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# History of Kṛṣṇāstra



## PREFACE

This little book is a modest attempt to present a short history of the kṛṣiśāstra, a forgotten chapter in the history of technical literature in India. While working on the subject I faced several difficulties, which are obvious to all those who know how scanty are the sources for research of this nature are available. Moreover these sources are in several languages and come from quite different parts of India.

There are many people to whom I would like to express my deep feeling of gratitude.

Firstly I must mention Prof. Lallanji Gopal (Varanasi), who has been my benevolent inspirator since 1973 and who quite recently encouraged me to undertake this job.

The late Professor V. Raghavan (Madras) gave me an immense help by managing to get a copy of the Kāśyapīyakṛṣisūkti.

Special thanks are due to Prof. Rahul Peter Das (Halle) for procuring a copy of the Kṛṣiśāsana and for numerous valuable suggestions during our talks in the last ten years.

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Jane and John Strong kindly checked and patiently corrected my English at several places. If there are still mistakes, the responsibility is, of course, entirely mine.

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*Gyula Wojtilla*



## PART ONE

### KṚṢIŚĀSTRA LITERATURE

What is kṛṣiśāstra?

The first member of the compound kṛṣi has been defined as a separate branch of occupations. Kauṭilya listed it under the commulative term vārtā "economy" together with animal husbandry (paśupālya) and trade (vānījyā) (Arthśā I, 4,1). The term occurs in the same sense and in the same context in the Amarakośa (AmaK II, 9,2.). Amara makes a clear distinction between "agriculture" (kṛṣi) and "gleaning" (uñcha or śila) (AmaK II, 9, 2). At any rate, kṛṣi must be understood as growing crops by using a plough in a larger area.

Kṛṣiśāstra firstly denotes "agricultural science" and, as such, it is a synonym of kṛṣitantra (Gopal 1973, 167 and Das 1988, 1.). Another synonym is sasyaveda "the science of crops" (KātyaKaT DānaK p. 208.) "die Lehre vom Ackerbau" (pw VII, 98.). According to Gode this is the title of a lost work referred to in a verse of the Nandipurāṇa, a text which itself is known only from citations in dharmanibandhas. (Gode 1948, 11.) The verse in question can be interpreted in this sense although, the first meaning is more likely. Sīrajñāna "the knowledge of plough", or its amended form sītajñāna "the knowledge of furrow", covers a considerably narrower semantical field (Bhaṭṭasvāmin on Arthśā II, 24; cf. Das 1988, 1.). Phalaveda "the science of crops" (NyāyaMañ 64.) is a rather ambiguous term because it may be connected either with agriculture or horticulture. The term kṛṣipurāṇa "the lore of agriculture" was coined by the sage Parāśara, the renowned agricultural expert, and figures as a practical name indicating a practical science which heavily depends on both great and little tradition. It is not by accident that this science did not get into the taxonomy of sciences, The Prasthānabheda of Madhusūdana which otherwise enumerates among others horse – breeding, science of arts and mechanics, science of cooking belonging to arthasāstra. (cf. Deussen 1920, 61) Kṛṣiśāstra must be distinguished from vṛkṣāyurveda, "the science about the life-span of trees", or vṛkṣāyuryoga, used perhaps in the same sense by Vātsyāyana (KāmaSūI, 3,15; cf. Das, 1988, 1) As a synonym of these two there is the word upavanavinoda, "the pleasure of groves". These three altogether represent "arboriculture" and "horticulture" in Indian tradition, as they do in modern times.

Kṛṣiśāstra secondly means "a textbook of agriculture" including theoretical and practical knowledge concerning agriculture. In reality texts labelled kṛṣiśāstras in Sanskrit or in vernaculars embrace a wider scope of topics related to village life and have an encyclopedical character, often comprising agriculture, animal husbandry and veterinary science, arbori – and horticulture and even passages that may fit into dharmasāstras or arthasāstras. In short, it is easier to say what is not kṛṣiśāstra than to say what is. Such texts as Gurusarṇhitā, Meghamālā, Lokavijayayantra, Vatsaraphala, Vanamālā, Varṣalakṣaṇa and Sarṇvatsaraphala must be put in the literary genre called natural astronomy (jyotiṣa). It does not mean that "real" kṛṣiśāstra passages occur in the Gurusarṇhitā (Gopal 1981, 47) or in the Lokavijayayantra (verses 9,10,14,17,18, 22 and 27). Similarly the petty text called

Ankurārpanavidhi, "The method of acquiring sprouts" extant in several manuscripts in South India (cf. CC I, 4), is a book of Vaiṣṇava ritual. The Viśvallabha extant in two manuscripts on the basis of the colophons is a text on arbori – horticulture.

It seems reasonable to accept as a working hypothesis that kṛṣiśāstras are those texts, irrespective of their mixed contents, which include the word kṛṣi in their title, or a synonym of it, or those that are agreed upon in Indian tradition as such. Ereḷupatu, Kāśyapīyakṛṣisūkti, Kṛṣigītā, Kṛṣicakraññal, Kṛṣijñānapradīpikā, Kṛṣipatṭu, Kṛṣiparāśara, Kṛṣiṣayaka, Kṛṣiśāsana, Kṛṣisamayānirṇaya, Kedārakalpa, Kṣetratattva, Kṣetraprakāśa, Cāṣāpālā, Nuskha dar fann -i – falāḥat, Sasyanandamu, Sasyānanda and on the other hand Khanār – bocan, Ghāgh aur Bhaddārī kī kahāvēñ, Tirukkaivakam, Ḍāker – bocan are examples of those.

### The origin and development of kṛṣiśāstra

As a matter of fact not any extant kṛṣiśāstra antedates the early medieval times. It does not mean that texts containing information about agricultural science it did not exist before that period. The Sītādhyakṣaparakaraṇa of the Arthaśāstra (Arthaśā II, 41) obviously presupposes certain literature or at least certain knowledge on the level of theory or science. Similarly the Bṛhatsamhitā (BṛSam chapter 40) is also familiar with this type of literature and science. The respective chapters bearing on agricultural – like activities in the Agnipurāṇa (AgniP chapter 121) may preserve earlier material on the subject, too. It is a question whether these texts are earlier than the oldest extant kṛṣiśāstras. There is a remarkable coincidence between the appearance of kṛṣiśāstras as a literary genre and the literary form both in Indo – Aryan and Dravidian languages and the extension of cultivated territories (Wojtilla 1991) in which agricultural experience met the theoretical knowledge of brāhmaṇas who played the role of cultural missionaries at places and times. (cf. Kosambi 1970, 173). Their role becomes visible in the coining of Sanskritised terms of agriculture, supplying theoretical knowledge of astronomy, botany, economy and law and codifying popular wisdom deposited, for example, in the collections of sayings in vernaculars. A relatively sophisticated mood of cultivation required a great number of beasts of burden, especially cattle, a circumstance that raised the prestige of the cow, and made their higher protection inevitable, especially in those areas of India where vegetarianism was not an established custom. The propagation of ritually pure food fit for offering to the gods and for everyday meals of the higher castes cannot be separated from the more differentiated agricultural and horticultural activities. The importance of agriculture suddenly emerged: Kṛṣiparāśara verse 6 states: "Rice is vitality, rice is vigour too, and rice (indeed) is the fulfilment of all ends (of life). Gods, demons and human beings all subsist on rice." The legitimisation of king in the regional kingdoms, which was strongly promoted by brāhmaṇas, designated a special role for the kings. In certain regions the kings appear to be the highest patrons of agriculture. The verses 1–3 of the Kāśyapīyakṛṣisūkti read thus: "For the sake of pleasing the Gods, the pious king – who bears the burden of protecting his subjects – having punished the wrongdoers and establishing the law entirely should give nourishment to those subjects of good behaviour who are devoted to the system of the varṇāśrama. The Gods, spirits, heavenly choristers, fathers, sages and others are said to be



meritorious of the different sacrifices. The wise men knew that they could please them by devayajña."

