CHAPTER III

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Agriculture constituted the economic mainstay of medieval Indian societies and provided the surplus upon which the non-producing social sections thrived. As a matter of fact, trade as well as industries of the region, as also the larger part of the state's revenue, depended mainly on agriculture. Therefore, the state apparatus revolved primarily around the appropriation and distribution of this agrarian surplus. This is evident from the inscriptions belonging to the major and minor powers that ruled the region under study such as Vijayanagara rulers, Keladi Kingdom and various minor chieftains besides the records of Hyder Ali, Tippu Sultan and the Portuguese. In the absence of advanced farming techniques, it was the extent (area) of land under actual cultivation rather than the practice of intensive (quality) agriculture that contributed more to increasing production.

The topography of South Kanara region has greatly influenced agricultural production and the economy of the region. The fertility of the soil, the crops grown, the method of cultivation, the mode and extent of irrigation, the availability of green manure, etc. depend upon topographical factors.

The river system that we have examined earlier also greatly influenced agricultural activities. The heavy south-west monsoon and the undulating nature of the land are responsible for the large number of rivers and streams in South Kanara. During the monsoon, these rivers swell and roar, rendering them unfavorable for transportation. Many of them overflow their banks causing heavy floods in the low lying areas affecting agriculture very badly. This also causes soil erosion and affects the fertility of the soil, both of
which have a bearing on agricultural production. Since the salt water of the sea flows back into these rivers in the coastal areas during summer, it affects agricultural production and the water of these rivers in such areas cannot be used for raising the second and the third crops. The flow of salt water into the paddy fields regularly during the high tide also renders them unsuitable for cultivation.¹

The climate of the region is marked by high humidity. The hot season from March to May, when the weather is rather oppressive, is followed by the south west monsoon from June to September. October marks the retreating of the monsoon, which is followed by the north-west monsoon season.² But the rains associated with the north-east monsoon are often nominal and apologetic, and after December the weather is generally dry. These conditions of weather have their influence on the crops grown here and on the whole agrarian economy.

Another factor that influences agriculture is the forest which provides green manure and brings rains and enriches the fertility of soil. In the Ghat belt are thick and evergreen forests.³ There are semi-evergreen forests in the foot hills, deciduous in the outer ridges and in the areas bearing secondary growth of scrub type in the exposed lateritic float- topped table land. Small jungles in different parts of the coastal region have provided the main source of manure for agriculture.

In the traditional pattern of agricultural production cattle plays an important role. The domestic cattle reared in South Kanara are not generally of the better variety. The cattle in general are of a small stunted breed and attain no great size or working power.⁴ The humid or damp climate is not perhaps conducive to the health of the animals. The region has scanty
pasture and from January to the monsoon season the cattle have to be fed with stored fodder. For these reasons the cattle of good breed used to be brought from the upghat regions. This is often mentioned in our sources.

The cropping pattern in the region is closely interlinked with topography. The narrow coastal belt adjoining the Arabian Sea provides enough wet land to grow paddy which is its principal crop. The main land in the middle portion of the region produced mainly pulses or oil seeds. Paddy and plantation crops were grown in the valley and the hilly belt towards the eastern part. The major soil formations of the region are coastal sandy belt soil, coastal alluvial, lateritic soil, red loamy soil and lateritic gravelly soil.

In the alluvial soil region to the east of the coastal sandy areas, many annual crops are grown. Here the intensity of cultivation is fairly high and paddy again is the principal crop. Laterite soil occurs towards the east of alluvial belt from the north to south. It varies from yellowish red to dark red, reddish brown to brown, clay loam to gravelly sandy loam on the surface and clay loam to the gravelly sandy clay or clay in the sub surface horizon.

The red loamy soil is found in the strip along the Western Ghats when the rainfall is the highest in South Kanara. Its colour is generally red but variations of brown and yellow also occur. The soil is characterized by the absence of the lime and free carbonates and low soluble salts. It is acidic in reaction and poor in lime and potash and low in phosphorus. In the forest and hilly belt of the region is found dark brown clay soil. The nature of soil, the altitude and the rainfall influenced ground-water level and all these factors had a role to play in the selection of crop and the quality of production
Apart from the climate conditions and the type of the soil, the location of the region on the sea shore promoted trade in agricultural goods. Trade contacts with the west through the coastal ports brought greater demand for agricultural products of the region which had an impact on their production.

**Productive Activities:**

Within the broad region that we have described in the second chapter, productive activities - whether agricultural or non-agricultural - were at least to some extent concentrated in specific pockets already by the beginning of the sixteenth century. The bulk of these activities, including manufacture, were, however, located in villages and urban centers, and not in concentrated in ‘towns’. In the case of northern India too, this has emerged clearly enough from the detailed description of productive activity, locality by locality, in such works as Irfan Habib’s *Atlas of Mughal India*.  

In the case of southern India, where an equivalent work does exist to date, it is nonetheless possible to point to some of the more obvious elements of sub-regional specialization, both at the beginning of the period and later.

South Kanara is essentially an agricultural region. Majority of the native population earned their livelihood by means of cultivation, and the majority of the remaining population subsisted on income derived from the same source. Since the middle of seventh century A.D. the economic life of the people centered round the incomes derived from agricultural products. Consequently, agriculturalists formed an important section of the society. This is evident from the Vaddarse and Udyavar epigraphs assigned to the seventh and ninth centuries A.D. The Vaddarse inscription states that one Adakappa was holding the cultivation right over land there. On the other
hand the Udyavar inscription of Alupa ruler, Maramma alias Aluvarsa IV (840-870 A.D) refers to six Okkalus as a donees for a royal grant. 11

From the early times, lands were owned by the royalty as well as private citizens. The right of cultivating the royal lands was held by officials serving under the king as evidenced by the Vaddarse inscription. Although all classes, caste and creeds are represented, the landowners being mainly Brahmins, Bunts, Jains and Christians. The Bunts, however, may be said to be the landowning and cultivating class par excellence, both on account of their numerical preponderance in that capacity, and their almost abstention from all other professions or occupations. A great part of the uncultivated waste land consists of forest - clad hill land, but there is also a large extent of grass land, particularly on the upland laterite plateaus between the coast plain and the inland forests. Cultivation is carried on mainly in the valleys which are fertile and specially adopted for paddy crops. Both the high and low caste people were involved in agriculture. The folk songs and a few Kannada literary works 12 depict the coastal villages having dry and wet lands owned by landlords near their free manorial houses which were surrounded by tenants. The latter provided free labour in landlords’ land in return for land for cultivation. The various historical sources 13 from present South Kanara District refer to the fields where three or two crops were annually cultivated.

The principal division is into paddy fields and garden lands, according to the crop, for the cultivation of which soil is best adopted. The paddy lands are classified more with regard to the water- supply than to the nature of the soil. As water brings silt with it, the lands, with the best water - supply, have also better soil than other lands in the same locality. The first class land is
called bail and comprises all the low-lying fields which are abundantly supplied with water, the direct annual rainfall being supplemented by water brought by channels from rivulets or streams, or raised from rivers by baling or by picottahs. In some parts of South Kanara, three paddy crops, called, yenelu or Kartika, suggi and Kolake respectively are raised on the best land of the bail kind. In others, it gives two crops of paddy and one of dry grain. Bail producing three crops of paddy a year is called Kolake gadde, after the name of the third paddy crop. The same kind of land giving two paddy crops annually is called either merely bail gadde from the fact that the greater part of bail gives only two crops, or suggi gadde after the name of the second crop. Those bail fields which lie so low as to be submerged during the first few months of the monsoon are called potla gadde and yield, as a rule, only one rice crop after the rains are over, which, however, is a very abundant one.

The majal or second class of paddy land consists of those fields in the higher parts of the valleys which, though not entirely dependent on the annual rainfall, have yet a considerably smaller supply of water than those areas situated lower down. On the majal fields two crops of paddy or one of paddy and another of some dry grain or pulse are raised every year.

The third class of paddy land is called bett and comprises those fields which are entirely dependent on the rainfall (bane bett, from ‘bane’, a hill or grass land) and those which have a supply of water only sufficient to last during a short break in the monsoon. As the rainfall, however, is very abundant, one good crop of paddy is usually obtained from the bett lands where the soil is not of a bad quality. Garden land specially adapted for the formation of coconut and arecanut plantations is called bagayet.
The geographical location and the availability of water for cultivation are the two important factors which determined the classification of cultivable lands such as bettu, bayalu, and majalu. Classification of land as bail, majalu and bettu is mentioned in an inscription from Venuru. 18 In another inscription of Krishna Matta, Udupi, we come across two types of land, majalu and makki. 19 Makki and Hakkalu, two more categories of land are also mentioned in a record dated 1461 A.D. 20 Makki land was inferior to bail and was to be cultivated with only rain water. It yielded only one crop and not attractive to the tenants. 21 The classification was between bail and bettu and in quality it was better than bettu. There is also another category called Hakkalu mentioned in the inscriptions.

Hakkalu is generally a high land cultivated without the aid of reservoirs. 22 However, K.V. Ramesh thinks it as an elevated piece of ground covered with brushwood, a piece of dry land irrigated by rain and used for raising vegetables. It is rarely brought under regular cultivation. 23 In South Kanara Hakkalu generally referred as graying ground. We also come across in the inscription another category of graying ground called Jeddu. 24 This was necessary for cattle employed in agricultural work. Mekke and Hola are other forms of cultivable land come across in the inscription. In the order of cultivability next to bail comes Mekke which is the same as majalu and it occurs in place of majalu in several records of the period under study. 25 Hola, is another form of cultivable land. It was also referred to as a land for wet and dry cultivation. Sometimes, the word Hola is also used to refer to the forest. 26 Since forest provided green manure for agriculture, it is mentioned in inscriptions along with agricultural land while registering grants.
These classifications of land had their own names like *Pande bete bailu*, *Harahina Makki*, *Kisana makki*, *Baliya Hittalu*, *Senobhoovanoura bettu*, *chavuli bettu*, *Madivala bettu*, *Bestavara bettu* and *Kolakeya Bailu*. *Pande bete bailu* indicates the ground for hunting of wild boar, while *Harahina Makki* refers to the extensive *makki*.

