possession of the donee. Such land assignments to individuals created a group of landholders who fall into the third category. Though we do not have records of such grants during the Sailodbhava rule, yet the usual practice of granting lands in lieu of salary must be prevailing in Orissa. Hiuen Tsang describes about the land share received by Harsa's official to support their family.\(^5\) The Ganjam plate of Dandi Mahàdevi\(^6\) refers to one pratihàra Dhabala who received land in Kongoda Mandala. In the Talcher plate of Subhàkara IV, Kulaputtraka Suryapala received land grant.\(^7\) The Kàvasthas and Karanas for their service were donated lands by the Early Ganga rulers. Royal gifts and donation of land determined the social status of an individual in the society.

In the medieval times a number of temples and monasteries were constructed. These temples and monasteries received land grants for their maintenance and for the religious functions. The Hindol plate of Subhàkara III made land grants for the worship of Vaidyanàtha Bhattàraka.\(^8\) Land endowment was made by Sivakara III for the worship of Buddha-bhattàraka.\(^9\) The Bhauma-Karas constructed various mathas, monasteries and temples and donated lands for their maintenance. Thus temple and the religious institutions also become landholders in medieval Orissa.

With the ascendancy of Brahmanism in Orissa large number of land endowments were made to the learned brähmana. This practice started with the Màthara rule in Orissa.\(^10\) Thus
Brahmana donees became a new class of landholders. The period under discussion reveals quite a large number of brahmana donees who received such gifted lands from the rulers of Sailodhavas, Bhauma-Karas and their feudatories.

The numerous copper plate grants of this period give impressions about the condition of land tenure system in Orissa. On the basis of its condition and fertility land was divided into a number of categories namely the arable land (kṣetrabhūmi), fallow land (khila bhūmi), homestead land (vastubhūmi or Sakhetā), grazing land (gocharabhūmi), forest land (arāṇya) and garden (Ūḍyāna bhūmi or guılmaka). The land tax (kṣetrakara) as one of the most important tax imposed on the subjects by the king. Fallow land (khila bhūmi or Ugaṇa bhūmi) was not suitable for cultivation and hence unprofitable to the state. Homestead or vastubhūmi was situated in the neighbourhood of cultivable land. Most parts of Kongoda and Kalinga were full of forests where the aboriginees lived and wandered about freely.

As discussed above we find land grants were made to brāhmaṇa donees by the different ruling dynasties of Orissa. The study of the inscriptions reveal various interesting factors about the land grants.
Land grants:

It seems that a number of factors prompted the rulers to make lavish land grants to the brāhmaṇas. Firstly, most part of Orissa being forest tracts were inhabited by the tribal people. In order to Aryanise the tribal belts the brāhmaṇas were offered incentive of tax free land. So large scale migration of Brāhmaṇas from Northern India, Bengal and Andhra resulted in the acculturation of tribal Orissa. Secondly regular settlements under the leadership of the brāhmaṇas developed in the frontiers, which remained loyal to the sovereigns. Thus the border of the kingdoms remained secured. Thirdly by land grants fallow lands or Khilabhumis were transformed into cultivable land which added to the state income. Thus new villages came into existence. In course of time they became revenue earning propositions. Thus a kind of agrarian revolution was brought about in the tribal region of Orissa. Lastly all the donations were made with the main objective of earning religious merit for the donor as well as his ancestors.

The land donations were made on a permanent basis, to last as along as the moon and the sun endure. The grants followed certain well defined principles prescribed in the Hindu text to be legally valid. Generally the land grants contain the geneology and the personal qualities of the donor as well as the details (gotra, pravara place and the geneology) of the donee. The specification of the plot to be donated is mentioned. The officials and the subject were addressed to honour the grant.
Usually the land was exempted from all kinds of taxes and the soldiers or revenue officers (chāta bhata) were not allowed to enter it. Finally the gift was made with a libation of water.  