As to the composition of the extant kṛṣiśāstra literature, the opinions of scholars vary. De concludes that the Kṛṣiparāśara is "a Sanskrit version of the collective weather – wisdom of the popular vernacular proverbs." (De 1960, II) The origin of the Bengali literature of this kind goes back to a remote past. Dasgupta surmises it is of foreign origin and believes that the traditional wisdom of the agricultural people of Malabar is the possible source. (Dasgupta 1935, 224 and 225 n. 1.) The prominent Malabar school of astronomy and the provenance of such texts as the Kṛṣicakraññā, Kṛṣisamayaniṛṇaya and Varṣalakṣaṇa and considerable portions of the Kṛṣigītā seem to underline this hypothesis. It is another question as to how far the science of climatology was influenced by strictly theoretical knowledge and popular wisdom. Lallanji Gopal, having analysed the contents of the Gurusarṇhitā, speaks of the great importance of the Sanskrit sources of this kind of knowledge. (Gopal 1981, IV) Dh. Tripathi goes further when he states that vernacular texts on weather – forecasting are translations from Sanskrit and that this work was executed by paṇḍits in the eighteenth century. (Tripathi 1971, 6–7)

It is true that climatology, based on astronomy, or even rain – making, based on magic, form an essential art of agriculture and consequently of the kṛṣiśāstras. This branch of science can be traced back to the Vedas. It appears, for instance, in a hymn addressed to Mitra-Varuṇa (RV, 5, 63), in the relevant portion of the Buddhist literature (Mahāmāyūrī "The peacock spell", Meghasūtra ("Cloud sermon" cf. Schmithausen 1997, 56–58) and later (Bṛhatsarṇhitā chapters 46, 47). Greek accounts on ancient India observe that this science and the related subjects were the privileges of the brāhmaṇas. As Arrian puts it: "Alone of the Indians they are expert in prophecy, and none save a sophist is allowed to prophesy. They prophesy only about the seasons of the year and any public calamity." (Indike II, 4–5. P. A. Brunt's translation) Similarly the establishment of irrigational systems demanded learned persons. Kāśyapiyakṛṣisūkti speaks of water – finders who are conversant with the kṛṣiśāstra (KKSū 683). This statement is well in line with the respective descriptions of the Bṛhatsarṇhitā. (BṛSam ch. 54.) The planning of dams, sluices, channels and water reservoirs required engineering experts. At the same time Parāśara reminds us of a kind of lore we should not forget that certain departments of agricultural science belong to the applied sciences rather than to the experimental sciences. Such terms as kṛṣikarmavid (KKSū 633), kṛṣikovidā (KKSū 457 and 558) kṛṣipaddhatikovidā (KKSū 110), or kṛṣivicaṣṣaṇa (KKSū 586) suggest this practical aspect of agriculture. Daśarathasvāmin, the author of Kṛṣiśāsaṇa, who drew mainly from Sanskrit sources included the advice of his friends who were farmers. The presence of deśī – words, or obviously Sanskritised ones, in the inventory of tools cannot be overlooked. (Kuiper 1969, 213–216; Wojtilla 1985, 200; Wojtilla 1988) According to the Kāśyapiyakṛṣisūkti the study of kṛṣiśāstra was permitted to the śūdras, as well. (KKSū 677 and 681)

To sum up, kṛṣiśāstra is essentially an applied science and has many facets. Climatology and related subjects as well as irrigation together with botany, veterinary sciences or economic law appear in them together with experimental knowledge. There is a counteraction between the elements of agricultural knowledge derived from the "great tradition" and "little tradition". It is a uniquely masterful work that brāhmaṇas codified a great deal of this knowledge in Sanskrit or in vernaculars. The making of a śāstric character

of the Sanskrit texts also praises the high quality of their editorial work. These endeavours resulted in composing a fair number of textbooks and didactical poems. The śāstras have their distinctive features of śāstric literature in general; this circumstance explains for instance the attribution of certain texts to gods, semi – gods or mythical sages. (cf. Pollock 1985) The survival of collections of popular sayings in Bengali, Hindi, Marathi, Rajasthani or dialects of them point to the common roots and properly demonstrates the vital importance of the “little tradition.” The great number of individual sayings spread over the huge folkloristic literature bear the testimony that Indian folklore continues to be a constant source of Kṛṣṇīśāstra. Likewise editorial work of learned authors did not come to a halt; Daśarathāśāstri composed his Kṛṣṇīśāna in 1909.

## PART TWO

### INDIVIDUAL KṚṢIŚĀSTRAS

(in alphabetical order)

#### Ēreḷupatu

Lang.: Tamil

Ed.: – with the commentary of Tirunagantaiyar by Velayudha Madaliar, Madras, 1886 – Kampar nūlkal iyaṛṇiya. 3. Er-eḷupatu. Ceṇṇai [Madras], 1969.

Lit.: Jesudasan 1961, 183. – AAI 165. – Zvelebil 1975, 185. – Wojtilla 1982a, 170. – Zvelebil 1995, 319.

The poem called “Seventy stanzas on the plough”, which dates from the 11<sup>th</sup> century, praises the plough and the ploughmen. It has been ascribed to Kamban, but it does not show anything like the Kamban touch. (Jesudasan 1961, 183). The attribution of the authorship to Kamban is in accordance with the tendency to ascribe minor works of unknown origin to celebrated authors. (Zvelebil 1975, 185)

#### Kāśyapīyakṛṣisūkti

Lang.: Sanskrit

Ed.: Kāśyapīyakṛṣisūkti: A Sanskrit work on agriculture I. Ed. by Gy. Wojtilla. In: AOH 33:2 (1979), 209–252.

Trans.: AAI (excerpts) – Randhawa 1980 (excerpts) – Kāśyapīyakṛṣisūkti: A Sanskrit work on agriculture II. English translation by Gy. Wojtilla. In: AOH 39:1 (1985), 84–136. (complete)

Lit.: AAI 158 – Randhawa 1980, 484 ff. – Wojtilla 1982a, 165–166. – Wojtilla 1995.

This is the largest extant text on agriculture in Sanskrit. The treatise is traditionally ascribed to Kāśyapamuni, the sage Kāśyapa who had received the text from the goddess Bhūdevī and the later from Brahmā. The work is known only from a single manuscript kept at the Adyar Library, Madras under the signature XXXVIII. 1. 8. 63419. It is a transcript from a lost manuscript from Tirupati. The transcript dates from December 9<sup>th</sup>, 1930. Neither the mythical origin nor the manuscript helps us to trace the provenance or date of the text. A further difficulty is that no quotations from it have so far turned up in other works, not even oblique references. On the other hand there are citations from various authorities (Bhārgava verses 211, 536–537); however, they cannot be identified with the verses attributed to him in the Nītikalpāra by Kṣemendra (NītiKaT verses 58–61 and 98.). Therefore we have to think of a forgotten line of tradition. It is an intriguing question as to whether this Bhārgava has anything to do with Bhārgava Rāma alias Paraśurāma who instructed Kerala brāhmaṇas on agriculture in the Malayalam text Kṛṣigītā (Gārgya verses 65–66) and Nārada the yogi (verses 350–351). The compound kṛṣipaddhatikovidā (verse 110) may give a hint to the textbook Kṛṣiparāśara a manuscript of which bears this name; however, we could not find any passages taken from that book in the Kāśyapīyakṛṣisūkti. These passages are of no