Along with *Kolake bailu* we also find reference to individual paddy fields, known as *Kolake Gadde*, revealing the raising of the third crop and the availability of water. *Hittalu* was another popular classification found in inscriptions. In this type of land, vegetables were largely grown. Another type of land called *hadahina balu* is mentioned in an inscription from Barakuru. It may be explained as table land or plateau. Another type of land frequently found in the inscriptions is *Haravari*. *Haravari* is an extensive elevated land. We also come across *Kuduru* which has been defined as an island formed in a river, by alluvial deposit. Some of them were very fertile like *Bennekuduru* and yielded rich crops. The type of soil and location also became the basis for the description of land as in the case of *oravina kaliya bailu*, *Devara kaliya bailu*, *Mekkeya bailu*, *Nanjina Mekkeya bailu* and *Hemmanna kereya bailu*. In the case of *Devara kaliya bailu*, *Oravina Kaliya bailu* and *Nanjina bailu* the classification is warranted by the type of soil *Kali* and *Nanju*. The location is indicated in the case of *Hemmanna Kereya bayalu*. In South Kanara, normally three crops are grown. The first crop (*yenelu*) is grown with the help of rain water only (June-October), second crop (*Suggi*) is grown mainly with the help of stored rain water (October-December). Third crop (*Kolake*) is grown only with the help of tank or well irrigation (January- April).
Some inscriptions mention a category of land called Potla. Sturrock defines Potla as a wet land submerged during the heavy rains of the early months of monsoon and therefore growing only one crop annually. Buchanan too had earlier expressed the same view: *These kinds of land called Potla or mojaru are situated in deep places near the banks of rivers and are much overflowed by the tide at high water.*

Inscriptions in South Kanara refer to *hadalu* or *haduvalu*. It is a low-lying land, in which the first crop is difficult to raise. There are various factors which are common to both *potla* and *haduvalu* lands. *Haduvalu* is commonly found in the epigraphs of the northern part of the region but *potla* occurs more frequently in the inscriptions of the southern part. We come across an interesting reference in an inscription from Hosangadi, which mentioned *Jalakabhumi*, land always supplied with water.

*Hadubettu* is a reference to the *bettu* land left fallow. A number of epigraphs mention *bedekaru* which was wet land to be sown during rainy season. *Kalabhumi* is another type of land, mentioned in our sources. This was interpreted as threshing floor. But it is clear from inscriptions that it was not merely threshing floor but paddy field. A Kadri inscription of Harihara II dated 1386 A.D. mentions *bittuva Kalabhumi mude*, i.e thirty *mude* of *Kalabhumi* for which the rent fixed was 112 *muras* of paddy. The same inscription registers elsewhere a grant of six *mudis* of *Kalabhumi*. All these details reveal that *Kalabhumi* was not a threshing floor, but cultivable land. Gururaja Bhat has shown that *Kalabhumi* is a first class land perhaps comparable to *Ere bhumi*. The fertility of the soil, availability of water, type of soil the crop cultivated, ownership and location were the basis of such classification.
Names of Paddy Fields:

Paddy fields in this region are identified by names. Some interesting aspects of socio-economic life of the region can be brought out on the basis of these names. The names of paddy fields in inscriptions of the region reveal many aspects of the agrarian economy and the social structure.

Some of the names of paddy fields indicate the types of soil or land. A paddy field called Morabina gadde is mentioned in an inscription from Barakuru, dated 1569 A.D. P.Gururaja Bhat interpreted this name as a field infested by a kind of weed. But the word Morabu is locally used to mean hard laterite. The name Morabina gadde therefore means a field with a hard laterite layer below the fertile top soil. Hoyige gadde means field having sandy soil. The same name appears in various forms in different epigraphs, like Hoyimanna mekke and Hoyigeya gadde. In this region we get evidence of land or paddy fields having black soil, i.e Kabbayalu. Kemmannaya bayalu is indicative of the red colour of the soil. Koletamannina gadde is another term which is referred to in inscriptions. Koletamannu literally means fertile soil or field. It means land which has become as fertile as organic manure itself because of the abundance of water available to it. In an inscription from Basrur in Kundapura taluk we get two interesting names of paddy fields, Belugalemba gadde and Hala gadde. Most probably Belugalemba gadde is indicative of the mixture of white stone pieces in the soil. On the other hand Hala gadde perhaps explains the white colour of the soil, the word “halu” or milk indicating the white colour.

The irrigational facilities available in the region are also revealed by names of paddy fields. Tanks were constructed by individuals and state agencies. Kola and Gumme are the two types of water resources indicated in
some inscriptions. Locally the word *Kola* is water reservoir, formed by an extension of river. *Gumme* on the other hand is a small pond. An inscription dated 1421 A.D. mentions a paddy field called *Hosa kereya balu*, which was evidently a field situated close to a newly constructed tank. *Kola gadde* and *Gummeye bagila gadde* were paddy fields near *kola* and *Gumme* respectively. The practice of constructing *Kattus* or *bunds* to store water is also revealed by the names of paddy fields. An epigraph dated 1403 A.D. mentions *Kattinagadde* (field by the side of *Kattu* or *bund*). There are other references also to support its popularity. This was an embankment built across a small river or a stream. These temporary dams were constructed by using mud and timber. It is incorrect to surmise that there is no evidence of *Kattus* in the epigraphs of South Kanara. Though we do not have direct evidence regarding the construction of dams, the names of paddy fields like *Kattinagadde* definitely attest to the existence of such structures.

There are a number of names of paddy fields with the suffix *Mar*. The full form is *Timar* which means a vast paddy field. In the Tulu-speaking area of the region (in the southern part) we come across the names of paddy field like *Kedu Timaro*. It means a paddy field situated near a *Kedu* or tank. It is same as *Keregadde* of Kannada-speaking areas. Similar information is furnished by an inscription from Basrur dated 1434 A.D. which speaks of *Kenchana Kereyemba balu*. *Kerey Kattina Gadde* suggests that those paddy fields were situated by the side of tanks. All point to the fact that *Kere* served as a popular means of irrigation. *Neeru Hariyuva Salina Olagulla Makki* refers to a paddy field flanked by small rivulets. *Toombina Bagila Hali* is a small paddy field close to a sluice.
The reference to Abiya gadde found in an inscription 77 suggests the irrigational facility available to a particular field. It means field near small water falls. Some of the names suggest the non availability of any other sources of water except rainfall. We come across banagadde. 78 It actually means gadde or field which is totally dependent on rainfall for cultivation. These reference help us to study not only different sources of water, but also various types of cultivable land P. Gururaja Bhat mentions a paddy field called Haneya baila gadde. 79 He interprets it as field of the sowing capacity measured in hanes which is one of the measures. It must be in all probability a reference to one of the popular forms of water - lifting devices in South Kanara, i.e. Hane.

Sometimes paddy fields are called by the name of the tree grown near them. For example, we hear of Mavina gadde 80 (Mango field) and ane mavina hali. 81 The later indicate the size of the mango grown. Bogiya gadde 82 field near a bogi tree (Hopea Parviflora Bedd) 83 Hangaru gadde field adjacent to a Hangaru tree (Erythrina indica Lamk), Nelligadde 84 field close to a Nelli tree (phyllanthus emblica linn) and Hunise gadde, 85 field near tamarind tree (Tamarindus indica Linn), are some of the examples. Hunnase gadde, a name which is popularly found in the northern part of the region, is also found in a few inscriptions of Tulu - speaking area. In Kantavara record 86 dated A.D. 1433 there is a mention of Pule Maranemba gadde. Puli is the Tulu word for Huli (or tamarind). In some records we get reference to Hunise Adi gadde. 87 Here Adi means a group of paddy fields. Hunise Adiya Makki means adi having tamarind tree. 88 Pejatimaru 89 is the field near wild jack tree (Artocarpus hissutus lamk). The name Halasina gadde 90 means the field near jack tree (Artocarpus hiterophyllus Lamk).
Kangi Timaro is a field near arecanut garden and Kedageya gadde is a field having Kedage flower plant (*Pandanus fascicularis Lamk*) by its side. There is a reference to singara gadde. It mentions a field by the side of arecanut tree Goliya gadde or Goligadde refers to a paddy field by the side of Hanayan tree. Alagadde too means the same thing. In the inscriptions of the Tulu-speaking area, Hangaru gadde is known as Pongar timaremba gadde. We thus get evidence throwing light on the trees grown near the paddy fields.

Lands were brought newly under cultivation during the period, and it is revealed by the names of some paddy fields. Extension of agriculture is referred to in an inscription from Mudabidre. Another inscription mentions Kaliyanu Roopu Madida gadde. Kali is a kind of grass, which normally grows by the side of river in uncultivated areas. The above reference can be explained as paddy field created by clearing the Kali grass, Kaliya gadde. Devara Kaliya bayalu, Megana Kaliyemba gadde are the other references available in inscriptions. Sometimes, the place itself is called Kali. Another mode of reclamation was by leveling hillocks. The names of paddy fields reflect this. Kadidu madida gadde, Guddeya gadde and Guddenu Kadidu gadde (Ma) duvare are clearly references to extension of agriculture in uncultivated areas.

*Hosagadde* means land newly brought under cultivation. The same expression is used in the inscriptions of the Tulu-speaking areas as Hosatimarembe gadde and Hosatimaru. In these paddy fields brought under cultivation. Paddy, pulses and garden crops like coconut were grown. There is, for instance, a reference to the names of fields Hosakali Thota, a name which shows the conversion of Kali into a garden.
Names of paddy fields, having names of people reveal private ownership of land, which was popular in the district, besides showing the land control of different classes of people and land tenure. A Kadri inscription dated 1389 A.D. refers to *Bommana gadde* or a field belonging to a person called Bomma. We get reference to Vishnu Karantana Balike Bhumi, Shambu Malingana Adi, Ramanayara Bayalu, Basavantana gadde, Barakuru Vittappana balu, Binda Manjana Mula gadde, Narana Mogarana Mula gadde, Narana Settiyara Mandagadde, Ramana gadde, etc. Another interesting point here is that even women possessed land during the period. Reference to Hebarati gadde indicates that the owner of the field was one Hebarati, who was a Brahmin lady.

