

Indigenous Knowledge in Conservation Agriculture¹

YL Nene

Asian Agri-History Foundation, Secunderabad 500009, Andhra Pradesh, India
(email: yeshwant.nene@yahoo.in)

Ever since humankind started practicing agriculture, there was a beginning of awareness of resource conservation. We find evidence of conservation practices in all ancient cultures. Since I am familiar more with Indian classic literature on agriculture that has been published by my Foundation (Asian Agri-History Foundation – AAHF) in the last 12 years, my lecture includes most information from literature published by AAHF.

As most of us know, according to Food and Agriculture Organization of the United Nations (FAO), “Conservation agriculture is a concept for resource-saving agricultural crop production that strives to achieve acceptable profits together with high and sustained production levels while concurrently conserving the environment” (FAO, 2007). Aspects of conservation that we normally deal are the management of soil, water, crop diversity, animals, storage of produce (seed, fertilizer, etc.), and maintenance of tools, implements, machinery, etc.

The following paragraphs refer to the relevant contents from some ancient texts of India.

“Conservation agriculture is a concept for resource-saving agricultural crop production that strives to achieve acceptable profits together with high and sustained production levels while concurrently conserving the environment.”

Rigveda (c. 8000 BC)

This is the oldest text compiled by mankind (Nene and Sadhale, 1997). We can note reference to conservation agriculture in some of the *ruchas* (verses). Rigveda insists that natural forces (earth – solid matter; water – liquid matter; air – subtle matter; fire – energy; and *akasa* – the opposite of matter) must remain in harmony with each other and also the humankind must not disturb the balance between them. The following verses relate to conservation agriculture. The verse numbers are quoted at the end of each verse for ease to locate in Rigveda, which is voluminous.

“O cows! Procreate calves, select fine quality grass, and drink clean, safe water from ponds.” (6:28:7)

1. Presented at the 4th World Congress on Conservation Agriculture on 4 February 2009 at New Delhi, India. The Congress was sponsored by the Indian Council of Agricultural Research (ICAR) and the National Academy of Agricultural Sciences.

“O humans! Do not kill a cow who is mother of Rudras, daughter of Vasus, sister of Aditya, milk bearing, innocent without complex.” (8:90:15)

“O Pusha! Do not destroy the trees that support birds but destroy those who hate me.” (6:48:17)

“Let the soil get soaked with water and give us harvests in the years to come.” (4:57:7)

“Let our plows open the soil happily, let the plowman walk happily with the bullocks, and let clouds soak the lands with water. Give us happiness.” (4:57:7, 8)

Cow protection, cattle management, discouraging cutting trees, desire for sufficient rain, and contented animals and farmers are the conservation issues covered in these verses.

“O Pusha! Do not destroy the trees that support birds but destroy those who hate me.”

Krishi-Parashara (c. 400 BC)

Parashara stressed soil management, seed health, and overall farm management that included water harvest and conservation, animal management, and maintenance of implements (Sadhale, 1999). No commentary is made since the verses are self-explanatory. Some of the key verses are:

“Farms yield gold if properly managed but lead to poverty if neglected.”



Parashara

“Even a fourfold yield of crops procured at the cost of health of the bullocks perishes soon by the sighs of their exhaustion.”

“The bullocks of the farmer who keep the cow shed strong, clean, and free of cow dung grow well even without special nourishment.”

“Crops grown without manure will not give yield.”

“Any implement which is not sufficiently strong or is not manufactured as per the

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(above-said) measurements will, at the time of farming operations, obstruct the work at every step. There should be no doubt about it.”

“Uniform seeds produce excellent results. Hence every effort should be made to procure uniform seeds.”

“One should (therefore) put in maximum effort to procure and preserve these seeds. The origin of plentiful yield is the seed.”

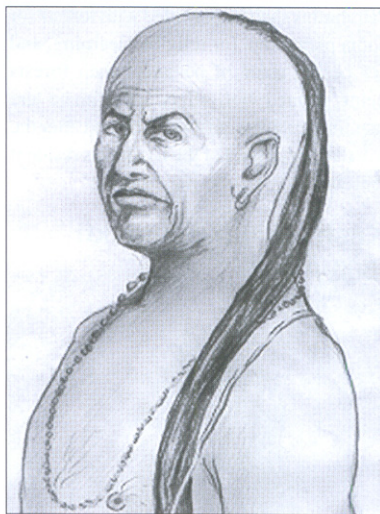
“Uniform seeds produce excellent results. Hence every effort should be made to procure uniform seeds.”

“What hope of harvest can that foolish farmer have who has not made arrangements for preserving water for the crop during *Ashwin* (October) and *Kartika* (November)?”

“... The origin of plentiful yield is the seed.”

