and when present on breast, neck, loins, and navel in the abdomen to be fair. Significance of these whorls is believed to be enhanced if they have the shape of conchshell, wheel, Indian club, jeweller's drill, mother of pearl, lotus, altar, seat of meditation, palace gate, pitcher full of water, white mustard, garland, fish, dagger, and shrivat.

In all 8 kinds of whorls are recognised e.g. *śatapadī* (resembling centipede in appearance), *mukula* (resembling *jati i.e.* jasmine bud), *avarta* (round whorl), *sanghata* (hair grown in cluster), *śukti* (shape of mother of pearl), *avalirha* (hair appear as if liked by its mother), *pādukā* (like shoe) and *ardha pādukā* (half of shoe). Ten whorls of great adoration were *maruta* (on upper lip), *hutāsana* (on forehead), *aśvinīdeva* (two on the breast), *candra* and *sūrya* (two on forehead), *skanda* and *viśākhā* (two on abdomen) and *hara* and *hari* (two on chest). However, if any one of these is absent, that is considered unlucky. Terminology developed to explain the location of whorls, their number and shape, is described in *Aśvavaidyakam*[4] and *Śukranīti*[3] and is given in Table-3.

TABLE 3

Terminology Used for Horse based on the Number and Location of Whorls.

Kind of Horse	Number and site of hair mark (whorl)
1. Śiva (Happiness of master)	One on the right cheek.
2. Vijaya ⎱ (Bad marks)	One on the nipples.
3. Indra ⎰	On the ear.
4. Padma (Brings wealth)	Two marks on the side of the neck.
5. Bhupāla	One mark on the nose.
6. Cakravartī	Three marks on the nose.
7. Cintāmaṇī (Realization of desired objects)	One large mark on throat.
8. Sulka (Give increase and game)	Marks on throat and forehead.
9. Dhumaketu (Causes ruins)	Mark on the origin of tail.
10. Niśreṇī (Accomplishes all desires of the owner).	Three on forehead, arranged in regular succession from above downwards.
11. Devamaṇi (Very auspicious)	On the neck where the bells are tied.
12. Liṅgāvarta (Frustrates all purposes of the owner).	On the thigh or the hock.
13. Vijeśa (Royal horse or lord of horses)	On neck.
14. Purṇa harṣa	Two on brow and one on head.
15. Sanjaya ⎱ (Increase the number of horses	On backbone.
16. Trikula ⎰ of the master).	Three on forehead.
17. Aṅgad, Musal, Srīvṛkṣa (Bring jewels and kingdom to owner).	One on the breast.

Colour, Star marks and Dot marks :

Not much breeding significance has been attached to these signs of horses because all the defects attributed to them are said to vanish if the horse had a decent aspect and was beautiful, strong, well built, not very wicked, and with good gait.

Śālihotra[10] has mentioned different colours of horses *e.g. kayaha* (dark grey or reddish brown), *seraha* (cream), *suruhaka* (ass colour), *nilaka* (blue), *triyuha* (yellow brown or tawny), *khilaha* (triyuha with pale yellow mane and tail), *halaha* (variegated colour), *khalgaha* (white and yellow), *kulaha* (yellow colour with black knees), *uraha* (kulaha with black knees and face and a black line on vertebral column), *veruhana* (pale red colour), *ukanaha* (mixture of red, yellow and brown), *kokaha*

(white), *khuṅgaha* (black), *hārita* (yellow), *kasāya* (red) *aṣṭamaṅgala* (all the four points, breast, face, head and tail white), *etc.* White, red, black or yellow horses were considered war horses. *Śyāmakarṇa* and *mallikākṣa* (iris black but a white rim around) were supposed to be auspicious and to increase happiness of the owner but the white iris was unlucky and thought to bring distress to the owner. *Hārita* horses were indicative of health, wealth and success. Horses with a coat having white and yellow hairs or red and white hairs, or horses with white face and joints (*pañcabhadrā* or *pañcakāya*) were believed to bring prosperity to the owners.

White horse with white iris or a faint yellow line along spinal cord, or one with black and white head or with head and tail of variegated colour, or head and tail coloured differently from that of the body or any obscure or indistinct colour were to be condemned. Horses with black legs, rough grey or ash colour, black body with white tail, black roof of mouth, tongue and lips were to be disposed of.