The location of paddy fields is another criterion adopted in naming the paddy fields. Paddy fields which are very close to the step of a house are known as *Mettukalla gadde*. Fields very close to land in front of the house is known as *Bagila gadde*. Normally, the houses which were old and famous had a big paddy field in front of them. Even now we find such fields. In the Tulu speaking areas of the region such fields are known as *Bakilmar* which is the same as *Bagila gadde*, in Kannada. It is interesting to note that in some inscriptions, the importance of the house is clearly stated as when they mention *Heriyamane bagila gadde*. Though apparently *Kallagadde* means a field near the Kallu or small rock, in many cases paddy fields in which inscriptions are installed are also called by that name. Sometimes, they are known as *Barada Kallu gadde*. In the Tulu-speaking area, the same name is referred to as *Kallaya gadde*. In this region another name used is *Kalli Timaro*. *Guliyana gadde*, *Guliya gadde* and *Guligadde* throw light on the location of
the paddy field, i.e. paddy fields which are situated in a very narrow and low-lying area.

While some of the names are indicative of the people's imaginative skill, one can also note the interesting ways in which rural folk named the lands, which sustained them. They had *Kandike ere gadde* or paddy field in the shape of a fish called *Kandike* or *Sillago Sihama*. Generally, narrow fields are called *Kandike gadde*. If it is still smaller, it is called *Kandikada hali*. A field in the shape of a cradle is known as *Tottalu gadde*. We have other references like *Battalu Kandayemba bayalu gadde* (field in the shape of a battalu or plate), *Arati Kandayemba gadde* (field having the shape of an *Arati* or a lamp for ritual offering). However, *Arati Kanda* may also be explained as paddy field donated for the purpose of *Arati* service, in the temple. *Kudure gadde* (field in the shape of a horse) and *Nevalada gadde* (is a field in the shape of Nevala or Girdle) are the other examples. We get another name *Anegalemba bayala gadde*, which, in all probability, referred to the vast extent of the field.

The size of the paddy fields can also be studied with the help of their names. *Malagadde* or *Mallagadde* are usually big in size. Sometimes, *Malagadde* is referred to as *Heriya Mallagadde* which indicates its size. *Hali* is a field, but in local context, it is a small field. The mention of *Kirugadde* in inscriptions also means the same thing. Along with size, something we get a clear idea about the location of paddy fields also. For example, *Mane Mundana Mallagadde*. *Mala gaddes* are in most cases found in front of the houses. Such names also reveal the location of houses. For example, *Makki Malagadde*. It indicates the type of land and situation
of the house simultaneously. Usually houses were built either in Makki or in bettu land and people avoided bayalu land for the construction of houses.

Sometimes, these names provide interesting clue to the religious and cultural life of the people. *Gori gadde* is a field having a *Gori* or memorial. It is indicative of the practice of erecting small memorial structures for the deceased. South Kanara is famous for *Naga* (serpent) worship. The popularity of the practice is well reflected in the names of paddy fields. For example, *Nagana gadde* was a field very close to *Naga Bana* (place of *Naga* worship). The other names like *Huttina gadde* or *Valmika Mallagadde* are also connected with naga worship and Hutta or Valmika (ant hill) is also worshipped in South Kanara as a part of Naga worship. These names reveal the importance of *Naga* cult in the religious life of the people.

Religious institutions of the period acted as powerful land owners and such ownership is revealed by the names of paddy fields. *Jinagadde* was a paddy field that belonged to Jaina basadi. *Manjunatha Devasvada gadde* was a field that belonged to Manjunatha temple. Many paddy fields are mentioned in epigraphs as *Devasvada gadde*. Land belonging to the *Mathas* in the Tulu-speaking area is referred to as *Matada gadde* in records. Mudabidre copper plate inscription mentions *devabettu* a group of paddy fields given as grant to God.

The social status enjoyed by some of the families or communities can be known from the names of paddy fields. We come across names like *Mala gadde* and *Bagila gadde* in inscriptions revealing their location in front of the houses or near the entrance of houses. Such fields are found only in front of the big and old houses of prominent families. Names like
Mane Mundana Malla gadde\textsuperscript{155} and Tammi Settiya bagila gadde\textsuperscript{156} also mean the same thing. The field next to Malagadde is known as Mattagadde.\textsuperscript{157}

A lot of information is available from the names of paddy field about kinship. Inscriptions refer to Aliyandira gadde,\textsuperscript{158} Sodranna gadde\textsuperscript{159} and Vasu Voramballiya Makkala balu.\textsuperscript{160} There existed two types of inheritance, Aliya Santana and Makkala which are indicated by the names Aliyandira gadde and Makkala balu. The names of paddy fields are also indicative of the land ownership of local administrative officials. Halara bageya Kali,\textsuperscript{161} Halara Mallagadde\textsuperscript{162} and Senabhovara bettu\textsuperscript{163} reveal that Halaru and Senabhovas owned lands. Very useful information is provided by the names of paddy fields about the measurement of land, e.g. Movathu hane gadde,\textsuperscript{164} Aruvathu hane gadde.\textsuperscript{165} In certain portion of the region Koiltu was a popular form of measurement which is reflected in the names Eradu Koiltu, Muru Koiltu.\textsuperscript{166}

We also get reference to Sunkada hali,\textsuperscript{167} which can be explained as place of toll-collection. Sometimes, the names reveal the purpose for which the grants had been given to individuals and temples. For example, the paddy fields granted for the purpose of Keelu Santi in a temple are together referred to by the name Kilu Santiya bettu.\textsuperscript{168}

Land ownership of different non - Brahmin communities is also revealed by names of paddy fields like Kumbara gadde and Acaribettu.\textsuperscript{169} The fact that even the prostitutes owned land is revealed by the evidence, Soole Makki.\textsuperscript{170} Royal ownership of land is another information provided by the names of paddy fields like Aramaneya gadde\textsuperscript{171} and Arisina Adi.\textsuperscript{172}
Thus very rich information is supplied by names of paddy fields regarding varieties of subjects like topography, type of soil, mode of irrigation, land reclamation, individual, official and institutional ownership, names of communities, land measurement, social status of families and many other things. Most of these names continue significantly to this day.

**Extension of Agriculture:**

It has been mentioned above that agriculture was the prime occupation of the country and the main source of prosperity of the people. The evidence of medieval travellers who visited South Kanara makes us believe that vast tracts of land were under cultivation. Land reclamation was practiced in South Kanara from an early period, with a view to bring more and fresh land under the plough and thus to promote the cause of agricultural production. Rulers attempted to increase the extent of cultivable land by cutting down forests, and to bring large tracts of fresh territory under proper cultivation. The inscriptive evidence speaks eloquently about the deforestation of vast tracts of land and formation of new villages on land they reclaimed from woodland and wide jungle. Such land reclamation and extension of cultivation had been the most important item in the official policy of agrarian development in South Kanara, particularly from the fifteenth century A.D. onwards. The extension of agriculture to the uncultivated regions was a feature of the agrarian economy of the period under study. Such extension by individuals was made easier by the financial and moral support rendered by different agencies. In this connection Burton Stein remarks-

*This may be regarded as the ecological concomitant of the social displacement and assimilation of tribal people. As in any developing tropical agrarian system,*
the clearing of forest was one of the standard methods for expansion. This kind of change in environment may, therefore, be considered a regularized process in which the tempo of expansion is a factor of vital importance.\textsuperscript{173}

It is important to note that such a process of reclamation, from the economic point of view, served mainly two purposes: on the one hand, it provided the means for the community to cope with the pressure of population in the form of new village settlements that were founded on the tracts reclaimed and on the other, larger areas of uncultivated land were brought under the plough, as a result of which the state's revenue also increased. Inscriptions of the period gives us unmistakable proof of the deliberate efforts made by the state as well as private agencies in this direction of the economic enterprise of great importance. Land was thus reclaimed by cutting down forests for village, as also for the founding of new settlements and constructing tanks and temples. Quite often, the state itself undertook such an operation, apparently through village and district officers, either on its own initiative or at the request of the people.

A number of epigraphical records refer to the process of reclamation in the Vijayanagara period. However, references to reclamation in Alupa inscriptions are very rare. When we turn to the Vijayanagara period, we notice the reclamation on a large scale. It included converting uncultivated lands like hilly region or waste lands by the side of rivers into agricultural land. We come across one such instance in an inscription of 1425 A.D. from the Panchalingesvara temple at Barakuru.\textsuperscript{174} This record belonging to the reign of Devaraya II of Vijanagara Empire registers a grant by Governor Narasimadeva Odeya for the feeding of twelve Brahmans in the Panchalingesvara temple. It is interesting to note that the income for this
purpose came in the form of additional levy collected from the ‘Paduvakone Nadavaru’ who had brought new lands under cultivation.

It explains how the people of Paduvakoninadu converted Kali, Hole, Bettu, Tittu into paddy fields and set up boundary stones, demarcating the areas of their own land. The same inscription also mentions Kaliya Bayalu, Devara Kaliya Bayalu, thus indicating that these paddy fields were once uncultivated land. An inscription from Basrur dated 1482 A.D. refers to a similar extension of agriculture to the uncultivated land like Kali. The same inscription mentions how such a land was converted into paddy field. Blackgram and coconut were the different crops grown in these lands.

These lands were suitable for coconut plantation due to the fertility, silt deposited, sandy soil and the availability of water.

An epigraph from Udyavara dated 1429 A.D. refers to Kaliya Balu. However, it is interesting that conversion of Kali into agricultural land is common mainly in the low-lying areas of the coastal region. Inscriptions of the interior region do not speak of such a practice. It was only in low-lying coastal region that Kali land was formed, and people who wanted to extend their agriculture did not have enough waste land except Kali. In the interior regions of South Kanara cultivators brought hilly areas under cultivation.

