

5. KAUTILYA'S ARTHA-SASTRA, AGRICULTURE, ANIMAL HUSBANDRY, COMMODITY TRADE etc. – FEATURES OF VILLAGE

Kautilya (also known as Vishnugupta or Chanakya) (321-296 BC) was a great scholar of time. He wrote a treatise titled, Artha-sastra, which deals with the management of resources. During Kautilya's time agriculture, cattle breeding and trade were grouped into a science called varta. Kautilya gave great importance to agriculture and suggested a separate post of head of agriculture and named it as Sitadhakashya. Agriculture today receives prime importance, by policy and administrative support from government officials. eg. i) Supply of good seeds and other inputs ii) Provision of irrigation water iii) prediction of rainfall by IMD iv) Assistance in purchase of machineries v) Marketing and safe storage. All the important aspects are mentioned by kautilya in his book. He suggested many important aspects in agriculture which are highly relevant today.

1. The superintendent of agriculture should be a person who is knowledgeable in agriculture and horticulture. There was a provision to appoint a person who was not an expert but he was assisted by other knowledgeable person. This is applicable even today, appointment of the directors of agriculture, horticulture are sometimes civil servants assisted by technical persons.
2. Anticipation of labours by land owners before sowing. Slaves and prisoners were organised to sow the seeds in time. He also emphasized that thorough ploughing provides good soil texture required for a particular crop. Even today farmers in Punjab hire labours from Bihar at times of heavy demand period.
3. Timely sowing is very important for high yield particularly for rainfed sowing for which, all the implements and accessories have to be kept ready. Any delay in these arrangements received punitive action.

4. Kautilya suggested that for getting good yield of rainfed crop, a rainfall of 16 dronas (one drona=40 mm to 50 mm) was essential and 4 dronas rainfall is sufficient for rice. It is very significant to note that rain gauge was used during Kautilya's period. It was apparently a circular vessel (20 fingers width, 8 fingers width depth) and the unit to measure rain was adhaka (1 adhaka=12 mm approx.)
5. He also stressed the optimum distribution of rainfall during crop growing season one third of the required quantity of rainfall falls both in the commencement and closing months of rainy season (July/Aug; October/Dec) and 2/3 of rainfall in the middle (August/ Sept.; October) is considered as very even. This concept is applicable even today i.e. even distribution is essential for rainfed crop.
6. The crops should be sown according to the change in the season. eg. Sali (transplant rice), Virulu (direct sown rice), till (Sesame), millets should be sown at the commencement of rain. Pulses to be sown in the middle of season. Safflower, linseed mustard, barley, wheat to be sown later. It is clear that even today our scientific results prove that cereals, millets were sown early and oilseeds, wheat, barley require less water which could be sown at last or as post rainy season.
7. He also stressed that rice crop require less labour expense vegetables are intermediate, and sugarcane is worst as it requires more attention and expenditure. It is true even today after 2000 years the situation has never changed that sugarcane requires heavy labour and expenditure.
8. The crops like cucurbits are well suited to banks of rivers, Long-peper, sugarcane and grapes do well where the soil profile is well charged with water. Vegetable require frequent irrigation, borders of field suited for cultivation of medicinal plants. Even today the practice of growing cucurbit (Watermelon, pumpkin) on river banks continue from river Ganges north to Pamba river in south. This is an outstanding example of sustained practice, which ensures utilization of moisture available in river bank.

9. Some of the biocontrol practices suggested by Kautilya has got relevance even today.

They are:

a) Practice of exposing seeds to mist and heat for seven nights. These practices are followed even now in wheat to prevent smut diseases. Soaking of seed in water to activate fungal mycelia and drying the seed under hot sun to kill the fungal.

b) Cut ends of sugarcane are plastered with the mixture of honey, ghee and cowdung. Recently evidences proved that honey has widely an antimicrobial property. Ghee could seal off the cut ends prevent loss of moisture and cowdung facilitated biocontrol of potential pathogens.

10. He also suggested that harvesting should be done at proper time and nothing should be left in the field not even chaff. The harvested produce should be properly processed and safely stored. The above ground crop residues were also removed from fields and fed to cattle.

Trade and Marketing (Economic policies)

All the industries were categorized into two groups according to their ownership. One group of key industry was covered by state and another group by private. It is interesting to note that this policy resembles today's model mixed economy. The production, distribution and consumption of agricultural produces were well controlled by the king. Agriculture was placed in the category of privately owned industries. The state Government should control and regulate all the economic aspects and evade the influence of market forces and private interests.

These practices suggested by Kautilya were followed by Indian farmers for over centuries which are more sustainable and relevance to scientific agriculture.