Star marks (*puṇḍraka*)[4] of different shapes like *śukti* (mother of pearl), *saṅkha* (conchshell), *gadā*, *khalaga* (scimitar), *padma*, *cakra* (discus), *aṅkuśa*, *sarāsana* (a bow), fish, vase with a spout, a temple, a garland, an altar or platform, a sacrificial post, a *śrībṛkṣa* were said to be auspicious or lucky. Star marks resembling a hill, moon, flag or a wreath of flowers were said to bring good harvest and prosperity. Star marks of black, yellow, or red colour resembling shape of a crow, a heron, head-less trunk, a serpent, vulture, or a jackal were considered inauspicious and those running obliquely or tortuously, or severed, or like a chain, or a spear point and placed on left side were unlucky. Similarly, star marks of dirty colour or ash colour or variegated colour were not praiseworthy.

Puṣpa (Dot marks)[4] :

Dot like marks of colour different from that of the horse, which appear adventitiously on the body of a horse are called *puṣpa*. These also were supposed to be auspicious or inauspicious, depending upon their position and distribution. *Puṣpa* on arms, forehead, eye brows, ear, neck, and the place where the mane ends were auspicious ; on shoulder, breast flank, scrotum, forearms, mane, jaws, back of the horse were good for its owner and on navel, throat and teeth fulfilled every desire of the owner. But the dots on lower lip, tip of nose, upper lip, face, cheeks, angle of mouth, temples, eye brows, neck, position between the forearm, the portion where the colour rests, croup, loins, anus and point of hock were always condemned. Dots of red, yellow or black colour were never desired but if they happened to be on the lucky parts, they were considered neither lucky nor unlucky. Horse with dot marks all over the body was to be rejected.

Considering body colour, whorls and dot marks alongwith their location, number and shape, to be the genetic marks, the aforesaid information might be

useful in studying genetic linkage to the related characters, primarily important and other signs attributable to good or bad horses.

Svaraḥ (Voice) (neigh) :

A deep sweet, nasal, and neither interrupted nor weak (*i.e.* strong) neigh of a horse was said to be praiseworthy. This kind of neigh was indicative of good health of the horse and its satisfaction and temperament on account of good management. An indistinct, stuttering, harsh, or a rattling neigh was not desirable. A low murmuring, soft, and indistinct sound (*pluta*)[4] is also described. The explanation provided for its generation however is difficult to interpret as it is said to be produced by the expansion and consequent outerflow of wind in four portions of intestine situated in the anal, pelvic, scrotal and navel regions. *Pluta* is said to be absent in horses at rest and in mares, as in them the portions of intestine are said to have their opening downwards. A healthy horse's neigh, but not of diseased, old, hungry, thirsty, fatigued, frightened, or debilitated, was considered to be a good omen.

Gait (Action) :

A horse with an action resembling that of an ox, elephant, lion, or tiger was adored but any other was not desirable. In all, five gaits are described,[4] *viz.,* *vikrama, pulaka, purṇakanṭhi, tvarita*, and *dhasa*. There is one more called *niralamba*, but it is said not to have been seen by any one.

Lustre of body :

Three kinds of lustres were recognised as good and auspicious and one as bad. *Pārthivī* (pleasing to the eyes and from which emanates various kinds of flashes of colours), *agneyī* (flash of pink like ruby), *varuṇī* (crystal clear or like quartz lustre) were considered auspicious, while *vāyavi* (poor, rough, and harsh) was bad.

Odour :

The odour which comes within the range of sense of smell was said to be pleasing to the mind and lucky, and the contrary was unlucky.

Nature (Satva) :

Two natures were recognised ; *devasatva*, (the lucky one), horse having natural aversion to unclean things, mud, and especially to the urine of goat, and *piśācasatva*, (the unlucky one), qualities contrary to those mentioned above.

Body conformation :

The horses were classified as good, medium or inferior by the sage Śālihotra on the basis of the measurements of their height, length, *etc.*[4] The details of the different measurement and their classification is given in Table 4.

TABLE 4

Classification of Horses According to Their Measurements.