Some of the records do not reveal the previous condition of the newly made agricultural land or paddy fields. Inscriptions from Barkur mention Hosa(thagi)madida gadde, Mane mundina Hosagadde and Hosatagi madida balu. The process of expansion by converting the non-agricultural lands into paddy fields is suggested in some records. An inscription from Kabettu in Karkala taluk reveals how hillocks were levelled and converted into paddy fields. Reference to Kadidu madida bhumi in Andaru
inscription from Karkala taluk is also a similar example. In this connection an epigraph from Gurugala basadi, Mudabidre is very interesting. It reveals that labourers from Channapattana were brought for the purpose of extension of cultivable land. Since the labourers were brought from the upghat region, it is clear that the work of extension was undertaken here on a large scale.

When we look into the expenses involved in bringing new lands under cultivation, it becomes clear that it varied from region to region. In connection with expenses involved in the conversion of hills into bettu lands Buchanan remarks that, *the expense is great and the returns are small.* But large scale conversions during this period testify to the contrary. An epigraph from Varanga dated 1575 A.D. and belonging to the reign of Krishnadevaraya records that on the representation made by Devendrakirti to the king the lands in Varanga, which had been granted by Devaraya to the Neminatha basadi, but allowed to remain fallow, were again made over to the same basadi by Akkamma Heggadi and others after clearing the forest, which had grown on that land.

Thus, by converting the Kali or hillocks or forest land which was uncultivated into cultivable lands, people contributed to the expansion of agricultural activity and increase in agricultural production. Individuals, institutions and the government took interest in this enterprise. The government benefited by such an extension, since it ensures more revenue. Even when the people themselves spent money and extended their agricultural lands, the government fixed the tax to be paid on that land. If such conversions were not brought to the notice of the government by the people concerned, they were fined. An interesting inscription is found in this
connection at Barakuru which belongs to the reign of Devaraya II. In 1425 A.D. the Nadavas of Paduvakone had converted the uncultivable land like Bettu, Tittu and Kali into paddy fields and had claimed that land as their own. When this matter was reported to Narasimadeva Odeya, the Vijayanagara Governor of Barakuru, he convened them to the provincial capital and asked them to make payment of tax on the excess land and granted the same to Panchaligesvara temple for feeding Brahmans. Such extension of agriculture fetched revenue to the state. All these show that people evinced keen interest in agricultural activity. It indicates great demand for land and it had its own impact on production and price of agricultural goods.

The process of extension of agricultural land continued even during the sixteenth to eighteenth centuries when the region was brought under the rule of Ikkeri Nayakas. During this period the extension of agrarian land took in the form of bringing hilly and marshy areas under food crops. In coastal region, a peculiar land formation known a Gajani or Khajjana was utilized for the cultivation of paddy, vegetables, coconut trees etc. In the first two decades of the sixteenth century, the agriculturists took interest in the formation of paddy fields from the marshy, hilly, rocky and other types of barren areas. In the third decade of the sixteenth century, they began to show interest in arecanut, pepper and other useful garden products. The following instances provide detailed accounts of the motives and the nature of the land formation. An epigraph dated 1482 A.D. from Basarur mentions the formation of paddy fields from the marshy and unproductive sites at Herekudru (Kundapur Taluk). This was done under the direction of the Halaru Settigaras of Basrur. The newly formed paddy fields (Hosa Gadde)
were capable of producing four *Akki Mudes* and their *Bijavari* thirty *Mudes*. Further, the same inscription refers to the formation of a few more paddy fields in the same place under the direction of the high caste land controlling units namely Kommi Bhatta (Brahmans), *Setti* and *Heggade*.  

The practice of land formation, throughout South Kanara was also observed by a large number of foreign travellers, who visited the region. For instance, Barbosa, in the year 1512 A.D. made his observation on the land formation in the region of Baindur. He opined that the extension of agriculture spread to dry, low land, hilly regions and *gajani*. Subsequently, all these lands were transformed into paddy fields and small areas of coconut gardens. The land formation also took place in places like Honnavar, Bhatkal, Mangalore and Kumbala.  

In the vicinity of Basrur, we get sufficient evidence regarding vigorous and intensive form of land formation. An epigraph dated 1519 A.D. suggests that the places *Anegali* and *Hemmadi* (near Basrur) fresh paddy fields were formed. A point to be noted is that a woman called *Timmakka shedti* played an important role in the land formation at Anegali. She, in fact, got a site at *Aruvara* from one Vasudeva of Mudukeri. As a result of her effort the site was transformed into paddy fields, yielding annually nine *Mudeis* of rice.  

We also come across a number of uncultivated sites like *Gajani* and *Bett* which were transformed into paddy fields in the places around Hegde and Uppunda. An epigraph dated 1528 A.D. refers to the conversion of *Gajani* and *Bettu* into paddy fields and the field within the river flowing area was planted with trees (*Harida Holeyaolagana Shtaldolage Mara Nadu Phalavengade*). Further, the inscription states that during the same year at
Hemmadi a new land was formed called *Kallu Gadde*. The epigraph reveals an important point that it mentions the formation of coconut gardens along paddy fields. The former was done by one *Malla Shetty* in a place called *Manikola* (Kundapur). One Hebbar had undertaken leadership in the formation of paddy fields in the rocky region into paddy fields at Hemmadi and that fields were known as *Kallu Gadde*.\(^{188}\)

In the subsequent years, land formation was also seen in and around Uppinakudru by extension of coconut and paddy cultivation. This resulted in the expansion of agricultural activities in Hemmadi and Uppinakudru to the areas of marshy, rocky and elevated places. In this regard an epigraph\(^ {189}\) dated 1531 A.D. refers to the formation of coconut garden by the river side. In both the cases, the low caste people worked hard in the formation of agrarian land, but under the supervision of the high caste land controlling units. In these places, the river beds, the rocky and barren areas were transformed into paddy fields.

At the same time, the interior region witnessed the extension of agricultural activities. Apart from paddy, the cultivation of arecanut, pepper and other useful products was in vogue. In the interior, the expansion of agriculture spread over the sites of rocky ground, forest slopes, the rivers' bank etc. This is supported by a record dated 1476 from *Jansale*,\(^ {190}\) which gives an impression that the areas covered by *Hakkalu, Hadalu and Makki* in that place were brought under the cultivation of paddy, pepper, jack fruit etc. It also refers to the formation of different types of paddy fields such as *Bettu-Makki, Kodi-sthala gadde* (water inundated paddy field), besides the *Bayalu Gaddes*. 

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Kadatas sometimes, give some information about land formation. One such Kadata kept in the Sringeri Matha, refers the formation of the Makki Gadde from the rocky region in the place called Sivapura of the Barakuru Hobali in the year 1516 A.D. One interesting features of the land formation in this village was the planting of coconut trees on the fence of the paddy field, These paddy fields were called Tengina Gadde Makki, Sanna Tengina Gadde etc. The Kadata also mentions the paddy fields of Kunta, Chenna and Nayakondi. One can assume that these people belonged to the lowest caste and they played significant role in the land formation, but purely under the direction of higher caste land owners in the Sivapura village. At Shankarnarayan village, unproductive areas such as Hakkalu, salty regions, were utilized for the cultivation of different trees, pepper along with paddy. An epigraph dated 1544 A.D. refers to the transformation of salty area into paddy field having the Bijavari 3 Mudes of rice, and Hakkalu into coconut and jack trees gardens. There were attempts to transform the river banks into cultivable areas and they became Bayalu Gadde. This could be seen in the villages of Kuppara, Shankaranarayana, Hattiyangadi and Basruru. The inscription dated 1562 A.D. mentions the formation of paddy field from the area of the river bed known as Holeyamba Gadde along with the Bettu Gadde. Along with Holeyamba Gadde, Hosa Gaddes (newly formed paddy field) were formed in the places of Hattiyangadi and Basrur.

The sea shore and dry land known as Badakaru also saw the formation of new agricultural lands. One of the epigraph dated 1569 A.D. mentions that Vishnu Maiya, Alakka Setty and Narayana Herale took leadership in transforming the agrarian land near the shore at Manur. Such
paddy field known as *Arala Gadde* yielded one *Mude* of rice. In Barkuru, *Bedakaru* was also transformed into paddy field. The latter is said to have yielded *Bijavari* one *Mudi* of rice in the year 1585 A.D.

In the Southern part of South Kanara region south and south-east of Mangalore i.e. Kasaragod, Bantwala and Ullala, *Bettu, hadi and nira katte* were transformed into paddy fields, coconut and pepper growing areas. It clearly shows that the cultivation of coconut and pepper gained prominence. This was largely due to the increasing demands from the foreign merchants and also due to the dwindling of rice trade in the port of Mangalore in 1567 A.D. However, the rice trade was prosperous in the ports of Honnavar, Bhatkal, Basur, Manjeswar and Kumbala. An inscription dated 1587 A.D. mentions that *Agrahara Bayalu* in the Monda-kapu village of Bantwala *Sime* was formed into *Bayalu Gadde* yielding one *Mudi* rice. This *Bayalu Gadde* was formed from the hilly region known as *bettu*. The record emphasizes the necessity of extending cultivation to the lands covering *hadi, hakkalu* and *nira nettae*.

The expansion of agricultural activities was more widespread in the seventeenth and eighteenth centuries than in the previous century. A large number of epigraphs of this period substantiate this feature. According to an epigraph dated 1608 A.D. one Narana Shetty took *Manja bettu* in the place *Korangi* (near Basrur) as *Aruvara* and that *bettu* was converted into field. The record further confirms that the *Kumbaras* of that region played an important role in the formation of cultivable lands from the rocky and *hakkalu bhumi*. In the region south of Mangalore *Guddi Bettu Nirumugulta Jaga* were transformed into cultivable lands. This type of land formation took place in the Manje village also. Pietro Della Valle a
foreign traveller also speaks eloquently about the intensive land formation in Basaruru, Kollur, Mangalore and Honnavar regions. He also testifies to the fact that a large number of Catholics and the lower caste people played a significant role in the extension of cultivation in the Mangalore and Basrur regions respectively.  