The secular land grants made to the vassals and officials are very few in number. However the donations made to the brāhmaṇas out numbered other assignees. The grants were made either to one or more than one brāhmaṇas. We have number of instances in which case gift was made to one brāhmaṇa. Madhavarāja the Śailodbhava ruler donated Chhavala grāma to Charampāsvāmi. Kumbhārachhe village in Thoraṇa viṣaya to Prajāpatisvāmin, Pulipina grāma in Guḍda viṣaya to Bhaṭṭa Bāmana, Ambāgrāma in Devagraṇa viṣaya to Bhaṭṭa Nārāyaṇa, and Sālagrāma in Thoraṇa viṣaya to Bhaṭṭa Vittadeva, Dharmarāja of the same family donated Nivina grāma in Khidinagāra viṣaya to Savarideva Dikṣita Bhaṭṭa. Sivavivāsagrāma to Bhaṭṭa Subhadeva, Uṣṭa-Vaṭaka village to Trilochana Svāmi, Kondedde grāma to Bhaṭṭa Gaṇadevasvāmi.

The Bhauma-Kara queen Tribhuvana Mahādevi donated the village Kontaspara to Bhaṭṭa Jagadhara. Subhākaradeva granted a village Addhendrakona to Suryapala. Dharma Mahādevi granted the village Deśala to Śridhara Bhaṭṭa. We have several other instances to show land grants made to a single Brāhmana by the Bhauma-Karas and their feudatories and the contemporary ruling dynasties.

In some other cases we find land donated to several brāhmaṇas at a time. Aghavaram plates of Indravarman, the Early
Ganga ruler record the grant of a village named Tōtāvātaka to the brahmin residents of Andherakagrahāra.25 Again the Chidivalasa grant of Devendravarman granted a village in Koluvarttini to several brahmins.26 The Śailodbhava ruler Madhyamarāja donated a village in Pūrvakhaṇḍa to twelve brahmins.27 Madhavavarman of the same family donated Tamatāda village to twenty three brāhmaṇas recorded in his Orissa Museum plates. In the 6th-7th century A.D. other feudatory rulers28 also donated lands in northern Orissa to several brahmins. Gayada Tunga donated a village to eleven brāhmaṇas.29

In some other cases more than one village is granted to a single donee or a group of donees. The Neulpur charter of Subhākara I records the grant of two villages Kompiraka grāma and Daṇḍaki and Yoki to two hundred brāhmaṇas.30 The Nādagam grant of the Ganga king Vajrahasta V refers to an assignment of twelve villages to one Pahgu-Saṅśaya.31 Many such examples can be cited of the Śulkis, Tunga, Nanda and Bhāṇja rulers of Orissa.

Not only the kings but the queens also donated land to the brāhmaṇas on many occasions. Kalyāṇa devī, the queen of Dharmarāja donated two tīmāpiras of land in Thoraṇa viṣaya to the Jaina teacher Nāṣichandra and his disciple Prabuddhachandra. Mahādevī Vijayā, the queen of Raṇabhaṇja deva donated land for the worship of Vijayesvara Siva.33 The queens of Nettabhaṇja named Kṣatrīdevī, Kaivartadēvī, and Meghavālīdevī granted a village to fourteen brāhmaṇas.34
Generally in medieval times most of the grants were made on auspicious days to increase the religious merit of the donor and his ancestors. Some grants mention the specific purposes for which the land was donated. For example the Hindol plate of Subhākara mentions the allotment of half of the village for offering of sandalpaste, flowers, incense, chara, vali and oblation to the God and other half was allotted for providing garments, meals and medicine to the ascetics and for their living. Tribhuvana Mahādevī granted land for obtaining rains.

The study of the inscription of this period reveal land grants being made on the principles of Nivi dharma and bhūmichhidranāya. In case of Nivi dharma the donee used to enjoy the gift perpetually and could make use of the income assured from it. Most of the Bhauma records mention a fiscal term in the land tenureship which is bhūmichhidranāya. In ancient times this term indicated a fallow or uncultivated land. But in 7th-8th century A.D. the land donated under the principle of bhūmichhidra was not necessarily a virgin or fallow land. The records indicated such land were inhabited by tantuvāyas, saunḍhikas and gokuta. In Bhauma-Kara times this term of land tenureship was used for the settled villages and cultivated land over which the donee enjoyed the same rights as in case of a fallow land being brought under cultivation for the first time.
Another system of land tenure that prevailed during this period was Karasāsana. Gayada Tunga, the Tunga chief of Yamagarṭṭa maṇḍala donated land to eleven brāhmaṇas as a Karasāsana. On the payment of a fixed annual rent of 9 palas of silver, the grant was converted to a permanent one.