value for dating our text. The mention of the *pākaśāstra*, authored by Nala, and another one by Bhīmasena are of little help. Bhīmasena as a specialist of *sūdaśāstra*, i.e. the science of the kitchen, is referred to in the *Bṛhatkāthāślokaśaṃgraha* of Budhasvāmin (BṛKaŚlSāṃ XVI, 61 and XVIII, 20), a text dated from the eighth–ninth centuries (Banerji 1971, 169). King Nala was a famous cook, according to the epic tradition. A booklet on cooking under his name called *Pākadarpaṇa* “Mirror of cooking” has survived. This text is extant in variant readings and one of them was printed in Benares in 1915. The dating of it is not without problems, but since red pepper is not mentioned in the book, it must have been written before the introduction of chili to India in the seventeenth century. (Masica 1979, 123) The third main chapter concerning the preparation of ritually pure food recommended for the *brāhmanas* borrows a great deal from the *Mānavadharmasāstra* (ManuSm V, 5–26) and the *Vaikhānasaśmārtasūtra* (VaikhāSmS IX, 15). According to W. Caland the editors of the former might have known the latter. (Caland 1929, XIX) In that case we may suspect a long chain of *Vaikhānasa* tradition from the ancient times upto the time when the *Kāśyapiyakṛṣisūtra* was edited. Notwithstanding we must proceed with utmost care because too many details in the history of the *Vaikhānasas* are still in total darkness. Some specialists of the *Vaikhānasa* tradition argue that the relation of the *Kāśyapiyakṛṣisūkti* to the *Vaikhānasa* literature cannot be ascertained without further research. (Personal communications from T. Goudriaan and G. Colas). The existence of a text called *Kāśyapajñākāṇḍa*, “The wisdom – book of Kāśyapa”, from the Tirupati area dated in the second half of the first millennium A.D. (Goudriaan 1965, 10) is still in debate; however, there is no sound evidence of a closer relation between this and our text. On the basis of a reference to Kośala as the best paddy producing area (verse 424) Randhawa proposes a date between the 5<sup>th</sup> and 10<sup>th</sup> centuries A.D. (Randhawa 1980, 484). Another attempt at dating can be made if we pursue the name Kāśyapa in agricultural tradition. As a cultural hero, promoter of cultivation, his name can safely be attested to in the *Arthaśāstra* (ArthŚā II, 24, 27), *Rājatarāṅgiṇī* (RājaT V, 113), *Nīlamatapurāṇa* (NīlamaP 300), and Bhaṭṭotpala, in his commentary on *Bṛhatsaṃhitā* LIV, 7 calls him an expert in agricultural meteorology. J. J. Meyer holds that the first attestation of the name can be found in the *Pāraskaragṛhyasūtra* (PāraGS II, 13; cf. Meyer 1937, 157, note. 1); however the identification of Uddalākāśyapa with the semi-god invoked in the mantra in the locus cited from the *Arthaśāstra* remains a question. Since Kāśyapa in the *Kāśyapiyakṛṣisūkti* does not figure as an astronomer or climatologist the information given by Bhaṭṭotpala does not concern our Kāśyapa. Because the *Rājatarāṅgiṇī* and the *Nīlamatapurāṇa* are Kashmirian texts, they preserve a very valuable tradition about Kāśyapa, who regulated the rivers and made cultivation in the Kashmir valley possible. It is interesting to note that his expertise in canalisation has been equally highlighted in the Kashmirian texts and the *Kāśyapiyakṛṣisūkti*. On the other hand we must contend with the possibility that there was an accidental similarity between the irrigation systems in Kashmir and in the territory of the late Pallava kingdom where the patronage of paddy cultivation was a prominent task of the kings following the Vaiṣṇava faith (Gonda 1954, 236). In addition Tirupati – the place to where the provenance of the single manuscript can be traced – was the centre of the *Vaikhānasas* excelled also in grain (paddy) cultivation from the early medieval times onward. The last word can be said only after one has a better knowledge of the history of the *Vaikhānasas*. One striking

phenomenon of the religious views depicted in our text is the Varāha incarnation of Viṣṇu and the lengthy treatment of the myth of Viṣṇu-Varāha and Bhūdevī the earth-goddess. The appearance of this myth in South Indian religious tradition and as a popular topic in the fine art in the early medieval period suggests that our text is related to the same age. Simultaneously there are passages in the text that indicate late interpolations: for instance, the mentioning of *jalepikā* (verse 833) and the seemingly modern botanical taxonomy. The analysis of the language and style has brought minimum result. There are few Middle – Indic forms which are Kosala (verse 321: instead of Sanskrit Kośala), *pādaghāṭṭanaka* “threshing by feet” (verse 487) and *pānaghaṭṭa* “the bank of a canal” (verse 94). In addition *kheṭa* “paring plough” (verse 414 cf. Wojtilla 1985, 200) is a *deśi* – word. *Pecana* (verse 569: an unknown term of husking rice?), *vāḷaga* “a kind of fertiliser prepared from fish etc.” and *śaṅkula* “sickle” (verse 480) were perhaps coined under the influence of the Telugu speaking area in the vicinity of Tirupati. (Wojtilla 1995, 272). To sum up, there are different textual layers in the work. The earliest one can be dated from the post – Gupta times i.e. after the sixth century A.D. Later interpolations might have entered into the text. As to the provenance of the present text, we cannot ignore the testimony of two lists of geographical names: Kāśmīra, Vaṅga, Nepāla, Pañcāla, Kośala, Kuru, Virāṭa, Avanti, Mālava, Śakadeśya, Sindhu-Sauvīra, Cedi, Koṅkāna, Andhra (verses 321–322) and Gandhāra, Kuntī, Pañcāla, Kāśmīra, Avanti, Sindhu, Nepāla, Naiśadha, Kośala, Aṅga, Ghurjara, Saurāṣṭra (verses 751–752). In them there is direct reference to the present-day Tamilnadu while the far-South is missing. It is curious because we learn from the *Mahābhārata* (*MahāBhā* XII, 49, 56) that Paraśurāma having defeated the *kṣatriyas* presented South India Kāśyapa as a gratuity for the sacrifice of a horse. A breakthrough in research could only be expected if another manuscript of the work or at least parallel passages in other sources would be found. For this there is very little hope after so many years work in this direction.

The treatise is composed of 1780 verses divided in five main parts or chapters. The first serves as a kind of introduction. The second and third comprise several sub – chapters. Altogether the redaction of the work is very loose. The problems connected with this issue cannot be solved until other manuscripts are found.

The first part called, “The preliminary advice on the subject”, provides a proper argumentation for the importance of agriculture in sacred and profane spheres of life. It narrates to us the mythical provenance of the text. (verses 1–24)

The second part, called “The description of the method for cultivating grain etc.” (verses 25–599), is divided into 13 sub – chapters. The main product is paddy. The first sub – chapter provides a short introduction in the classification of the soils. It is followed by two lengthy chapters on the establishing of an irrigation system. A separate part is devoted to the eulogy of agriculture and characterization of cultivators. The subsequent two chapters describe the tools of agriculture and the plough. The following two chapters deal with the worship of bull – king and with the marks of cows and bulls. One chapter discusses the proper season for grains and the method used to divide the land, and the other describes the ways of collecting various seeds. A following chapter narrates the method of cultivation which is fit for gaining various grains, and the last one does the same concerning the pulses and some other products such as wheat, barley, millet, sugar – cane and cotton trees and.

The third part, called "The description of the cultivation method for vegetables etc." (verses 600–777), contains a considerable amount of information about producing vegetables and fruits, gardening (upavanavinoda), and forestry. All this is mixed with arthaśāstra – portions highlighting the tasks of the king in organising the distribution of products and collecting taxes. The verses 757–765 curiously present a short discourse about products obtained from mining.

The fourth part (verses 778–819), is called "The description of rules regarding edible and unedible things." The contents are mainly based on the instructions of the Mānavadharmaśāstra (ManuSm V, 5–26) and the Vaikhānasasmārtasūtra (VaikhāSmS IX, 15).

The fifth part, called "The description of the order of offering various oblations" (verses 820–849), gives a a rich variety of cakes and sweets.

### Kṛṣigītā

Lang.: Malayalam

Ed.: – ed. by C. Govinda Wariar. In: BGOML III (1950) No. 1, 89–107; No. 2, 99–112 and Vol. IV. (1951) 99–113. (hereinafter: Wariar 1950) – Pāṭṭukal. Part II. Ed. by Raghavan Pillai. (hereinafter: Raghavan Pillai 1968 Trivandrum 1968, 109–142.

Lit.: Padmanabha Menon 1924, 88. – Wariar 1950, 89. – Raghavan Pillai 1968, XXI–XXXI. – Rahman 1982, 519. – Wojtilla 1982a, 170 – Vijayalakshmi 1993, 42–43.

The author of the poem is unknown but, as Wariar puts it, he "wields a facile pen and the lines all have a lucid charm and melodious flow. The metre employed in the first three padas is 'Pāna' and the fourth is written in the 'Thullal style' ". (Wariar 1950, 89) The highest authority whose teaching is expounded is Bhārgava i.e. Paraśurāma, and traditionally the text is said to have been taken from the Keralotpatti (Rahman 1982, 519). Others believe that it is a translation of the Sanskrit work entitled Keralakalpa. (Padmanabha Menon 1924, 88) The age of the composition is uncertain. (Wariar 1950, 89). If we take it as a part of the Keralotpatti, it could not be dated before the 17<sup>th</sup> century. It has been very popular in Kerala. As Padmanabha Menon reported, it was taught in schools in Northern Kerala at the end of the last century and beginning of this century. (Padmanabha Menon 1924, 88)

The poem is composed of four chapters (pāda) and comprises altogether 943 lines.