On the basis of these, one can certainly presume that the practice of the expansion of agriculture in the period under study resulted in the transformation of large chunk of unprofitable paddy fields (nasta gaddes) or barren, marshy, waste lands (Jaddina, javugu) were converted into the gardens of coconut or arecanut in the Coastal and interior South Kanara regions. This was supported by an inscription dated 1669 A.D. which says that nashta bhumi (nashta gadde) in the Asodagrama was transformed into coconut garden. Such instances are found in other places like Uluvari, Tonse, Uppuru, Manjeswara and Kumbala as revealed from a paper document and a Kadata dated 1739 A.D. and 1748 A.D. Secondly the rulers patronized the land reclamation and conversion of non agricultural land into agricultural land for the purposes of cultivation of commercial crops. The rulers sometimes went to the extent of inviting skilled agriculturalists to come and settle in their domains. In this connection a local tradition states that towards the end of the sixteenth or the beginning of seventeenth centuries, the chief of Karkal (Kalasa-Karkala chief known as Bhairarasa Odeyars) granted hilly places to a large number of Marata Brahmins. They were involved quite actively in converting this region into betel-nut gardens. According to another belief, the Keladi Nayakas invited skilled Christian agricultural farmers from Goa to come and settle in South Kanara region. They, in fact, transformed many waste lands in Gajani
and Marshy places into coconut gardens and sugar cane plantations. Further, the rulers while donating lands to the individuals or the religious institutions advised that those who received land were expected to increase the productivity of the granted lands by planting coconut and other productive trees and plants. An epigraph dated 1602 A.D. informs that the donee, Appaje, (receiver of the land from Keladi Bhadrappa) was expected to increase the productivity of granted land in the Bennar Bettu village by transforming that land into gardens of coconut, mango and other cash crops. Similarly, one Vaman Kamti promised to undertake the cultivation of coconut and arecanut, jack and mango trees on the barren sites in the Manje village while receiving the above land from the Banga Chief Vira Narasimah Laksmappa in the year 1614 A.D.

After the demise of the Keladi Nayakas, the region was brought under the influence of Hyder Ali and Tippu Sulthan. Like the previous regimes Hyder and Tippu Sulthan also took keen interest in the expansion of activities further. They particularly encouraged the cultivation of cash crops namely sugarcane, pepper, arecanut, coconut, sandal wood etc. Attempts were made to bring barren and unproductive lands under the cultivation. Tippu Sulthan in particular granted barren lands to peasants and collected a nominal rate of tax. He even encouraged the cultivation of sugar cane and sandalwood. The enterprising peasants were given loans for the expansion of agricultural activities in the barren places. His Government provided irrigation facility in places, where it was feasible. However, his agrarian measures were mismanaged by his own officers in such a way that it led to adverse affect on the process of the extension of agriculture in South Kanara region.
Between sixteenth and eighteenth century the region witnessed systematic expansion of agricultural activities and the formation of new agricultural land for the cultivation of commercial crops. This yielded positive results because of the participation of a large number of low caste population such as Devadigas, Mogeras, Kumbaras, Bhandaries, Billavas, or Halepaikas, Koragas, Bakudas, Male Kuidyas, Siddhis etc and even the women folk. At the same time the Christians coming from Goa also played a prominent role in the expansion of cultivable land in the region. It was due to their efforts that many hilly and Gajani areas around Mangalore became the gardens of coconut and paddy fields. However, it was closely supervised by the higher caste people who actually were the owners of the major portion of their lands and who controlled the lands of the religious institutions. Therefore, the low caste people could not enjoy the fruits of their labour in the land formation.

All these attempts reveal that in the land transformation, the motivation of cultivators eventually shifted to export oriented crops like pepper, arecanut and cardamom in the interior and coconut and sugarcanes in coastal region in preference to paddy cultivation as it ensured more material returns. Moreover, since pepper growing areas were found more and more in interior region, the European's trading activities increased and concentrated in coastal ports. Their commercial transactions had far reaching impact on the agrarian system in the region.

Sources of Irrigation:

Rainfall was one of the most important factors determining the areas that were to form the agricultural core of the region. Needless to emphasize
that proximity to the hills determines the amount of rainfall received in various parts.

The rainfall during the south-west monsoon being unfailing and abundant, there are no extensive irrigation works in South Kanara. The rainfall alone is sufficient to ensure one crop even on lands where there are no facilities for storing water, while the streams and springs, which continue to flow for some time even after the rain has ceased, enable the farmer to raise two or even three paddy crops on the low-lying lands at the bottom of the valleys. For arecanut plantations, small tanks were usually made at the top of the valley in which the plantation is situated, and for the second and third paddy crops, the cultivators are in the habit of damming up the water in the streams and the smaller rivers. Small anicuts are found in abundance all over the district though perhaps there are more in the Uppinagadi region and fewer in Kasaragod than elsewhere. For the annual construction of these dams, a slight remission called Kattutas was made from the assessment. The amount was merely nominal and in no way represents the value of the labour annually expended on the works. On the coast, where water is found near the surface, large numbers of small private tanks or reservoirs were dug by private owners.

Where water for irrigation cannot be obtained by direct flow, it is raised by a variety of primitive contrivances, according to the depth from which it has to be procured. Sometimes, it is a matter of only a few inches, in which case it is ordinarily thrown up by means of a small wooden scoop held in the land. When the depth is a little more, a somewhat larger scoop is suspended from a small tripod, and by this device called ‘Keidambe’, water can be raised by one man from a depth of about 3 feet. A more efficacious
method, however, is to have two men to scoop the water up with a basket suspended by two ropes, one of which is held by each of the men. When the water is at a greater depth than 3 feet, a 'Yatam' or Picottah is used the lever being pulled down by men or women holding on to ropes and dropping into a pit, by the side of which there is an inclined plane, by means of which they walk up again to repeat their jump as soon as they arrived at the top. The method prevailing on the eastern coast (Picottah) in which a man walks up and down the lever is not in much use here in South Kanara, and as there is very little cultivation from deep wells, the ordinary 'yatam' is a much smaller device than the common Madras Picottah. Larger ones are to be seen occasionally, however, especially in the compounds of the houses of wealthy land lords, where it is used mainly for drawing water for domestic purposes.

On the west coast the Monsoon rainfall is so lavish that double and treble cropping are common in Malabar and the low lands of South Kanara. But the peasants could not totally depend upon rain water for their cultivation. At times it was uncertain and insufficient and its distribution uneven and unfavorable. During the seasons when there was no rain, alternative arrangements had to be made for irrigation. Such arrangements were quite essential in the event of the failure of rains. Hence, successful cultivation round the year could be accomplished only with the help of irrigation supplied through river, streams, storage- tanks and wells. Both private individuals and the government took measures to provide irrigation. Since irrigation had an impact on agricultural production it influenced the assessment of land revenue. In short, the welfare of the people and the revenue of the state depended on availability of irrigation facilities for agriculture. Hence, the government's interest was to provide
irrigation facilities to agriculturists. The construction of great irrigation works was generally undertaken by the government. The government also encouraged private initiative and at times gave concessions and remissions in the matter of taxation on the lands so irrigated.²¹⁶

Early inscription of the Alupa period does not provide details of irrigation works or natural sources of water. However, the Talengere inscription of Jayasimha mentions the irrigational activity just on the eve of the beginning of our period of study. Mochabbarasi, who got the land from the ruler as Kanyadana developed this barren land into a fertile land suitable for cultivation by digging tanks and constructing dams (Torege Sere) across the streams. The modes of irrigation mentioned in this inscription as prevailing in a part of the Alupa kingdom must have existed in other parts of the kingdom also.²¹⁷ There is a reference in the Varanga inscription of Kundana, an Alupa ruler, to the construction of tank near the Varanga Basadi.²¹⁸ Most of these temple tanks may also have served as sources of irrigation. But here the temple tank which is mentioned as source of irrigation is different from Kalyani. In most of the temples of South Kanara a small well is used as Kalyani. Kattatimaru is mentioned in an inscription of Lokanathadevarasa from Hiriyangadi, in Karkala taluk (1334 A.D). It means 'a paddy field situated near Katta or bund'.²¹⁹ The same inscription refers to another paddy field called Kattatila in Kowdoor Village.

We come across similar modes of irrigation in early Vijayanagara inscriptions also. An epigraph from Barakuru belonging to the reign of Bukka I refers to Tumbulakere of Mudukeri. Even today this temple tank serves as a source of irrigation to a large number of paddy fields.²²⁰ The same inscription mentions Hole or river as another source of irrigation.
Apart from Kere\textsuperscript{221} there are references to Bhavi,\textsuperscript{222} Todu,\textsuperscript{223} Gumme,\textsuperscript{224} Salu,\textsuperscript{225} and Hole.\textsuperscript{226} Hole, Salu, Todu, Tore etc., were distinct from other modes of irrigation because they were not artificial. Kere\textsuperscript{227} was the integral part of the property. A Surathkal inscription stresses the importance of Kere. Two inscriptions, one from Barakuru\textsuperscript{228} and the other from Mudabidre\textsuperscript{229} are significant in the study of irrigation works of the period. They are also useful in assessing the role of tank in irrigation system. They mention two types of Kere, Manna Kere and Kalla Kere. Manna kere is one which is dug in the laterite soil, sides of which are not strengthened by stone masonry, while Kalla Kere is one which is built by using granite or laterite stone blocks. Hence the above names reveal the technique of construction of tanks.

The names of tanks also reveal the owner or the person, who constructed them and the institution to which the tank belonged. Sovanna Settiyar Kere,\textsuperscript{230} Mahadevara Kere\textsuperscript{231} and Kallangere\textsuperscript{232} are the best examples. Sovanna Setti appears to be the owner of the tank and Kella was the person who was responsible for its construction. These show the private initiative in providing irrigational facilities to agriculture.