The donees enjoyed the rights over land, forest and water. In the forest tracts the rights over the trees, creeper, thickets, catching, fishes, tortoises were transferred to the donees. But in the developed areas land along with its inhabitants including the artisan community, tantuvāyas, saunḍhikas and gokutas were donated. The practice was not only followed by the Bhauma-Karas but also their feudatories the Bhaṅjas, the Tungas etc. Thus the artisan class produced surplus for the benefit of the donee and converted to a semi-serf position in the medieval society.

Inspite of these rights in some cases the donee did not possess the right to appropriate the village land. Achyutapuram plate of Eastern Ganga ruler Indravarman II permitted the use of water in Sidhārthataṭāka for the purpose of irrigation. Devendravarman granted a land to Tamparasarma Dikṣita asking him to share the water course with other families of the locality during summer (grismodakām). We do not find records referring to sale or purchase of land in the period under discussion. The king owned vast landed property known as crown land. Yet private ownership of
land was approved by the state. So sale and mortgage of land also needed state approval. Example can be sited regarding this fact. On the request of Vinitatunga Sivakaradeva III approved the expenses for the worship of Buddha Bhāṭṭāraka. Regarding the sale of land we have a reference of an early Ganga record of Hastivarman (578 A.D.) which states that the king granted two and half hala of land to a brāhmaṇa named Jayasarman, which he bought from agrahārikas. This suggest that in early medieval times land sale charters were rarely found in Orissa. Yet for such purposes royal assent was necessary. The king as a person could buy private land and could donate it as tax free land to the donee as the sovereign authority.

The epigraphic study shows most inscriptions were donative in character. The number of land grants prompted the rulers to have specific officers to maintain the records, and to ascribe different officers the works concerning the copper plate grants. Land revenue was an important source of income. So there was a revenue department to run smoothly the administration concerning land administration.

In the Śailodbhava charters we come across one official Petapāla who was in charge of lāñchanā. The Buguda plates, the Purushottampur plate, Puri plates, Orissa Museum plates of Madhavavarman and Nivina plates of Dharmarāja refer to one officer Jayasimha who was in charge of Lāñchanā of all these records. The word Petapāla was used
from the time of Dharmarāja. Petapāla sometimes was the writer of the charter. Jyesthasimha, Balavarman were Petapālas and writers (lekhaka) of the charter also. Petapāla is a synonym to Pedapāla mentioned in some of the Bhauma charters. Peḍapālas or Peḍapālas were an important branch of officers who were in charge of heating and putting the royal seal on the charter. A copper pate grant without the royal seal was not considered as a legal document. Petapāla Nārāyaṇakara, Kayevadeva, Rāmadeva were in charge of heating the copper plate and supervising engraving during the rule of Subhākaradeva II, Subhākara III and Sivakara III.

The Mahakṣaṭapataladhikritas, the chief keeper of accounts and records are found in all the Bhauma records. The Neulpur charter mentions Samudradatta as the Mahakṣaṭa- lāḍhikaramdhikrita. Other such officers under different rulers were Tārādatta, Vṛhatbhogi, Balabhadra, Rāṇaka Śrī Vichitrādhyya, Rāṇaka Śrī Bhusaṭanāgā. Rāṇaka and Bhogi may be titles enjoyed by these officers. He was assisted by Mahakṣaṭaptaḷikas and Akṣapatalika Brahmadatta was the Mahakṣaṭapatalika mentioned in the Neulpur plate while Bhogi Haravara, Nagadeva and Devapyaka were Mahakṣaṭapatalika during the reign of Tribhuvana Mahādevī I and Sivakaradeva III. Bhogi Padmasena was the Mahakṣaṭapatalika under Dandi Mahādevī. These branch of officers supervised the work of the engraver, the amount of land, names of the donor and donee, the date etc concerning the land grant.
Pustapāla was the record keeper who kept record of the dimension of cultivated and uncultivated land and about all kinds of land transactions.\textsuperscript{58}