		Good	Medium	Adhama or inferior
*1.	Height and Girth (Parihara)	4.0 Cu	3.5 Cu	3.0 Cu
**2.	Length	7.5 Cu	6.0 Cu	<6.0 Cu
3.	Shank	16.0 F	14.0 F	12.0 F
4.	Face, breast, loins	32.0 F	30.0 F	28.0 F
5.	Hoof	7.0 F	6.0 F	4.0 F

Cu = One Cubit = 34.0 fingers

F = One finger = 3.5 *Yava* (berleys) (breadth of finger)

*From end of the hoof to the withers.

**Outer canthus of the eye to the root of the tail.

Mahādoṣaḥ (the great blemishes) :

Certain blemishes in horses were recognised and were said to bring the loss of life and property or to cause differences among friends. These blemishes are listed in Table 5. It is said that Suratha and Vaikarha lost their kingdoms for possessing *kakudi* and *karāli* horses, respectively and Sagar was destroyed with his family for possessing *sṛngi* and *stani* horses. Rāvaṇa is said to have lost his kingdom for having a horse with whorls on the knees.

The good, medium and inferior breeds of horses were also recognised on the basis of their *Janmadeśa*, i.e., the country of their origin.[4] The good horses were supposed to come from *deśa* (country) like Jajikah (Arab), Pārasikaha (Persia), Kekkana (Konkana, i.e., a strip of land between Sahyadri and the sea) and from Prastha (not yet identified). The horses born in Tura (Turkey), Kira (Kashmir), Bhurusta (Bhṛgukaccha) (old Sans. probably modern Bharonch in Maharashtra), Bhānda (not yet identified), the hills of Sindhu (Sind) and Sārasvata (banks of Sarasvatī river comprising portions of Haryana, Punjab, Rajputana and the present Delhi) were considered medium and from Sambhala (Sambal Moradabad also a name of Birdhist Bactriana), Kuśa (possibly present day Tamilnadu) and Jatadeśa (not yet identified) to be inferior. A mention is also found regarding the body character and the nature of these horses.[4]

G

TABLE 5

Mahādoṣas (*Blemishes*)

Blemishes	Description
Kakudī	Whorl on withers.
Karālī	One or more of the teeth either on upper or on lower gum larger than the others and protruding beyond the mouth.
Hīnadanta	Less (only 4 to 5) teeth.
Adhikadanta	One with 7 or 8 teeth.
Sṛngī (Carrier of evils and was advised not to be allowed to remain in the state)	Protruberance of the size of first joint of thumb or of *jamun* fruit on the head where the mane ends, or space between the ears. Cleared appearance of skin is also called sṛngī.
Ekāṇḍa	Only one testicle present.
Jatāṇḍa	Scrotum thickly covered with hairs.
Kañcukī	Shoulder, breast and forearms having different colour than that of body.
Mārjārpada (Supposed to cause extinction of the family).	Having lines of different colour on the feet and fetlock joint.
Dvikhura	Hoof divided like cow or with a mark like suture in the middle throughout.
Sanjantbrasana	Born with scrotum.
Stanī	Born with well developed teats.
Trikarṇa	With three ears.
Vyāghrābha	Colour like that of a tiger.
Jamaja	Born disabled or monster.
Vāmana	Unusually or disproportionately short stature.
Musali	Colour of one of its legs different from that of body.
Indravṛdhva (Cause destruction of family of its owner)	Without any scrotum and does not show its mettle on seeing the mare.

REFERENCES

[1] Krishnaswamy, A., *Indian Vet. J.*, **21**, 398-410, 1945.

[2] ————, *Indian Vet. J.*, **21**, 388-398, 1945.

[3] *Sukranīti*, Chapter IV, Section VII, English translation by B. K. Sirkar compiled in *The Sacred Books of India* by B. D. Basu and reproduced by A. Krishnaswamy, *Indian Vet. J.*, **21**, 398-410, 1945.

[4] *Aśvavaidyakam*, by Mahāsāmant Jaydatta, Chapter III, ślokas 1-194, translated into English from the original Sanskrit with notes and commentaries by N. N. Majumdar, *Indian Vet. J.*, **3**, 221-226 ; **4**, 48-53, 142-150, 1927-28.

[5] *Agni Purāṇa*, referred by Krishnaswamy, A., *Indian Vet. J.*, **21**, 398-410, 1945.

[6] *Viṣṇu Purāṇa, ibid.*

[7] *Matsya Purāṇa, ibid.*

[8] *Arthaśāstra, ibid.*

[9] *Mahābhārata, ibid.*

[10] *Sālihotra, ibid.*