Tank was an integral part of a temple and water from these tanks was used for agriculture.\textsuperscript{233} Most of them had sluices at different levels to supply water to the paddy fields situated at different levels. An inscription from Doddakere Katte, Basrur, dated 1472 A.D. reveals how water used to flow in channels (Todu) from the temple tank called Mahadevara kere.\textsuperscript{234} We come across interesting name of the tanks from an inscription of Jogi Matha at Kadri called Tavarekere. This name comes from the large number of lotus flowers which grow in the tank.\textsuperscript{235} Hemmanna Kere\textsuperscript{236} is referred to in an
inscription in Panchalingesvara temple, Barakuru and the name indicates the 
type of soil of the area in which tank was located.

The location of the tank and the construction of the tank in large
number in a particular area are revealed by the expression Kadasala Kereya
Neeru Holake bandudu. This also mentions the flow of water, from
Kadasalu Kere to the paddy fields. 237 Whenever there was shortage of water
more and more new tanks were built as is revealed by the name Hosakere238.
This also indicates the extension of irrigational facilities to new areas. Thus
a study of the names of the tanks reveals a lot of information about tank
irrigation. Very interesting names have survived to this date. For example,
Kesanakere (tank of keshvayya), Kolake kere (tank which irrigated the
third crop called Koleke) Sedi Kere (tank with sedi or white clay type of
soil), Huntana Kere (tank by the side of Hutta or anthill), Arasikere (tank
constructed by or for a queen), etc. 239

Gumme was another type of irrigation, and it is a small pond, smaller
than Kere or tank. It met the needs of only a few paddy fields. 240 We also
come across Halla in inscriptions and this term was used in South Kanara to
mention or denote natural tank like water reservoir. 241

Bavi was a very popular source of irrigation in the period of our
study.242 It was generally a source of drinking water but its water was also
extensively used for agricultural purposes. K.S. Shivanna thinks that, Wells
were constructed and maintained by private enterprise on the part of the
owners or cultivators of the soil and they were extensively in use. 243 This
was the case in South Kanara too, where holdings were generally small and
needed mainly small sources of water like well or tank were needed.
There are frequent references in inscriptions to Todu. It is a natural rivulet which provided water for irrigation. Todu also served as a channel for supplying water from small reservoirs to the paddy fields. During the rainy season excess water flowed through these Todus. Todus were connected with smaller ones called Kai Todu. These were useful for the farmers for letting out excess water from the paddy fields, during transplantation.

A large number of epigraphs refer to oni or Niru hariyuva oni. It was used as pathway for people and animals. Water also flowed through oni during rainy season. Oni also supplied water for agriculture. Our Sources refer to them as baccalu or Hariva baccalu. Baccalu also supplied water to paddy field and during the rainy season it carried excess water as in the case of Todu. River was a major source of water for agriculture. Epigraph frequently refers to Hole. Agriculturists, except those of the coastal areas made use of river water. In the coastal region due to the inflow of sea water, particularly during summer season, salty river water could not be used for agriculture. Salu were the tributaries to these rivers and epigraphs make a mention of different Salus called Dannira Salu, Uppinagarada Salu etc.

Another source of irrigation was Katu or Katta. Flow of water in small rivers or tributaries of rivers or Todu or streams was blocked by constructing bunds across them. They were small dams. This helped storage of water for the second crop called Suggi. There are many epigraphical evidences of these Kattus. This practice of construction of bund for irrigation was known at least from the beginning of the period of study. An Alupa inscription tells us how the land was made fertile as a result of the construction of a bund across a stream or tore. Our Sources also mention
paddy fields situated near such *Kattus*. Bijur inscription from Kundapura Taluk mentions water that flowed from *Kattu*.254

Whenever an irrigational project involved a heavy investment the government intervened. The sources mention such big projects undertaken in Vijayanagara period. An interesting instance is the construction of a *Jalasaya* or a reservoir during the governorship of Bacanna Odeya of Barakuru in 1406 A.D. 255 The government also undertook the construction of big reservoirs called *Madagas*. They selected a place with elevated or hilly areas on three sides and the fourth side, which was open, was blocked by raising a *Kattu* or dam. In such reservoirs, there used to be a provision for the inflow of water from the slopes and the outflow of water from the reservoirs to the paddy fields through small channels. In the absence of channels in certain places, water was taken through certain paddy fields and such paddy fields were called *Nieru saduvina gadde*.256 These reservoirs could supply large quantities of water soon after the rainy season. There were sluices at different levels and water was let out as per strict regulations to different areas to be fed by that water. One of the best examples for such *Madaga* is at Chantar. It is a testimony to the engineering skill of Vijayanagara times. A copper plate inscription dated 1445 A.D. shows that its construction had taken place before that date. 257 It irrigated several acres of land, thereby contributing to rich agricultural production in this region.

A word has to be said about the regulations made for the utilization of water from the sources and the maintenance of these irrigation works. A record from Hosala village near Barkur lays down regulations for cleaning tank and its maintenance. The inscription clearly states that the silt in the tank had to be removed once in three years. Since it was a public tank
municipal administration had made arrangements for the maintenance of the tank. 258

We also come across a reference to the proper care taken for the equal distribution of water from these sources. An inscription from Dodda-kerekatte, Basrur, reveals that a quarter of the water from the tank was to be used for the garden specified in the record. 259 Probably the rest was set apart for paddy fields. This shows that great importance was given in those days for paddy cultivation. Another record from Barakuru 260 mentions the distribution of water from the tank of Narana Chuyyana Matha to the paddy fields specified in the inscription. This record mentioned the boundaries of the land for which one third of the water from this tank had to be used. Thus the government and the cultivators attached great importance to the supply of water which was the life blood of agriculture. Different types of irrigation works were maintained and strict regulations were made and observed with regard to the distribution of water for agriculture.

It can be seen that the topography of the land dictated the patterns of crops raised in this region. The crops themselves depended on the climate and geography to a large extent. The nomenclature of the fields, as contained in the inscriptions gives us information regarding a variety of aspects of agriculture. The records are also useful for us to know the arrangements for irrigation. A clear idea of these aspects helps us to undertake a study of the agrarian relations and the sound structure formed on their basis in a more meaningful way.

Cultivation was carried on chiefly by means of Kulialugalu or hired labourers, but there were some Muladalugalu or hereditary labourers. Most of the labourers employed on farms belonged to the class known as Dhers or
Holeyas and such of them as were not still considered as farm slaves or Mulada Holeyas came as a rule under the designation of Salada Holeya or a Holeya, who is bound to his master by the debt amount he had taken. Slavery of course as a custom, prevailed everywhere and the Jain and Brahmin farmers were especially dependent on their services. These labourers are paid in paddy or rice and especially in the case of Salada Holeyas their wages were subject to deductions on account of debts contracted by them to meet the expenses of marriage etc. For gathering the harvest and storing it up, hired labourers were not paid wages at fixed rates, but received a certain proportion of the produce. Also for dehusking paddy they received three seers of rice (1 seer of rice approximately one kg) for one mura (42 seers). At the time of transplanting and reaping, females were largely employed and were generally paid at the rate of two seers of rice per day.

Types of Crop and Crop Rotation:

Even now, the staple produce of South Kanara is paddy which is cultivated in all the valleys. Generally three crops are being grown every year on a considerable portion of the low-lying lands. Next comes coconut, of which there are extensive plantations all along the coast line and arecanut which is grown more inlands and especially in the shaded valleys on the slopes of the ghats, or the spurs which run down from them in all directions. Other products cultivated in the district are arecanuts, horse gram, black gram, green gram, ragi, gingelly, pepper, cardamoms, chillis, sugarcane, tobacco, betel leaf, castor seeds, turmeric, cotton, plantains and Ginger. The cultivation of paddy, coconuts, arecanuts, betel-leaf and sugarcane will be described in detail here. The gram crops grown mainly as a second crop on
the Majal paddy fields and in Kumari and hakkal cultivation will also be explained.

Ragi is mainly grown in Kumari and Hakkal. Pepper and cardamoms are quasi-forest produce, a certain amount being of spontaneous growth. This is very trifling unless supplemented by planting and training creepers in the case of pepper and partial charring to let in light and air in the very moist and secluded spots in which alone cardamoms are to be found. The cultivation of pepper and cardamoms in arecanut gardens is carried out only to a limited extent in South Kanara. Chilies, turmeric, gingelly and ginger are mainly hakkal crops. Tobacco is grown only in the southern part of Kasaragod taluk. The crop requires careful monitoring and a liberal use of fish manure for good yield. The leaf is badly cured locally and is used mainly for snuff within the region, but a small quantity is made into cigars, and a little is exported to Bombay. Cotton is grown only in the Kasaragod Kumaris. Besides, agricultural produce most of the ordinary South Indian fruits thrive well in the South Kanara. Pine-apples are particularly abundant and are of very fine quality when carefully cultivated. All over the waste lands in the vicinity of the coast, cashewnut trees are grown. They are valued not only for the nut, but for the spirit which can be distilled from the apple at a trifling outlay. Besides cardamoms and pepper above alluded to, the minor products of the forests of South Kanara are numerous and abundant, the most important being myrabolans, Shige-kai or the fruit of the Acacia concinna, cinnamon flowers, catechu, wild mace, wild nutmeg and nux-vomica. The oil nut most largely grown in the region is, of course, the coconut, but gingelly and castor are grown to some extent and a considerable
quantity of lamp oil is also made from the seed of the Alexandrian laurel which flourishes along the coast.