As land revenue was the chief source of income, the rulers of early medieval times surveyed it properly. Land assessment was made to realise proper amount of revenue from the people. In the Hindol plate of Subhākara III,\textsuperscript{59} Talcher plate of Sivakara III,\textsuperscript{60} Kumurang plate of Daṇḍi Mahādevi\textsuperscript{61} the boundary lines of the villages Noddilo, Kallāni, Surddhipura and Kantasarā nagari were made properly. This may suggest that during the Bhauma rule stones were planted to mark the boundary line of the village. Thus the department of land administration was very active during the medieval times in Orissa.

**Measurement of Land**:

The epigraphic records show different units of land measurement being used in Orissa.

**Tiropīra** - This unit of measurement was first used in the Soro plate of Sambhuyasa\textsuperscript{62} dated 580 A.D. Here the ruler donated eight tiropīras of land in Northern Tosali to a brāhmaṇa named Bharaṇasvāmi. The other dynasty that used this unit regularly was the Sailodbha rulers of Kongoda. Mādhavarāja, Madhyamarāja and Dharmarāja in their charters have mentioned this unit.
This unit was used locally in Kongoda and Northern Tosali. The contemporary records in other parts of Orissa do not refer to this unit. It is difficult to ascertain the amount of land donated according to this unit of measurement in modern terms. Perhaps one timpira of land denoted the same as one hala or one gocharma used in early medieval times by other dynasties. In other words the amount of land sufficient for the need of a man for one year.

Gocharma - The Midnapur charter of Somadatta mentioned the unit gocharma. Scholars have interpreted it in different ways. Parāśarasāṃhitā and Brihat Sāṃhitā suggest it was the area of land where one thousand cows could graze freely. According to Visnu Sāṃhitā, the amount of land sufficient for the maintenance of a person for the whole year with its produce was measured as gocharma. In modern terms it denoted seven acres of land which can be cultivated with a plough.

Hala - Literally 'hala' means plough. This unit was very popular in Kalinga and Kosāla. The early Ganga rulers Hastivarman, Indravarman, Devendravarman and Anantavarman have referred to this unit. The early literatures also refer to this unit of land measurement. Bana in 'Harsacharita' has mentioned this unit. 'Vrhadhala' apparently suggest an amount of land larger than 'hala'. This unit was popularly used in Northern and Southern India in the ancient times.
Muraya - This term was used in the inscriptions of the who were feudatories of the Bhauma-Kara rulers. The Kamanālīnā-Ksyaṇapura charter of Jayavarman IV states that ten Murayas of land was donated to a brahmin named Viṣṇu Sārmā. Gautami plate of Indravarman refers to four Murayas of land donated to two brahmans Viṇāyaka Sārmā and Nārāyaṇa Sārmā. The exact amount of land in this unit is not known. S.N. Rajguru suggests one Muraya of land may be synonym to one acre of land in modern terms.

Mala - The Bhauma records mention mala as a unit of measurement. In the Angul plate of Dharma Mahādevī the land donated was ten malas. Their feudatories the Tungas also refer to this unit.

Dronavāpa - Dronavāpa as a land measure also was current in Northern Orissa during the period under study. Midnapur charter of Subhakirtti refers to the grant of 40 dronas and one dronavāpa of homestead in the village Kumbhārapadraka to Dāmya Svāmī. This was an area where one drona of seeds could be sown. The word 'Vāpa' is derived from 'Vap' which means to sow. In the inscriptions of Bengal the terms drona, bhudrona, kulyāvapa and ādhamvapa were used to measure land in ancient and medieval times. So these terms must be vague in the adjacent territories of Northern Orissa.
Thus we find different units of land measurement were prevalent in Orissa. Among them, 'hala', muraya', 'timpira', mala, go charma, 'drona' were significant.