The first chapter (lines 1–222.) starts with a dialogue between Paraśurāma (Bhārgava Rāma) and the brāhmaṇas of Kerala who are eager to learn the agricultural condition of the region. On their request Paraśurāma gives a proper instruction. He speaks of the requisites of agriculture: cowshed, manure pits, ploughs, axes, spades and the cattle. He describes the values of the good agriculturists and lists the operations: fencing, manuring, dividing the field, removal of weeds, collecting firewood, preparing the soil, collecting seeds and bestowing water resources.

The second chapter (lines 223–379.) provides further instructions. Paraśurāma says that all agricultural work must proceed according to the prescription of the sages. Then the rules of ploughing, sowing transplanting of the paddy seedlings come. The proper day for sowing must be calculated on an astronomical basis. Enemies of agriculture are also here enumerated. The proximity of water is a major factor in determining the quality of the soil.

The third chapter (lines 380–636) deals with miscellaneous topics. Paraśurāma explains the difference between Kerala and other countries. It is followed by special instruction with regard to pepper and arecanut which must be cultivated on high land and paddy which must be grown on low land. The next details concerning paddy cultivation include classification of seeds, preparation of the paddy field, treatment of the seedlings, or the fitting of the ploughshare in the plough, and the regulation of its position in order to carry out effective ploughing and yoking of the oxen. The subsequent lines narrate the cultivation of coconut, jack fruit and palm trees and maintenance of flower gardens and growing chilis. The ending lines contain prescriptions on deep ploughing, hoeing, making pits for trees and instructions on the agricultural calendar. The brāhmaṇas listened to all this and expressed their wish to hear more about the auspicious days, hours for cultivation and the monsoon.

The fourth chapter (lines 637–943) is the continuation of Paraśurāma's teaching. Ploughing and sowing at night are easier and forests should not be destroyed. Then follows an account of the auspicious and inauspicious days for agriculture. At the end we are taught of the defects and virtues of the cattle including bulls and buffaloes. They are characterized according to their tail, spine, horn, hooves, teeth, spots on the skin, nose, shoulders, hair etc. The buffalo and the bull should not be put under the same yoke.

### Kṛṣicakraṇṇal

Lang.: Malayalam

Ed.: No information.

Ms.: Kerala University Oriental Research Library, Trivandrum under the signature Ms 10856 – G.

Lit.: K. V. Sarma 1972, 100. – Wojtilla 1982a, 170–171.

The author of the text is unknown. The lower – limit of its date is the age of the manuscript which cannot be earlier than the 18<sup>th</sup> century. (personal communication from Prof. Unni 1977) It is regarded as a text on natural astrology. (K. V. Sarma 1972, 100) It is a collection of meteorological maxims related to agricultural work.

### Kṛṣijñāpradīpikā

Lang.: Kanarese

Lit.: AAI 165.

It is a modern treatise based on āgamaśāstras and purāṇas and compiled by a certain Sri Nagabhusonaghans – mathadharya (sic!) who lived between 1826–1884. (AAI 165)

### Kṛṣipāṭṭu

Lang.: Malayalam

Lit.: AAI 165. – George 1968, 22.

The title is wrongly given as Kṛsi – patta in AAI 165. The works are agricultural songs praising the cultivation of paddy and coconuts. Many of them have no idea to convey, but have lift and rhythm which inspire the workers engaged in hard manual work. (George 1968, 22.)

## Kṛṣṇiparāśara

Lang.: Sanskrit

Ed.: Kṛṣṇisangraha [Ed. by] Prasannakumāra Ṭhākura. Kālikātā 1862 – Kṛṣṇisamgrahaḥ Pūjyapāda – Parāśaramunipraṇītaḥ... Giricandraśarmaṇā... mudritaḥ. Kālikātā 1862, 1–18. (I was able to see only the second item therefore I share the doubt expressed by Prof. R. P. Das who also did not take a definite stand on whether the two editions contain the same text. (cf. Das 1988, 508) – Vācaspatyam, compiled by Śrī Tāranātha Tarkavāchaspati. Calcutta 1873–1884. Vol. III, 2197–2201. – Ed. by Tārakānta Kāvyaṭīrtha [=so – called Vaṅgavāsī – edition: Sanskrit – Bengali parallel text] Kālikātā B. S. 1322 [=1915] – Kṛṣṇi – Parāśara. Ed. G. Majumdar and S. C. Banerji. Calcutta 1960. [hereinafter: Majumdar – Banerji 1960. It is the so – called critical edition with English translation, introductory study and copious references. It was reviewed by Birwe (Birwe 1964) and Kuiper (Kuiper 1969). [This is a reliable text; however, the editors did not take into consideration the texts printed in Calcutta in 1862 (Gopal 1973, 151 note 4; Das 1988, 508) as well as some other manuscripts: Ms Tagore 24, IOL Catalogue No. 6475; one manuscript from Cambridge, two manuscripts from the late Central Provinces and Bengal reported by Kielhorn and Rajendralala Mitra and one manuscript from the Provincial Museum Cuttack (these are recorded in NCC IV, 284) and eleven manuscripts from the Orissa State Museum Bhubaneswar.] – Kṛṣṇi – parāśara. Anuvādak evaṁ prakāśak Caudharī Śrīnārāyaṇa Sinha. Varanasi 1971. [Sanskrit text with Hindi translation. The Sanskrit text is based on the so – called critical edition. The edition is valuable for the numerous notes and references to agricultural sayings in Hindi.)

Mss.: NCC IV, 284. – Gopal 1973, 151 note 4. – The report about the eleven manuscripts from Bhubaneswar (Mishra 1973, 122–123) was not available to the editors of NCC while compiling the volume in question.

Transl.: For the Bengali, English and Hindi translations see the respective bilingual editions. There is an English translation by S. Raychaudhuri (1938) – An Oriya translation was published in Cuttack in 1930 (Gopal 1973, 151 note 4) – the text has also a Hungarian translation (Wojtilla 1976).

Lit.: Benthley 1800, 576 (he regarded the text as an insignificant little work and a most palpable forgery) – Majumdar 1927, 207. – Gangopadhyaya 1932 and 1941 – Roy 1948, 30. – Banerji 1955 – De 1960, II. – Birwe 1964 – AAI 154 etc. – Kuiper 1969 – Gopal 1973 (=1980, 1–30.) – Wojtilla 1976, 1977, 1982a, 1982b and 1988 – Lal 1980, 126. – Roṣu 1986, 258–260. – Das 1988, I and 43; 1997, 205 and 215. – Chowdhury 1992.

Parāśara to whom the text has been ascribed, has not been identified. His identification with certain persons by A. Lal (Lal 1980, 126) is improbable. He is not the author of a work entitled Vṛkṣāyurveda. (Chowdhury 1992, 33 and Das 1997, 205 and 215) The attribution to Parāśara may be based on the śāstric tradition. In this case we may think of the fame of the Parāśara gotra of brāhmaṇas in science, which gave a rank to the work. S. K. De considers the treatise a Sanskrit version of the collective weather – wisdom in the form of popular sayings in vernaculars. In its present form it is a compilation because some verses of it are attributed to Raghunandana to Varāha, Hārīta, Devala, the Rājamārtanḍa, the Kṛtyacintāmaṇi and the Devipurāṇa. (De 1960, II) The matter is, however, not as simple since Banerji has already touched this problem and concluded that the borrowing might



have taken place vice versa. (Banerji 1955, 5) Lallanji Gopal thinks that "it would not be fair to accuse Parāśara of plagiarism", and it is possible that both Parāśara and Raghunandana used a common source, moreover "Raghunandana did know the Kṛṣi – Parāśara text." (Gopal 1973, 161)

The text has been variously dated to the 5<sup>th</sup> century A.D. (Majumdar 1927, 207), to the 6<sup>th</sup>–8<sup>th</sup> centuries (Roy 1948, 30) and to the 6<sup>th</sup>–11<sup>th</sup> centuries (Majumdar – Banerji 1960, VIII–IX). Lallanji Gopal in his meticulous study comes to the conclusion that the middle of the eleventh century is a reasonable date. (Gopal 1973, 168) Using the passages ascribed to the Rājamārtanḍa, Chowdhury places the composition of the text between c. 950–1100 A. D. (Chowdhury 1992, 33)

Most probably the text is of a north-eastern Indian provenance. It is indicated by some desi words such as madikā-/ mayikā- "a kind of harrow", paccanī- "goad" which can be connected with Bengali mai- "a ladder - shaped contrivance used for levelling ricefields" and pāñcan – bāṅi respectively (Kuiper 1969, 215). The manuscript tradition leads us also to Bengal and Orissa. We may call attention to a similar Hanumān mantra in the Vṛkṣāyurveda by Sūrapāla, a text from Bengal from the second half of the eleventh and first half of the 12<sup>th</sup> centuries A. D. (Das 1988, 262) Curiously the same mantra can be found in the eighteenth century Śivatattvaratnākara (ŚivataRaKaVI, 10, 65–67). The author was King Basava, the ruler in a part of the modern Karnataka state. Modern Bengali almanacs show a close resemblance to the description of the agricultural year presented by the Kṛṣiparāśara. (Bhattacharyya 1976, 172) There is no mention of an irrigation system in the text, indicating that it was a territory where the natural rainfall regulates agricultural production. This circumstance points also to the same region.