We have epigraphical references to a large number of crops. The earliest references are of the Alupa period. In an Udyavara inscription we come across, for the first time, different crops grown and which are exported from Udyavara. The major crop of South Kanara was paddy. This has been mentioned as the main crop by both indigenous and foreign sources. Barbosa observes thus:

_Majandur further in advance along the coast towards Malabar is another small river on which stands a good sized town which they call Majandur pertaining to the seignory of Baticals where abundance of very good rice is reaped and from this place comes almost all that is taken on board at Baticala..._

He also says,

_Yet further advancing along the coast beyond Majandur, there are two small rivers on which stand two towns the one called Bacanor and the other Bracalor which pertain to the kingdom of Naryugua in this its province Tolinate. Here is much good rice which grows in the lands there by..._ Thus he has explained the popularity of paddy cultivation and its use, in the district. In his account we also come across details of rice trade in Mangalore.

This observation of Barbosa shows that paddy was the common crop in this district of South Kanara from Byndoor in the north to the southern point of Mangalore. H.S. Ramanna quotes Varthema’s account and says,

_Untacola (Uncola) Onor and Mangalore excellent districts of India in Varthema’s days, produced much rice and roses, flowers and fruits all through the year and had red cows and sheep in great abundance._ Inscriptions all over the district also support this evidence.
Paddy produced here was of different varieties. But we have only limited evidences of the varieties of Paddy that was produced. Kantesvara temple inscription refers to Jeeratige Akki. Chandrama Kavi mentions Sannakki in his Karkala Gomatesvara Charite. It is also said that Girsal was the best variety of paddy produced at Byndoor. Belatige Akki (White rice) is another reference. In Basrur inscription Sudda Akki is referred to. Mugu Akki is another type of rice that was in use in pre-Vijayanagara and Vijayanagara periods in South Kanara. Belatige Akki, Sudda Akki, Mugu Akki are the names given to different types of rice classified on the basis of how they are prepared. Belatige is raw rice which is not pre-boiled during dehusking. Sudda Akki refers to cleaned rice while Mugu Akki is half-boiled, which is also known as Arebevu.

Next to paddy, sugarcane was the prominent crop in South Karara. Chandrama Kavi and Padmanabha Kavi refer to sugarcane cultivation in South Kanara. Inscription also refers to Kabbu. Foreign sources too refer to sugarcane as one of the crops here. Apart from the above items, various other crops were also produced in Alupa and Vijayanagar periods. An inscription from Barakuru refers to the goods which were brought from up the ghats. That these goods were brought from the upghat regions for trade need not mean that all of them were not grown in the region. Some of them were exported from the ports of South Kanara. Mangalore, Barakuru and Basrur were important ports for export of these agricultural goods.

Coconut cultivation was also popular. A large number of inscriptions refer to coconut plantation during the period. The Mudabidre copper plate inscription of Cauta Abbakkadevi refers to coconut cultivation. Coconuts were grown not only for domestic consumption but also for export on a large
Coconut gardens were leased out. In one of the epigraphs there is a mention of *Kantada Meling Tengina Mara*. These coconut plants were grown on the sides of the *Kanta* or the bunds separating one paddy field from the other. This indicates diverse utilization of the available land. But people were not ready to convert paddy fields into coconut gardens. Even literary sources refer to *Tengu* or coconut cultivation. *Adake* or arecanut was another profitable cash crop. The earliest epigraphical reference to arecanut is found in the eighth century inscription of Udayavara. This crop was more popular in the Southern part of the district though we get reference to *Adake* in the northern part of the district also. Mudabidre and Udupi inscriptions refer to *Adike Mara* and *Adikeya Tota* respectively. An inscription from Basrur refers to taking of areca tree in procession to a temple. This, however, indicate its importance. Alternatively the trunk was used as a ceremonial flag-pole. Yet, there was no great demand for arecanut during the period under study. It may have catered to only the *Tamboola* chewing (betel leaf with lime and arecanut) section of the population of the area. Apparently the cultivation of arecanut was not done on such commercial scale as it is now.

Many inscriptions refer to *Hittilu*. Normally the place where vegetables are grown is known as *Hittilu*. But in inscriptions place where flowers were grown also mentioned as *Hittilu*. We get evidence for *Melogarakayi* or vegetables in one of the epigraphs. The name of a particular vegetable, *cavute* (cucumber) is seen in an inscription from Shankaranarayana in Kundapura taluk. It not only names the vegetable but also speaks of *cavute hali*, a small paddy field, where the vegetable was grown.
Flower - gardening received much encouragement from all comers, particularly temples and mathas. We have an inscription which registers a grant of 10 mude of rice for the maintenance of flower garden. Fruits of certain varieties were grown in South Kanara. Chilly cultivation was known in the region Mavu or mango tree and Halasina Mara or jack tree are referred in inscriptions. Kadali Tota or area when plantations are grown finds reference in the records. Cikku (sapota) was another fruit that was produced in South Kanara. Black gram and horse gram were also produced in large quantity here. Besides, Hesaru (green gram) is also mentioned in inscriptions. Chandrama Kavi refers to their processing. In Mudabidre inscription there is a mention of Jola Timaru. Timaru as mentioned earlier meant ‘field’. Jola Timaru must have been the field where Jola was grown. Though it was not a popular crop grown in South Kanara, probably people experimented with its cultivation. Jola (Jowar) brought from outside the region probably attracted them and they may have tried to raise this new crop here. Needless to say, such an experiment failed due to unsuitability of soil and climate.

The agricultural products in South Kanara are broadly classified into food products and commercial products (the latter is known as cash crops). Different varieties of rice, ragi, jowar, vegetables, sugar-cane came under the first category and coconut, arecanut, cashew nut, pepper, cardamom and forest products belong to the second category. In the agrarian history of the region under study, the cultivation of the second category of the agricultural products had become prominent from the sixteenth century. The agrarian products of the region had demand even in the trans - oceanic regions. The
important places of the cultivation of these agricultural products and the nature of their trade are as follows-

**Rice:**

Rice is an important food product and subsequently turned into commercial product in South Kanara. The geographical and the climatic conditions of the region facilitated the cultivation of rice of different varieties. For example, in coastal region, Barbosa observes, “contained many farmsteads, where much rice was grown”. Among the kinds of rice cultivated, as some traders also observe, “were Girasal, Acal, quavages and pachary”. White rice was consumed by the rich classes and red black by the poor class. The black rice was better and more wholesome than white rice. Regarding its cultivation, he remarks Majandur (Byndur) where abundance of very good rice is reaped… and from this place, comes almost all that is taken on board at Baticala (Bhatkala). All round they sow it in valleys and flats covered with water, for it is sown and reaped in water; they plough the land as we do with oxen or buffaloes, yoked in pairs, and the ploughshare has a hallow in it wherein the rice is carried when the land is flooded and as the share ploughs the rice goes on settling down underwater and earth. On dry land they sow by hand. And every year this land bears two crops; the first and the best is *Girasal* and the second is called *acal*. According to Domingo Paes “the south from Bhatkal was very fertile and the regions between Bhatkal and “Zambur” were well cultivated with plenty of rice. The same region continued to be cultivating areas of the same product and the foreign traders used to get large quantity of rice. Similarly, coastal regions around Mangalore were suited for the cultivation of different varieties of rice as known from other contemporary source.
cultivation of different types of rice in Kasaragod, Kumbala, Bantwal, Mulki, Mudabidre, Barkur and Basrur was confirmed by indigenous and foreign sources.\textsuperscript{308}

With regard to different types of cultivable lands in the Mangalore region, Buchanan noticed that there were three kinds such as Bayalu, Majalu and Bettu. He further remarks that the Bayalu land fetched annually three rice crops namely Yenallu, suggi and Kolake. It is said that paddy raised on mackay (makki) was of very inferior quality mostly raised on the lower fields. The rice cultivated on makki was generally used as wages to the labourers and slaves. \textsuperscript{309} The process of cultivation in South Kanara as known from the account of Buchanan \textsuperscript{310} convinces us that transplantation of seedling and reaping the harvest played significant role in the agrarian operations. The entire agrarian operations depended upon the hard labour of the unorganized agrarian labourers who mainly belonged to the lowest caste people. \textsuperscript{311}

**Pepper:**

Although pepper was known in the region under study as early as eighth century A.D., its cultivation gained prominence only towards the end of the fifteenth century.\textsuperscript{312} In the course of years, pepper gained so much importance that a series of inscriptions from the region regarded it as one of the essential commodities (\textit{Gadasina Saraku}). It was grown on both sides of Sahyadri. It is believed that the pepper produced in South Kanara region was an excellent quality and it had great demand in different countries.\textsuperscript{313} The region between Bhatkal and Goa gained prominence as pepper growing areas. The pepper seeds grown in this region was bigger in size than in Cochin, but is lighter and not so hot.\textsuperscript{314}
Towards the end of the sixteenth century the Ghat region spreading from the district of Shimoga to South Kanara (the Honneya Kamballi principalities) produced abundant pepper as evidenced by one of the Portuguese records of 1591.³¹⁵ On account of the abundant availability of good pepper in the principality of Gerusoppe, the queen of that region was known as “pepper queen.”³¹⁶

In the next century, the Kingdom of Keladi produced excellent pepper as known from the accounts of foreign records.³¹⁷

**Other Crops:**

Coconut, arecanut, cashew nut and cardamom became commercial products along with pepper in the seventeenth century onwards. Their cultivation received active encouragement from the rulers because these products had great demand from the foreign traders in the ports of South Kanara. It is said that the Portuguese introduced better type of cultivation of coconut in South Kanara. It is also said that with an intention of improving coconut cultivation in the Kingdom of Keladi, rulers of that Kingdom invited the Goan Christians to Coastal region.³¹⁸ Further, the Nayakas encouraged coconut cultivation whenever the rice crops failed. This has been substantiated by epigraphical evidence. For instance a copper plate dated 1681 A.D. from the village Kodladi states that rice cultivated lands in the places of Padukone, and Gangoli incurred *Nashta* and to overcome the loss, the ruler of Keladi Chennammaji, encouraged the cultivation of coconut on the *grazy* sandy lands and on the sea shore in those places (*Padukone Gramadalli Hosthane Holethavadi Hullu Belada Mudi ondaro sthaladalli Hakisuva Tenga Sasi 75 Gangoliya Belegalli Hakisida Tenga Sasi*).³¹⁹

In the beginning of the seventeenth century, the Christian populations
residing in the regions of Mangalore, Basaruru, Honnavar were associated with the cultivation of coconut. They owned large coconut gardens.