**Demarcation of Land:**

The village and the private lands were properly demarcated as a result of land survey conducted by the officers under the Bhauma-Karas and also the contemporary rulers. Pustapalas, a branch of officers kept the records of the land with its precise dimensions. The boundary of a village or a land was generally marked by rivers, trees, mounds of earth, ant hill, stone or roads.

The Nivinna plates of Dharmarāja demarcate the village Nivina by a trikuta Adapadivanarāi, Valmika, Vānkaśila vanarāi in the west; a village Kholāca, Atavanarāivāda, to the east; Dighasīla, trikuṭa in the north, a stream Pavadisīla gadi in the south, and Bāghaguhā trikuṭa in the south east.

The early Ganga ruler donated a land bounded by a tank and river in the east, Bhogapāṭaka land on the west, middle of the river bed in the South. In his Gautami plate the donated land was demarcated by an ant hill in the east, a tank on south-west, a forest on the south and kasamva taṭāka on the west and Udaya taṭāka on the north.
The Bhauma records also narrate in detail the boundaries of the gifted lands and villages. The boundaries of the village Noddilo in the Hindol plate of Subhākara III are marked by Dhānyamadā Jotā, Karanja tree, Asvatha tree, Bandha jotā, Srṅgala jotā, Vaṇamāndāra tree in the north-west; Simā jotika, mango tree, Vaṇapolandaka in the south; Tendrātaka in the west and Gāngetic jotā in the north.

The village Kallāni mentioned in the Talcher plate of Sivakara III is bounded by trikūta in north-east, Valmika-Vipana plot, jotā in south-east; jotā, qohiri, gartika in the south-west, Taila khāta in south; trikūta in north west, bagha gartika and Masa river in north.

Suraddhipur village in the Talcher plate of Sivakara III similarly was demarcated by Tamāla Khanda Kṣetra in the north-east upto river Sumeyi; Devālaya jotā in South-east; a river, trikūta in the south-west, river in north west and Janapāṅgā in the north.

In the Kumurang plate of Daṇḍi Mahādevi the village was bounded by Payāda on the west, a setu in the east, a village called Mahākalesvār and a tāla tree.

From the above discussion it is evident that there was perfect system concerning land administration in Orissa in medieval times. The survey stones were implanted to demarcate the boundaries of the village so as to avoid boundary disputes.
Land being the most valuable possession of the state, much attention was paid for its maintenance and development by the ruling dynasties of Orissa.

**Land Revenue**:

The Sailodbhavas and the Bhauma-Karas do not furnish much information about the sources of revenue or the system of taxation. However, the cultivators or the tenants had to pay one-sixth of the total produce as land tax. This revenue was paid for their security and to implement better administration.

The strength and prosperity of a state depended upon its treasury. Kautilya has mentioned Kosha or treasury as one of the important limbs of the state. But excessive and illegal taxes were considered as injurious to the economic condition of the state. In medieval times, the Orissan rulers desisted from exorbitant taxes. The Hindol plate of Subhākara III mentions atibrakara, Talcher grant of Subhākara IV depicts Samyakara, and the Dhenkanal grant of Tribhuvana Mahādevi refers to mru dukara (light taxes) imposed on the people. But the people were not free from stringent taxation policy. The tax collectors and the soldiers (chāta, bhata) entered the villages and exacted excessive money from the people. So in the land grants, royal order specifically was made for the non-entry of the chatas and bhatas into the donated village.
Bhoga, bhāga, kara:

Scholars give different view about bhoga-bhāga-kara. According to R.S. Tripathy this is not one, but three different categories of tax. Bhāga is the grain share of the king, Bhoga is enjoyment of some rights by the landlord and kara is the rent proper, payable in cash or kind. Kautilya states Bhoga was the government share of the produce collected from the people. Kalidasa refers 'bhāga' as the share of the king. Thus Bhoga-Bha-Kara was an important tax paid by the people in early medieval times.