The text contains 243 verses. Its condition is generally good; however, there are obviously mistakes in certain manuscripts. There is only one lacuna in the text in the Hanumān mantra following the verse 194. As Majumdar and Banerji put it, the book is very easy and affords a pleasant reading; the language is simple. (Majumdar – Banerji 1960 XI) The contents of the treatise can be summarized as follows.

It begins with the praise of agriculture. Since agriculture depends on rainfall a great part is devoted to climatology. This passages stand very near to those in the collection of popular sayings in vernaculars and to those in Sanskrit text on weather – forecast. The next are the rules regulating the treatment of cattle with special emphasis on their role in ploughing. A short instruction concerning manuring forms the next part. It is followed by a very detailed description of the plough (cf. Wojtilla 1977 and 1988). This portion of the text is of great interest from the point of view of technology as well as for the history of language because it abounds in Sanskritised vernacular terms. Prescriptions on the commencement and carrying out of ploughing are dealt with at considerable length. There is enough room for omens and portents connected with this business. The subsequent verses provide detailed instructions on the seeds, sowing, the operations afterwards such as harrowing, transplantation of paddy seedlings, weeding, release of water from the paddy field and magical protection of the seedling from insects and pests which cause harm to crops. Before harvest there is some minor work to be done, such as fixing nala (lit. reed) in the field in order to avert evils to paddy or simply to scare away mischievous birds, testing the crop by taking a handful of samples and fixing a pole (medhiropaṇa) for threshing or for

magical purposes. The whole process of cultivation and accordingly the prescriptions of our treatise end with the narrating of the harvest and the connected festival called puṣyayātrā, when the grains of paddy are weighed and stored. The last thing to be done is the Lakṣmīpūjā, the worship of the Goddess of wealth and fortune.

As Majumdar and Banerji rightly say, “the book undoubtedly contains very valuable instructions regarding the important business of agriculture; these instructions, shorn of the superstitious matters, the speculative astronomical observations and the religious practices, cannot fail to impress us even to – day.” (Majumdar – Banerji 1960, XVII) The lasting impact of it can be felt in the practice of Bengali farmers of our time. (cf. Bhattacharyya 1976, 171–176)

### Kṛṣiṣayaka

Lang.: Sanskrit

Ed.: No information

Mss.: One manuscript is reported from the private collection of a certain Mahārāja Śrīyukta Satiścandra who lived in Kṛṣṇanagara – Navadvīpa in Bengal. The manuscript is old and accurate. (R. Mitra 1871, 379–380)

Lit.: R. Mitra 1871 – Rahman 1982, 519.

The author of this “Guide to agriculture” in one hundred ślokaś as well as the age of the composition is unknown. It deals with various crafts connected with agriculture.

### Kṛṣiśāsana

Lang.: Sanskrit

Ed.: Kṛṣiśāsanam... Daśarathāśāstrisamṛtitaṁ

tatkr̥tanārāyaṇabhāṣyārāghavabhāṣyadvyaśaṁvalitaṁ... nāgapure prakāśitaṁ. V. S. 1977 (=1920)

Transl.: Hindi: see above. It is a translation cum commentary.

Lit.: AAI 154. – NCC IV, 284. – Wojtilla 1982a, 167. – Wojtilla 1991 – Wojtilla 1993)

The author is Daśarathāśāstri, son of Nārāyaṇa, from the Garga – gotra of brāhmaṇas who compiled the treatise in the village Śrīśukara (modern Soroṇ in Uttar Pradesh) in 1909. The text was printed in Nagpur in 1920. The book is accounted as a bibliographical rarity. The editors of AAI simply remarked that it was not available to them (AAI 154). One copy in good condition is kept at the India Office Library (=British Library).

The treatise is composed of eleven chapters. Daśarathāśāstri tells us the details of the editorial work. He thanks those brāhmaṇa friends who know the essence of the soil (bhūmitattva) and who are devoted to the worship of Viṣṇu. His main source is the printed text of the Kṛṣiparāśara and the Bṛhatparāśarasūtra. What is astonishing is that he borrowed the description of the plough from the later one and was able to make proper emendations where the reading of the Jībānanda Vidyāsāgara edition is in error. (Wojtilla 1993, 530–531) It is possible that he might have used manuscripts of the Bṛhatparāśarasūtra. Similarly the readings offered him from the Kṛṣiparāśara differ from that of the 1862 edition at places. There are remains of borrowings from vernaculars: vakṣara – “plough used for levelling” (VII, 73) is a Sanskritised form of bakhar-/ vakhar while ḍuṇḍi- and ḍoḍaka (ibid.) remained unchanged. There are two commentaries one in Sanskrit and one in Hindi. The

Sanskrit commentary is based on not less than fifty sources, including some little known and still unpublished texts such as the Karmalocana, Bhojanakalpataru and the Saṁvatsarapradīpa. The authorities referred to are the Parāśaras, Atri, Nārada, Pṛthu and Marīci. A sketch of the plough according to Pṛthu has been appended to the text; however, we have not located a description for a description. The Parāśaras need no introduction and the role of the mythical king Pṛthu, the cultural hero who invented agriculture, is also well known from the epic tradition. Marīci and Atri made themselves a good name in the Vaikhāṇasa tradition. The relation of this tradition to agriculture in southern India has been already touched upon. Marīci's name in connection with agriculture can only be attested to in the Liṅgapurāṇa (LiṅgaP I, 5, 40). The reference to Nārada as the authority of the fluctuation of prices is very interesting. A closer examination of it shows that a great deal was borrowed from the Mayūracitraka, which is basically a text on climatology and one manuscript of which has come down to us under the authorship of Nārada. It is a pity that Daśarathaśāstri, who did not forget to refer to the place of the Liṅgapurāṇa, here remains silent. The chapter has resemblances to the respective parts of Hindi Pañcāṅgis and Jantris (cf. Wojtilla 1995, 529). In classical Sanskrit literature we can trace only the short chapter called Arghakāṇḍādhyāya ("The fluctuation of prices") of Varāhamihira's Br̥hatsaṁhitā. (Br̥Saṁ ch. 412)

The Kṛṣiśāstra is a kṛṣiśāstra in the broadest sense of the term including long chapters on topics that in the narrower sense do not form part of kṛṣiśāstra in the narrower sense. The titles of the chapters, aptly illustrate their contents, are as follows.

1. The description of the duties of the brāhmaṇas in agriculture. It is a kind of law – book embracing the tradition beginning from the Vedas. In the spirit of the Parāśaras Daśarathaśāstri permits agriculture as a profession for brāhmaṇas.
2. The description of the first "foot" (pāda) of agriculture. The chapter informs us about the different types of soil and how to make them fertile with help of manuring. It gives room to short hymns and incantations applied in worship of the Earth personified.
3. The description of the marks of bulls. It gives the conventional classification of bulls which follows the varṇa pattern.
4. The description of the medical treatment of bulls. It is an independent work on veterinary science.
5. The description of the "foot" called the seed.
6. The description of the fourth foot of agriculture called the husbandman. It discusses the social and health conditions of husbandmen. Practical advice on how to cure diseases can also be read here.
7. The description of the agricultural work. It is a systematic account of examination of the soil, the seeds, ploughing, sowing and the implements used for these purposes.
8. The description of the knowledge of rainfall. It proceeds on the footsteps of Parāśara and provides us the necessary knowledge about climatology.
9. The description of the ordinary and the high prices of items. It is an account of the seasonal fluctuation of prices of agricultural products.
10. The description of agricultural work beginning with weeding.
11. The definition of laws concerning agriculture. It comprises the sacred law explaining how to perform sacrifices and worship.