Kautilya's Artha-sastra (321–296 BC)

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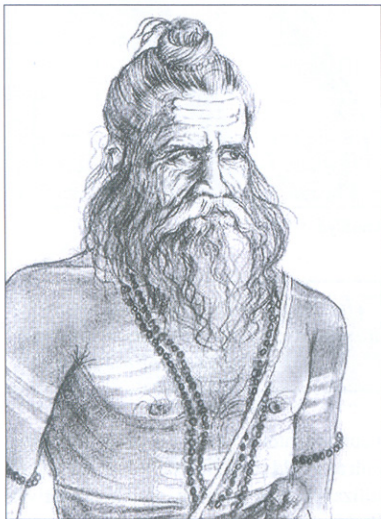
mentions intercropping of medicinal plants with any field crop. An example of wasteland utilization was planting cucurbits on river banks, after the excess water receded (Shamasastry, 1961). The practice continues even today in all parts of India. Some significant statements made by Kautilya are:

“Whoever hurts or causes another to hurt, or steals, or causes another to steal a cow, should be slain.”

“The Superintendent of forest produce shall collect timber and other products of forests by employing those who guard forests.”

“Brahmins shall be provided with forests for soma plantation, for religious learning, and for performance of penance, such forests being granted with safety for animate and inanimate objects, and being named after the tribal name (*gotra*) of the Brahmins resident therein.”

Kashyapiyakrishisukti (800 AD)



Kashyapa

This treatise is a detailed one and gives advice on management of farm not only to farmers but also to kings. There are details about rice-growing practices that are widely followed in India today (Ayachit, 2002).

“Land is intended to receive excellence in every age.”

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“A good quality land yields good results to everyone, confers good health on the entire family, and causes growth of money, cattle, and grain.”

“To the west, north, east, or south of the villages and cities at the most convenient places, he (king) should prepare reservoirs of water according to the condition of the land.”

“The reservoir of water to be founded should be deep, equipped with barriers, splendid in the shape of a bow, long in some cases, round in others but essentially unfathomable.”

“They should also be equipped with inlets for water. Hence they should be founded near some hill or a high-level ground joined with a lake.”

“The king should plan its construction at such places as not to cause fear of danger from flooding. Such reservoirs should be regularly examined.”

“Large forests teeming with various trees, on the forest lands, or on the outskirts, or interiors of existing forests, or on mountain slopes should be propagated.”

About canals for irrigation, “Even more than the ponds, lakes, wells, etc. protection of

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canals should be treated by them (farmers and the king) as their *dharma*", said the sages who know the truth.

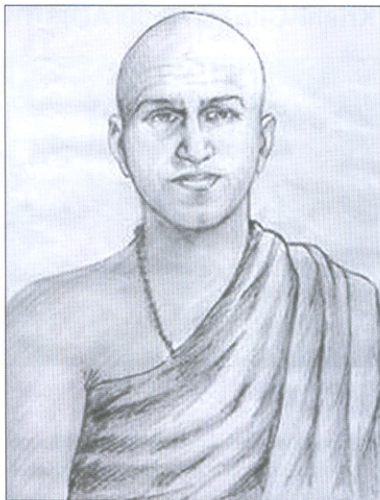
"That water (therefore) should be preserved by all (sorts of) efforts, as agriculture is said to depend on water. Hence, kings and (other) eminent persons should obtain water by exerting everywhere in the seasons and conserve it."

For rice, "The second cultivation in a year is fruitful everywhere and is therefore recommended on various types of farmlands. For taking up this second operation, it is essential to raise the fertility of the soil, which can be achieved by using manure of goat-dung, cow dung, and vegetation (green manure)."

Vrikshayurveda (c. 1000 AD)

Vrikshayurveda by Surapala is a 'complete' treatise on arbori-horticulture. It also emphasizes the importance of trees and environment. Some of the verses carry deep meaning (Sadhale, 1996). Importance of growing trees is versed beautifully below by Surapala.

"Ten wells are equal to one pond.
Ten ponds are equal to one lake.
Ten lakes are equal to one son.
Ten sons are equal to one tree."



Surapala

"... one should undertake planting of trees, since trees yield the means of attaining *dharma*, *artha*, *karma*, and *moksha* (the four aims of life)."

"By planting all kinds of trees, useful for fruits and flowers, a person gets reward of thousand cows adorned with jewels."

"Seeds which are treated and preserved (in prescribed manner) are all good for use. Trees grown from such seeds bear forever abundant flowers and fruits of an excellent quality."

"Ten wells are equal to one pond. Ten ponds are equal to one lake. Ten lakes are equal to one son. Ten sons are equal to one tree."

Krishi Gita (c. 1500 AD)



Parshurama

Parshurama recommended deep summer plowing. This has been in practice in Kerala for several centuries. Green manuring was recommended for rice. Although forest clearing was recommended as a means to expand cropped areas, farmers were also encouraged to plant trees and other woody perennials (Kumar, 2008).

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