Uparikara:

This tax was an additional tax levied on the different sections of people living in a village. 'Uparikara' is the combination of two words Upari (extra) kara (tax). D.C. Sircar, V.V. Mirashi branded it as an extra tax. U.N. Ghosal, Altekar and suggest it as a tax paid by the temporary tenants. The Bhauma records taxes derived from weavers (tantuvayas), cowherds (gokuta distillers (saundhikas), hamlets (sakheta), landing place (ghata), ferries (naditarassthana), and thickets (gulmaka). In other words tax was levied on textiles, pasture, liquor, hamlet; river transport and forest.
Hiranya and meya:

Hiranya (gold) and meya (material) are another type of tax deposited in treasury in forms of cash (gold, money, or material). The Talcher grant of Kulastambha, the Sulki ruler and the Talcher grant of Gayada Tunga suggest the assessment of tax made in cash.

Nidhi Upanidhi:

According to the Puranas Nidhi and Upanidhi were properties buried under the ground or hidden treasure. The Bonda plate of Mahasivagupta refers to this tax. Kautilya prescribes one sixth share of hidden property for the discoverer and the rest to the royal exchequer.

Another type of tax found in the contemporary records is danda or fines for certain civil and criminal offences committed by the people. Besides the usual offences of theft, murder, adultery, and lies sometimes tax similar to licenses were also imposed. In the inscriptions ahidanda, hastidanda, haladanda etc are mentioned. B.Mishra suggests the killing of elephants and the killing of snakes are hastidanda and ahidanda respectively. According to some others these may be taxes imposed on a person for catching elephants and snakes. A cultivator was to pay haladanda or tax on each pair of bullocks.
Besides these taxes grazing tax, gift to the king on royal visits and emergency tax might be prevailing in the society.

AGRICULTURE:

During the period under discussion cultivation was the main occupation of the people in Orissa. Agriculture, therefore was the corner stone of the agrarian economy. The distribution pattern of land grants suggests that the agrarian pattern was concentrated largely in the coastal tract of Orissa. The network of rivers, which acted as fertilizing agent was responsible for the growth of settlements and cultivation along the basins.

The inscriptions of this period reveal the land donated usually were situated near the water streams or tanks. The Nivina plate of Dharmarāja states the southern boundary of the village is indicated by a stream. The Talcher grant of Sivakaradeva mentions the Sumeyi river and Devālaya joṭa bounded the village Suradhipur. Another charter refers to Kavade jota and Masā river on the border of the village Kallāni. Besides the contemporary records of Orissa also reveal the existence of villages on the bank of rivers, streams and other water sources. Thus agriculture depended solely on the irrigated water from these sources besides rainfall which was not adequate and timely.
Regarding the fertility of the soil Hiuen Tsang's accounts gives sufficient information about the condition in Odra, Kalinga and Kosala. About Odra he describes "The soil was rich and fertile and produces abundance of grain and every kind of fruit."\(^{108}\) About Kongođa he states that "The ground was low and moist and was regularly cultivated and highly productive."\(^{109}\) Kalinga and Kośala also produced flowers and fruits abundantly. Most parts of Orissa were also depicted as fallow land and full of forests. The inscriptions refer to garta, khāta, usara, guılmaka which denote the barren land uncongenial for production.

**Agricultural Products:**

We do not get sufficient information about the agricultural products in this period from the inscriptions. As the soil was rich and fertile, it may be assumed that food grains, vegetables and fruits must be cultivated in plenty. Though the names of certain fruit and vegetable are referred to in the accounts of Hiuen Tsang nothing specific is mentioned about the cereals and pulses except rice and wheat.\(^{110}\)

Rice was the staple food of the people in Orissa from the time of remote antiquity. The Bhauma records refer to dhanya or paddy.\(^{111}\) The land donated to the temple for the worship of gods often mentioned 'charu' which was a preparation of rice stuffed with milk and clarified butter.\(^{112}\) Archaeological
excavations at Viratgarh, which flourished under the Bhanja rulers of Khijjingakota (8th-10th century A.D.), yielded the remains of burnt rice in earthen pot. Kalinga in ancient times was famous as a rice growing kingdom in eastern India.