## Kṛṣṣamayanirṇaya

Lang.: Sanskrit

Ed.: Kṛṣi – Parāśara Ed. by G. P. Majumdar and S. C. Banerji. Calcutta 1960. Appendix. [It is a transliteration of the manuscript No. 7276 from the Government Oriental Manuscript Library, Madras. The learned editors did not undertake the job of textual criticism, and because they found the “text hopelessly corrupt”, they did not venture to make “hazard emendations”, but reproduced the text unaltered, indicating the “absolutely unintelligible” portions with dots.

Ms.: There is a single manuscript kept at the above mentioned library. Our scrutiny enables us to say that the majority of illegible portions can be safely corrected. The manuscript itself is a transcript in easily readable devanāgarī characters made by a certain Nilakaṇṭha Nambūdrīpād inhabitant of Kaññūr – mana, Ottapalam, District Malabar in 1926–1927. The material is paper, and the number of leaves is 16 (=32 pages). There are 20 lines on each page. The copy is incomplete. In spite of strenuous efforts during the last twenty years we failed to trace the original in Kerala.]

Lit.: AAI 160 – NCC IV, 284. – Wojtilla 1982a, 168. – Das 1988, 43–44.

The text containing 294 – in the manuscript unnumbered – verses mostly in anustubh metre is written in poor Sanskrit, because of a scribe’s carelessness, it abounds in orthographical and grammatical errors. There are only two lacunas in the text (verses 18b and 92ab)

As to authorship and date of composition we are in full darkness. On the ground of the existing long tradition of natural astronomy in Kerala we might conclude that it was written well before the 18<sup>th</sup> century. The extant text is of an encyclopedical character. It embraces agriculture, animal husbandry, climatology and topics pertaining to village life, such as house building. The treatise in its extant form divides itself into seven chapters.

1. The method of agriculture.
2. The method of sowing seeds.
3. The use of the polar star [in fixing times for work]
4. The constellations causing diseases to begin
5. The constellations [suitable] for the medical attendance of diseases.
6. The methods of protecting crops.
7. The methods of setting up the pillar and the wall at the commencement of [building] a house [and] the strengthening (stambhādi?) of the horses, oxen and men and the like. [This title is partially conjectural because there is a lacuna and there are obvious errors in it. This chapter abruptly ends without a full discussion of the items indicated in the title.]

## Kedārakalpa

Lang.: Sanskrit

Ed.: No information

Lit.: Das 1988, 3.

The work is mentioned in the Bengali foreword to Upavanavinoda. (Das 1988, 3) It is unlikely that the text is identical with any of the sections of the Skandapurāṇa (cf. pw II, 98 and MW 309) or of the Nandipurāṇa (cf. MW 309) bearing the same title.

## Kṣetratattva

Lang.: Sanskrit

Ed.: No information.

Lit.: Das 1988, 3.

The work is mentioned in the Bengali foreword to Upavanavinoda (Das 1988, 3).

## Kṣetraprakāśa

Lang.: Sanskrit

Ed.: No information

Lit.: Sarkar 1937, 438.

According to B.K. Sarkar it was once printed (Sarkar 1937, 438). No details of the publication have been given.

## Khanār – bocan

Lang.: Bengali

Ed.: It is not possible here to give a complete survey of the editions; therefore, we shall only recall the oldest and more important ones. Khanār vachana. The astrological sayings of Khanā. Golachipa 1875 – Khanār vacan. Ed. by P. S. Bhattacharya Calcutta B.S. 1315 (=1908) – Khanār vachana ed. by Saracchandra Śīla. Calcutta 1915 – S. K. De: Bāṅglā Pravād. Calcutta B. S. 1359 (=1952) Varāhamihira – Khanā Jyotiṣ granth [ed. by] Śrī Kālimohan Vidyāratna Kartik. Kālikātā [undated] Sulabh Kālikātā Lāibreri pp. 202–224.

Mss.: CCBM I, 42.

Transl.: To our best knowledge there is not any complete translation of it into foreign languages. There are excerpts from it in English (Chakravartī 1930, 374–376 and Das Gupta 1935, 225 ff.: a great number of sayings together with the Bengali original) and in Russian (Novikova 1965, 27–29)

Lit.: Rāya 1903 – Chatterji 1926, 131–132. – Chaudhuri 1935, 7. – Roy 1948, 25. – Sen 1949, 52–57. – Sen Gupta 1955, 59–61. – Banerji 1955, 32. – AAI 158. – Sircar 1965, 25. – Tripathi 1971, 7. – Wojtilla 1982a, 169.

Khanā, the traditional author of this collection of sayings was an astrologer. She was the wife of Mihira, son of Varāha. (Roy 1948, 29; Sen Gupta 1955 59–61) Some scholars translate the name as “learned man” and derive it from the Tibetan cmkhan– (Chaudhuri 1935, 7) or regard it as a vernacular form from a Sanskrit kṣaṇada – “astrologer” (Sircar 1965, 25)

The text has been variously dated from the 8<sup>th</sup> century (Sen 1949, 52–53) to the period after 1400 (Chatterji 1926, 131–132). The core of the text might have been composed by a relatively early writer (Banerji 1955, 32) however, the extant text abounds in later interpolations. The occurrence of such plant names as *tambāku*– introduced by the Portuguese to India probably around 1605 (Gazetter III, 49) and likely *ālū*– certainly belong to these loci.

The existence of a Marathi version (Tripathi 1971, 7) may speak for the great popularity of the work outside of Bengal. It might have been made in a period when Maratha's political power was present in North-eastern India in the first half of the 18<sup>th</sup> century.

The sayings of the collection are concerned with climatic conditions, agricultural operations and the like (Banerji 1955, 32). For instance a saying instructs us as follows: "He who cultivates the soil in the days of the full moon and the new moon is sure to suffer misery. His cows suffer from rheumatism, and scarcity prevails in his house." (Dasgupta 1935, 225) The collation of the existing printed texts and the preparation of a critical edition are badly needed. A proper analysis of the contents can be made only after that.

### Ghāgh aur Bhaḍḍarī kī kahāvaten

Lang.: Hindi, Gujarati, Marathi and Rajasthani

Ed.: Here it is not possible to give a complete survey of the editions. We shall recall only the oldest or the most important ones. Ghāgh aur Bhaḍḍarī. *Sampādak Rāmnareś Tripāṭhi*. Ilāhābād 1931 and its reprints – *Sampādak Paṇḍit Rāmalagna Pāṇḍeya, Vārāṇasī* [undated] – Śakunāvalī. Astrological and other omens and auguries by Bhaḍḍalī. Agra 1868 and its reprints (Hindi) – Bhaḍḍalī – vākya. The astrological maxims of Bhaḍḍalī, the daughter of Hudaḍ, a Brahman of Marwar. Ed. with introduction by Harajīvana Purushottama Śukla. Nadiad 1882 (Gujarati) – Sahadeva Bhaḍḍalī. (According to Laping 1979, 44: Marathi) – Some verses of the Rajasthani version have been published in magazines and journals. (Datta 1988, 1384) There are ca. 150 sayings in the edition of the *Kṛṣiparāśara* edited by Caudharī Śrīnārāyaṇa Sinha. (cf. *Kṛṣiparāśara*)

Mss.: The earliest extant manuscript of the sayings of Bhaḍḍarī dates from 1373 and belongs to an astrological work: *Svādhyāya saṁgraha pustikā* by Lokohitācārya (Datta 1988, 1383).

Transl.: Grierson 1885, 274–278 English, excerpts)

Lit.: Christian 1891, 204. – Tivari 1946 – R.N. Tripathi 1949, 19–20, 1952, 12. – AAI 158 – Sircar 1965 – Tripathi 1971 – Laping 1979, 44. – Wojtilla 1982a, 169. – Datta 1988, 1383–1384.

Ghāgh's name is often interchanged with that of Ḍāk and the same also happens with Bhaḍḍarī. Nothing is known about his personality. The name most likely means "clever", "cunning", "experienced". Bhaḍḍarī, Bhaḍḍalī or Bhaḍḍarī is regarded as Ghāgh's wife by the Jaina author of the *Megha* – mālā – bhaḍḍalī – vākya composed in Rajasthan in 1674 (Datta 1988, 1383). R. N. Tripathi takes Ghāgh, a brāhmaṇa from Kāmarūpa, who established the village of Saraya Ghāgha in the vicinity of Kanauj during the reign of Akbar (1556–1605) (R. N. Tripathi 1949, 19–20) Sircar thinks that the name Ghāgh is a common noun which simply means "old, wise man", while the name Bhaḍḍarī refers to a community of astrologers called bhaḍlī or bhaḍalī in Rajasthan, bhaḍuri, bhaddari or bhadri in Uttar

Pradesh (Sircar 1965, 26). Christian speaks of a certain Bhaddar who was a man and poet whose "descendants (an inferior class of Brahmans) are still supposed to reside in a village of the Shahabad district [in Bihar]" (Christian 1891, 204). The sayings ascribed to Bhaddārī can be attested in all dialects of the Hindi language belt (R. N. Tripathi 1952, 12).