Besides rice other food grain like wheat (godhuma), millet and several kinds of pulses were grown in Orissa. Different kinds of paddy grown in Orissa, yielded in large amount. Thus, this essential food grain was available at a low price. Six ādhakas of husked rice was sold at four panas or cowries during the Bhauma-Kara period. Cereals and pulses of different kinds were grown on the fertile plains of Orissa.

Among the commercial agricultural plants sugarcane, cotton and oilseeds like tila (sesamum), mustard and castor, were grown. The word Gudda, Guddasarkar suggest jaggery made from sugarcane was a very popular sweetening agent used in the preparation of sweetmeats and other delicacies.

Cotton was another commercial agriculture for which Kalinga was famous in ancient times. Arthasatra refers to the best stuff of cotton fabrics produced in Kalinga. The dancing figures in Kapilesvara and Parasuramesvara temple support this view. The Buddhist charyapadas also refer to the cotton production in Orissa. Salamli or silk cotton trees were found all over Orissa. The growth of cotton, silk cotton trees and hemp provided raw materials for the textile
industry to flourish. The weavers (tantuvāyas) community settled in every village was very useful regarding the supply of clothes.

Oil was another necessary item not only preparation of food but also for burning lamps in the temple and the houses also. The word 'tailā',\(^{122}\) is also referred to in the inscription of our period. Though we do not know from the inscription about the oilseeds that were grown in Orissa, yet it may be assumed that seasamum, mustard, castor etc must be produced. In the Hindol plate\(^ {123}\) there is the reference of a Karanja tree on the boundary of the village Nodditta. Karanja seed must be used for making oil which had some medicinal value. These trees are found plenty in the forest tracts like silk cotton and cotton trees.

Cultivation of betel leaf has been referred to by Bara in the Vindhyan region. Kalidasa in his Raghuvaṃsa\(^ {124}\) describes betel leaf and betel nut in connection with king of Kalinga. From ancient times to modern days taking betel after meal is one of the favourite habits with the people in Orissa. So betel leaf and betelnut must be growing in Orissa in the period of our discussion.

Spices like ginger, turmeric, coriander, cumin, clove, pepper, cardamon etc were grown in Orissa. Kadambari\(^ {125}\) refers to the cultivation of lavāṅga (clove) and ela (cardamon) in Kosala. Spices were used in condiments, perfumery and in some medicines also.
Hiuen Tsang's account describes about different types of fruits that were grown in abundance in Kośala, Odra and Kalinga. Among them mango, amla, tamarind, madhuka, kapittha, tiṇḍuka, uduṁbarā (ficus glomerate), plantain, coconut and jackfruit were significant. Besides palm, palmyra etc were also grown.

Though the names of the vegetables are not found in the inscriptions of our period, yet it may be assumed that the fertility of the soil must have produced them in large number. Boiled rice along with pulses and condiment with species was a favourite food habit of the people in Orissa. Among the varieties of vegetable products mention may be made of brinjal, gourd, melons, pumpkins, kanda, radish, onion etc.

Irrigation:

Agriculture mainly depended upon rain water. However sufficient measures were taken by the rulers to water the lands in time of need. Irrigational activities by the royal families can be traced back to the date of the Nandas. The inscriptions of our period refer to tank, tadāga, vapi and puskarini which suggest that large number of water reservoirs were constructed for satisfying the needs of the people.

In the early Ganga records the existence of a number of water reservoirs in Kalinga. The Achyutapuram plates of
Indravarman states the record of one hala of land to the brāhmaṇa Durga Śarman in the village Siddharthaka on the occasion of the consecration of Rājataṭāka. This tank was controlled by the state and mainly constructed by the king for irrigational purpose. The Tekkali plates refer to a land donated on the western side of Vidud Ganga with the right to draw water from the tank until the crop was ripened. The name of a tank Ksatriyataṭāka is mentioned in the Santabommali plates. The Dharmalingesvar plates of Devendra-varman states a big water reservoir named Guṇahāri Garta on the border of the village Haḍubāka.

In the Puri plates of Dharmarāja it is mentioned that the eastern border of the village was bounded by a tank, trees and house of a bronze smith.

The consecration of the tanks were made on auspicious days. The Almanda plates of Anantavarman were issued on the opening day of a tank on the solar eclipse day.

The epigraphic study shows canals or water course were made to facilitate the lands with water. Besides tatāka there were bandhas, dykes and bridges (setu) for irrigational purpose. The Kumuranga plates of Daṇḍi Mahādevi refer to sottrabandha, Samudrakara bandha and a bridge in the east of village Kalesvar.

Most of the villages were situated near a stream, river course or jota. The cultivable land was irrigated
properly due to the availability of water from these sources and thus could yield more. Hiuen Tsang has mentioned that there was regular harvesting in Orissa. In some cases the peasants developed double cropping. An Early Ganga records of 8th century A.D. reveal about the grant of land which were growing two crops in a year, one in Autumn and the other in summer.\textsuperscript{135}

\textbf{Forest}:

Hiuen Tsang describes about the vast tract of forest that existed from Kosala to Kongoda for about 1200 li.\textsuperscript{136} From Kosala to Kalinga there was an impregnable forest area of 1800 li.\textsuperscript{137} The Kanasa inscription of Lokavigraha\textsuperscript{138} gives an account of 'A\textit{stadasa\textaa\textit{tavikajya}' or eighteen \textit{A\textta\textit{vika} (forest clad) states. 'Maha\textit{kantara}' of Allahabad Pillar inscription was a part of Orissa.

The jungles in Orissa are rich with trees, bushes, medicinal herbs and roots and fruits. The tribals in the forest tracts earned their livelihood by selling fuel, timber, bamboo, honey, fruits, wax, gums, hides, horns ivory and medicinal herbs and roots. Trees like \textit{Arjuna}, \textit{S\textaa}, \textit{Salmali}, \textit{ni\textmb}, \textit{Asvatha}, \textit{Kar\textaa\textja}, Mango, bamboo etc of economic importance densed the Orissan forests. In medieval times the forest provided useful materials to the villagers for their common use.
The land donated on the border region transformed into cultivable land. The tribal inhabitants also cleared the hilly tracts in the forest and turned them into cultivable land. In the Buddhist Charyāpada reference is made to such taila land to produce crops like Kangoo and Cheena.

Thus we find from the above study that donation of land was a popular practice among ruling dynasties, feudatories and rich people. There was specific officers to administer the land system in the kingdom. Some of the donees left the traditional duty and engaged themselves in agriculture. They gave the land to the landless tenants on share crop basis. The bulk of the produce went to the landlords whereas the economic condition of the agrarian labourers was insufficient and wretched. In the forest tract the tribals were converted to labourers. Besides the agrarian labourers there were artisans, business community and cultivators who owned land also were living freely in medieval Orissa. Different types of taxes were exacted from the people to run the administrative machinery smoothly and to protect them from internal and external aggressions.

As Orissa was an agrarian state much attention was paid to agriculture. Though various irrigational facilities were provided to the cultivators, yet Orissa was prone to natural calamities like drought and floods. During such period relief measures were taken by the rulers - The Bhauma-Kara records eulogises the rulers Subhākara I, Subhākara IV, Tribhuvana
Mahādevī and Daṇḍi Mahādevī as benevolent rulers who helped the poor, helpless and feeble against affections and natural disasters.

The land system was based on individual and institutional ownership. The king, temples, Brāhmaṇas and members of the state bureaucracy were the land owners. There was regular land revenue system on land not gifted on tax free basis. There were different types of land tax and land measurement. Demarcation of boundaries was a consistent feature mentioned in the land grants. The society revolved round agriculture. It was the main source to sustain state economy. The Government was aware of its responsibilities for the agrarian community. Provision of facilities of irrigation and protection against encroachment were duties of the state. Agricultural land and forest land were separately distinguished and considered equally important for the people.
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