The age of the oldest manuscripts roughly determines the date of the sayings of Bhaddārī. As to the sayings of Ghāgh, we do not have any fixed point. The present form cannot be earlier than the appearance of the Arabic – Persian terms referring to agriculture such as kharīf and rabi in India.

The edition by Paṇḍit Rāmalagna Pāṇḍeya contains 399 verses under the name of Ghāgh and 249 attributed to Bhaddārī respectively. Both collections prevail in the richness of practical knowledge of various aspects of agriculture. A collation of the editions in Hindi would serve as a basis for a critical edition. It is still a desideratum. A proper analysis of the vocabulary and grammar would also help to establish dates for these texts.

### Cāṣāpālā

Lang.: Bengali

Ed.: No information

Ms.: Calcutta University Ms No 2455.

Transl.: Das Gupta 1935 (excerpts in English)

Lit.: Dasgupta 1935, 229, 264–265. – Sukumar Sen, 1960, 151.

The author Rāmeśvar Bhaṭṭācārya who is also the author of a poem called Śiva – sankīrtan composed in 1710. He is a keen observer of the life of the agrarian population in South-west Bengal which had been always a purely rice – producing area. He shows an unpretended sympathy for the poor. As Sen puts it his poem is "one of the best of the century if not the best. (Sukumar Sen, 1960, 151)" The Cāṣāpālā (lit. "The ploughman's turn") presents a vivid, though rather exaggerated description of the making of various agricultural implements such as ploughs, ladders, rice – husking pedals, and the first – tilling ceremony the living condition of agriculturists. An interesting passage from the text reads thus: "It is with great trouble that harvest can be gathered. If there is drought then it is all over with the peasant. If there is good crop forthcoming in any one year, the king is cruel enough to put it to sale for his own benefit at the expense of the poor cultivators. In spite of the good harvest it is not the cultivators who really get the profit – but the king. The peasants till the soil amidst immense sufferings in the mud and bog, and drag on their miserable existence not so much by mixing the really good men as by coaxing very bad people who are self-seeking to the extreme and are the real masters of the land." (Cāṣāpālā manuscript fol 3.: Das Gupta 1935, 264.)

### Tirukkaivakkam

Lang.: Tamil

Ed.: No information

Lit.: Zvelebil 1975, 185. – Wojtilla 1982a, 170.

It is a spurious work in praise of agriculture.

## Ḍāker bocan

Lang.: Bengali, Assamese, Maithili

Ed.: It is not possible to give a complete survey of the editions. We shall only recall the oldest or more important ones. Ḍāk – bhaṇitā. Verses embodying ethical precepts, agricultural maxims, fortune – telling based on the study of physiognomy and astrology and like by Ḍāk. Revised and edited by Yajñarāma Ḍāsa, Calcutta 1885 (Assamese) – S. K. De: Bāṅglā Pravād. Calcutta B. S. 1359 (=1952) (Bengali)

Mss.: According to Basak there are twelfth century manuscripts of the Old – Bengali version in manuscript collections in Nepal. (Basak 1969, XXVI) Some manuscripts of the Maithili version are kept at the S. S. Sanskrit University Library in Darbhanga. (Datta 1987, 834)

Transl.: To our best knowledge there is not any full translation of it into foreign languages. There are excerpts from it in English (Grierson 1885, 274 276 and 280) and in Russian (Novikova 1965, 10–18).

Lit.: Carnegy 1853 (to our knowledge the first report on the sayings in English).– Ghosa 1908 – Chatterji 1926, 131–132. – Chakravarti 1930, 377. – Barua 1933, 189 and 319–320. – Sen 1949, 52–57. – Choudhury 1959, 395–396. – De 1960, II. – Sircar 1965 – Basak 1969, XXVI. – Tripathi 1971, 7. – Choudhary 1971, 235. – Wojtilla 1982a, 168. – Datta 1987, 834.

Traditionally the collection is ascribed to a single person called Ḍāka(a) who lived in Assam in the village of Lehidangara (Chakravarti 1930, 311). Barua also identifies him as an inhabitant of the village Lehidangara in the ninth century. (Barua 1933, 189 and 319–320) Sircar believes that the sayings were originally assigned to a single astrologer, and later divided between two, Ḍāk and Khanā. The Bengali collection reflects this later development, while the Assamese and Maithili collections attribute all the verses to Ḍāk (Sircar 1965, 24). Verses of Ḍāk have been known as those of Ḡhāgh in Uttar Pradesh. (Sircar 1965, 25) and since his name occurs as Dank in Rajasthan, this collection was probably very popular in northern India. Besides that different persons and traditions have been intermingled in the collection. Even as to the Bengali or Assamese collection it is difficult to say whether or not, it that it is the composition of a single individual. (Datta 1987, 834). Sircar thinks that the word simply means “announcing” and so the alternative Bengali form of the author’s name Ḍākpuruṣa means “an announcer of proclamations” (Sircar 1965, 25)

It can be assumed that the core of the collection belongs to the early medieval times in a period when the Assamese and Bengali had not yet divided two distinct languages. Sen dates the Bengali version between 800–1200 A.D (Sen 1949, 52–57). De is of the opinion that some verses might have been translated into Sanskrit and incorporated in the Kṛṣiparāśara. (De 1960, II) On linguistic grounds Chatterji dates the extant Bengali text in a period after 1400 (Chatterji 1926, 131–132).

This oldest collection of agricultural sayings in the vernacular covers a wide range of practical knowledge concerning climatology and the routine of cultivation. A typical saying reads thus: “If it rains in the month of Phāgun, urid is spoilt; if in the month of Chait, lemons; if in the asterism of Krittika, the toddy palms; and if in that of Swāti, beans and sesamum, saith Ḍāk, the Gowāla.” (Grierson 1885, 275) The most urgent task would be a



critical edition which collated the printed text and the individual sayings in other works. It may serve as a solid basis for the whole history of *kṛṣiśāstra* as a branch of science. The edition would be an important contribution to literature as well.

### Nuskha dar fann – i – falāḥat

Lang.: Persian

Ed.: Unedited

Lit. CPMOIL – Rahman 1982, 39 and 62.

Ms.: Two manuscripts of it are known to us. One is kept at the India Office Library (=British Library) (CPM No 2791) and contains 37 fols and 13 illustrations. There is a summarized version of the text in the Āzād Library at the Aligarh Muslim University: Ms 51 Lytton Collection. It was transcribed in the year 1693 (Rahman 1990, 62 note 7).

The work has been traditionally attributed to prince Dārā Shukoh (at Rahman stands the wrong form Shikon), but it appears to be that of Amānullah Husaini, son of Mahābat Khān, a noble in the court of Jahāngīr (1605–1627) (Rahman 1990, 39.)

As the title says this is an “Inventory of the agricultural knowledges”. It is a tract on agriculture forming the eleventh ‘amal of a larger anonymous work with a few marginal notes. It gives a considerable amount of information about crops, vegetables, fruits, trees, herbs about the preparation of the soil and harvesting techniques and about the time of harvesting, as well as practical information needed for improving the yield. An interesting feature is the use of astronomical knowledge in planting and harvesting. Cotton cultivation occupies an important part in the work. As a whole the text is mostly devoted to gardening practices (cf. Rahman 1982, 39).

### Sasyanandamu

Lang.: Telugu

Ed.: It has been published in Madras (personal communication Prof. Sankaranarayanan, director, S. V. U. Oriental Research Institute, Tirupati 28 November 1977); however, we have failed to procure any copy so far.

Lit.: Śivanārayya 1980, 485 – Wojtilla 1982a, 170.

The author of the text *Donayāmātya* lived in the 14<sup>th</sup> century (Śivanārayya: 1980, 485). It is a textbook (*śāstragrāntam*) on agriculture and related topics.

### Sasyanandamu

Lang.: Telugu

Ed.: No information.

Lit.: AAI Wojtilla 1982a, 170.

According to Prof. S. Sankaranarayanan, director, S. V. U. Oriental Research Institute (personal communication, Tirupati 28 November 1977) the text was composed by Addaṅki Līṅga Kavi who lived in the 12<sup>th</sup> century. We were unable to verify this statement so far on the ground on the textbooks and encyclopedias studied in India and elsewhere.

## Sasyanandamu

Lang.: Telugu

Ed.: Sasyanandamu by Lakṣmī Nṛsimha Śāstri. Calla, Masulipatam 1931. This very rare book is kept at the India Office Library (=British Library) under the signature Telugu D. 1987.

We could not find any reference to this text in the secondary literature. It is a poem.

## Sasyānanda

Lang.: Sanskrit

Ed.: No information

Ms.: One manuscript from the private collection of the ruler of Vijayanagar (Oppert 1880, No. 7445) and two copies possessed by a certain Taḍakamalla Venkatakrṣṇayāra from Tiruvallikēnī (Oppert 1885, No. 3289) have been reported.

Lit.: Oppert 1880 and 1885 – AAI 164. – Wojtilla 1982a, 170.

The text entitled “Pleasure of crops” looks like a poem but nothing definite can be said before a scrutiny of the manuscripts is completed. Unfortunately the editor of the catalogue, Oppert, knew a great deal of manuscripts only from hearsay (cf. CC I, VII.). It is not clear whether this Sanskrit work has anything to do with the Telugu texts called Sasyanandamu. We were told by the editors of NCC in the Department of Sanskrit at Madras University on 19<sup>th</sup> November 1977 that there was no hope to find out these manuscripts.

## APPENDIX ONE

### Texts containing independent chapter (s) on kṛṣi

#### Arthaśāstra (ArthŚā)

Ed. and transl.: See bibliography

The chapter 42 (section 41) called "The director of agriculture" (Sītādhyakṣarakaraṇa) is the so far earliest comprehensive text on some aspects of kṛṣi. (cf. Wojtilla in press)

#### Bṛhatsamhitā (BṛSam)

Ed. and transl.: See bibliography

The chapter called "Growth of crops" (Sasyajātakam) forms a minor treatise on agricultural climatology. Being probably composed in the 6<sup>th</sup> century it is very important for the study of the history of kṛṣiśāstra.

#### Raṭṭamata or Raṭṭasūtra

Ed.: – by H. Sesha Iyengar. Madras 1950.

It was translated by a certain Bhāskara into Telugu in the 14<sup>th</sup> century.

Lit.: AAI 164. – Wojtilla 1982a, 170.

According to the AAI (170) this Kanarese text deals with forecast of rain and other agricultural matters. The text is edited by H. Sesha Iyengar (Madras 1950). It was translated into Telugu by the fourteenth century poet Bhāskara. (Bandhyopadhyaya 1925, I, 15)

#### Lokopakāra

Ed.: Lokopakāra of Cāvuṇḍarāja. Madras 1950.

Transl.: No information.

Ēit.: AAI 164. – Wojtilla 1982a, 170.

This Kanarese text contains a section on science of agriculture and plant life (AAI 170).

#### Viśvavallabha

Mss.: I. Rajasthan Purutattva mandir, Jaipur No. 5831. Liptisamay samvat 1925, saka 1790 (=1868/69) Complete in 540 ślokas. – 2. Vallabha Vaiṣṇava Library, Nathdvār, Rajasthan Manuscript collection no. 195. (It is in private collection. Its possessor was Shri T. G. Goswāmi mahārāja of Nathdvār in the end of the seventies.)

The second manuscript is comprised of nine cantos and bears on agriculture, horticulture and botany. (AAI 159 and Kaw 1971, 174)). Its author is Cakrapāṇi Miśra a brāhmaṇa who lived in Mathurā in the second half of the 16<sup>th</sup> century. (Wojtilla 1982a, 167) A collation of the manuscripts and a proper analysis of their contents is still a desideratum.

### [Vyavahāraradīpikā]

The author of the text is a certain Hudrahastaka Harapati Ṭhākur. A section goes on sowing and acts to be performed by agriculturists. AAI wrongly gives the title as Vivahara Pradipika. There are extant manuscripts of the text in Darbhanga Rāj Library.

## **APPENDIX TWO**

### **Collections of agricultural sayings in vernaculars**

Research into popular sayings is an old debt of Indian studies. It must be carried out on regional level. Here we list only a handful data gained from handbooks and bibliographies.

**Bengali:** Vandhyopadhyay 1893. – Chakravarti 1930.

**Bihari:** Behar proverbs: Christian 1986, 200–223: Class V. Proverbs relating to agriculture and seasons.

**Hindi:** S. P. Tivari: Khetī kī kahāvateñ. 1949.

**Kanārese:** In: Bulletin of the Department of Agriculture, Government of Madras. no 35. (1934) (hereinafter: BDAGM)

**Malayalam:** In: BDAGM No. 36 (1935)

**Tamil:** In: BDAGM No. 29 (1928)

**Telugu:** In: BDAGM No. 31 (1930)

**Note:** This collection of bibliographical data is of course preliminary since no one has a complete overview of folkloristic research in India.



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- AAI Agriculture in ancient India. Ed. by D. Raghavan, New Delhi 1964.
- ABORI Annals of the Bhandarkar Oriental Research Institute, Poona.
- AgniP Agnipurāṇa. Ed. by A. B. Upadhyaya. Varanasi 1966.
- AOF Altorientalische Forschungen
- AOH Acta Orientalia Academiae Scientiarum Hungaricae
- AmaK Amarakośa = Amara's Nāmalingānuśāsanam. Critically edited by N. G. Sardesai and D. G. Padhye. Poona 1969.
- ArthŚā The Kauṭīliya Arthaśāstra Part I. A critical edition with a glossary. R. P. Kangle. Bombay 1969. – Kauṭīliyamārthaśāstram with four commentaries. Ed. by Viśvanātha Śāstrī Dātāra. Vol. I. Part I. Varanasi 1991. English translation with critical and explanatory notes by R. P. Kangle. Bombay 1972.
- AT Antik Tanulmányok (Classical Studies) Budapest
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- BDAGM Bulletin of the Department of Agriculture, Government of Madras.
- Bentley 1800 J. Bentley: A historical view of the Hindu astronomy from the earliest dawn of that science in India to the present time. in: Asiatic Researches VI. Calcutta 1800.
- BGOML Bulletin of the Government Oriental Manuscript Library, Madras.
- Bhattacharyya 1976 S. K. Bhattacharyya: Farmers, rituals and modernization. A sociological study. Calcutta 1976.
- Birwe 1964 R. Birwe's review on Majumdar – Banerji 1960. in: ZDMG 114 (1964), 455–457.
- BMPP British Museum Printed Books

- BrKaŚISam Bṛhatkathāślokaśaṁgraha a study by V. S. Agrawala. With Sanskrit text edited by P. K. Agrawala. Varanasi 1974.
- BrSam Bṛhatsaṁhitā by Varāhamihirācārya. Edited by A.V. Tripāṭhī, Varanasi 1968. – Varāhamihira's Bṛhat Saṁhitā with English translation...by R. Bhat. Delhi – Varanasi – Patna – Madras 1981.
- B.S. Bengali Saṁvat
- Caland 1929 see VaikhāSmS
- Carnegie 1853 Carnegie: Kutcherry technicalities. Allahabad 1853.
- CC Catalogus catalogorum I.–III. Leipzig 1891–1903.
- CCBM Catalogus catalogorum of Bengali manuscripts. Vol. I. Compiled and edited by J. M. Bhattacharjee. Calcutta 1978.
- CCDPL A comprehensive and critical dictionary of the Prakrit languages. With special reference to Jain literature. Vol. I. Fasc. I. General editor A. M. Ghatage. Poona 1993.
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- IJJ Indo-Iranian Journal
- IJHS Indian Journal of History of Science
- Indike Arrian with an English translation by P. A. Brunt. Cambridge Mas. 1983.
- IOL India Office Library (=British Library)
- JA Journal Asiatique
- JAOS Journal of the American Oriental Society
- JASB Journal of the Asiatic Society of Bengal
- JEĀS Journal of the European Āyurvedic Society
- Jesudasan 1961 C. Jesudasan – H. Jesudasan: A history of Tamil literature. Calcutta 1961.
- JPROASB Journal and Proceedings of the Asiatic Society of Bengal.
- JAS (L) Journal of the Asiatic Society, Letters
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- ZDMG Zeitschrift der Deutschen Morgenländischen Gesellschaft
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