Regarding the methods of cultivation, the observations of Buchanan are worthy of noticing.

The cultivators say, that the seed must be allowed one whole year on the tree to ripen, and must be the produce of a palm above fifty years old, after being plucked, it is kept four months in a place which is sheltered from the sun and rain. Then it is put in a well, and kept a month under water. A small plot of dry ground is then dug and manured with dung and ashes. In this the coconuts are placed at one cubits distance from each other, and buried so as just to be covered above the eyes which are placed uppermost. The plot must be near a tank or rivulet, from which with a wooden scoop, Tay pallay the water is thrown into it every other day when there is no rain. If there be rain, plants must be taken to prevent too much from logging on the plot. These operations may be performed at any season, so that the young plants, after remaining in the plot from 12 to 15 month, may be fit for transplanting between the 22nd July and the 20th of August. In this month square pits of two cubits deep and at 24 cubits distance are dug, and in the bottom of each is placed a coconut with its young shoot, which then is about three feet high. Round it are placed a seer of salt, some ashes, and as much fine mould as will rise four inches above the nut and roots. The young plants must be watered every other day, until the second leaves expand, which will be in about six weeks. In dry weather, they must, at least five years, be watered once in four days. In low grounds near the sea or inlets the trees after this age require no watering; but on high ground, during the dry season, they must be watered as long as they live. In both situations the tree must be manured twice a year with ashes, dung and leaves; and if at a distance from the seawater, they must at the same time get a little salt. When the first sets are from five to ten years old, another set is planted in the spaces between them. They arrive at full perfection in twelve years, and continue in vigor until sixty.
Similarly, other agrarian products namely Sugar-cane of different variety namely *Bily* and *Cari* (White and black sugar cane), Ginger, cashew nuts and forest products were cultivated. These products brought huge income to the State.\(^{322}\)

One of the significant features in the cultivation of commercial crops in South Kanara was the introduction of a few innovations by the Portuguese and converted Christians. These innovations were the introduction of the cultivation of cashew nut, tobacco, pineapple and papaya and the popularization of the cultivation of pepper and cardamom.\(^{323}\) These innovations opened a new avenue in the agrarian set up.

**Agrarian Trade Centers:**

Before the fifteenth century rice, Sugar-cane, Bengal gram, spices, coconut were traded and exchanged above and below the Sahyadri.\(^{324}\) Different trade associations namely the *Settikaras, the Elemagalu, Nakhara, Banakudas, the Nanadesi and the Goravas* played significant role in trade activities of the region under study. From the eleventh century onwards the Muslim traders Association known as *Hanjamanas* steped in. They engaged themselves both in internal and external trade transactions mainly with Arabia, Muscat, and Africa and also with Malabar. The prominent sea trade centres were Mirjan, Honnavar, Bhatkala, Basarur, Barkuru, Mangalore, Manjesvara, Kumbala and Kasargod, Karkala, Mudabidre, Kalasa, Sagar, Chandavar and Banavasi. Usually, trade of agricultural products was mainly internal and largely localised. Sea trade was confined to certain regions and it was done by the Muslims with active cooperation of the low caste Hindus as known from the foreign sources.\(^{325}\)
However, from the beginning of the sixteenth Century, the agrarian trade in South Kanara underwent a few changes. These changes were, the increasing use of money in both internal and external trade transactions, the introduction of export crops in trade and the expansion of trade avenues in the regions of Europe. These have been substantiated by the following evidence. The use of coinage namely *curzat* (gold coin of the Portuguese), *Pagodas* (*Pratapa*), *Xerafims Sao Tomes* etc., were in vogue in the trade transaction in Coastal Karnataka as evidenced by the Portuguese records since 1530 A.D. 326 It is curious to note that the coins of Goa and Kanara were equal in exchange rate. That is why, Antonio Nunez, writing in 1554 A.D. could indicate that the currency of Bhatkala (or other places of Kanara), was similar to that of Goa. However, later on, some variations cropped up as the Portuguese varied the value of their coins now and then. Thus in the treaty of 1633 we find a clause where in 100 *Pagodas* of Ikkeri were considered equal to 192 *Sao Tomes* which were considered gold coins of Goa. In 1630 another coin *Xerafim* which was current in Goa, was exchangeable with the Ikkeri *Pagodas* at the rate of 3.5 to 16. 327 In the course of years, the local merchants in the Coastal areas and the Keladi Nayakas insisted on the Portuguese traders to pay higher denomination of coinages for rice and pepper. 328

Sugar and pepper were in great demand from the Portuguese merchants and these products were exported from the ports of Bhatkala and Honnavar to Goa in 1512 A.D. 329 Coconuts, pepper, spices, and sugar-canes were in great demand from the merchants of Ormuz, Persia and Yeman.

These agrarian products were exported from the ports of Honnavar and Mangalore on ships owned by the Muslims and managed by the local
Hindus namely *Mukkaris* and *Kharvis*.\(^{330}\) The Portuguese contracted pepper from the regions of Bhatkala and Honnavar and paid cash to the local merchants six months earlier. According to another Portuguese record of 1594 A.D the trade of agrarian products namely pepper, sugarcane and coconut were in great demand in the ports of Honnavar, Bhatkala, Basarur and Mangalore.\(^{331}\) It is interesting to note that the commercial agrarian products such as Sugarcane and coconuts were demanded by the merchants from Maldiva Islands and Arabia. As a result of these, the trade activities of South Kanara region widened to the regions of Arabia, Ormuz, East Africa, Maldiva islands\(^{332}\) and Europe.

Further, the seventeenth century onwards, new ports such as Kumbala, Carnate (near Mulki), Gangoli, Tadri and Karwar\(^{333}\) emerged as centres of agrarian trade along with the existing ports. The emergence of these ports was due to the availability of certain agrarian products on abundant scale such as rice, pepper coconuts in large quantities. Manjesvara and Kumbala emerged as sea trade centres on account of the availability of rice, coconut, sugar-cane, and arecanut. These were exported on large ships to Bombay, Goa, Kalikote and even to Arabia.\(^{334}\) Similarly, Karwar and Mirjan gained prominence as sea trade centres because of their hinterland which produced the best pepper, casia, cardamom and forest products etc.\(^{335}\) Karwar had direct pepper trade contact with the European Countries. One of the English records of 1682 A.D. informs us that Karwar was required to supply 200 tones of pepper, 50 bales of cardamom to England. The pepper was to be purchased up to 500 tons.\(^{336}\)

Carnate (Karnad) was another sea trade centre where the Portuguese used to purchase rice, sugar cane, coir and coconut as known from the
account of Santa Catherin who visited this port in 1656 A.D. Towards the end of the century the direction of the flow of the river enabled a site near Carnate known as Mulki to become a port and it resulted in desolation of the Karnad port. In 1705, the Portuguese collected custom duties in the site which later on known as Mulki. According to Hamilton the direction of the flow of the river (Sambhavi) enabled that town to export large quantity of rice of Ormuz and Aden.\textsuperscript{337}

In the middle of the seventeenth century, Gangoli, near Kundapur emerged as agrarian trade centre for rice, pepper, Sugar-cane, Tobacco and coconut. To safeguard their trade and to get sufficient quantity of rice and pepper, the Portuguese constructed a fort there. The rice trade was brisk in that port. After it was reconquered by Keladi Sivappa Nayaka from the Portuguese, in 1653 A.D. the trade in the port passed to the Gowda Sarasvat merchants.\textsuperscript{338}

Thus towards the middle of the eighteenth century, the ports in South Kanara were brisk in the trade of agrarian products like rice and pepper which were exported to Malabar, Musket (Muscat), Arabia and Africa. The agrarian trade brought huge income to the treasury of the Nayakas of Keladi.\textsuperscript{339}

Agrarian trade prospered in the reign of Haider and Tippu Sulthan. Kumbala, Mangalore, Mulki, Basaruru, Gangoli, Bhatkala, Honnavara and Karwar continued to be prominent trade centres of agrarian products namely rice, pepper and coconut. Both Haidar and Tippu Sulthan had intentions to expand agrarian trade of rice and pepper to Muscat, China, Pegu, Arabia and even distant Maldiva Island. For the expansion of trade, Tippu Sulthan set
up a depot at Muscat and it was placed under the charge of Amildar at Mangalore.

But he did not like the increasing trade activities of the English in his Kingdom. With this in view, he prohibited English trade in his ports. This led to the reduction of pepper trade in and around Mangalore, Honnavar and Karwar in the last days of his reign. As a result, agrarian trade was dislocated in these ports. However, after his downfall, these ports revived their trade of agrarian products such as pepper, coconut, cardamom.

**Internal Trade Centres:**

From the seventeenth century onwards internal trade centres of agrarian products below the Sahyadri were Bantawala, Bangadi, Beltangadi and Pane-Mangalore as known in a record of 1642 A.D. Kokkarne, Karkala, Somesvara, Gerasoppe, Chandavara were also prominent trade centres of agrarian products. Similarly, Kodiyeabail, Mudabidre, Malpe, Kalyanapura, Barakuru, Basruru, Hattiyangadi etc., were prominent trade centres of agrarian products such as grains, rice, jaggery, oil, ghee, arecanut, pepper, tassels and coconut. Subsequently, these towns became Sunkathanes.

In the reign of Haidar and Tippu Sulthan, Kadra, Gudom Shakh (Nandidurga) Jamalabad, Barakuru, Hosangadi, Nagar, Shikaripur, emerged as additional internal trade centres of agrarian products.

**Means of Transportation:**

Usually the agrarian products were carried on the back of the bullocks or by carts drawn by bullocks. Ships and large boats were used for the sea trade. It seems that the roads in coastal zone of South Kanara were fit for the
movements of a large number of carts drawn by bullocks. This has been substantiated by the accounts of the foreign travellers. For instance, in 1516 A.D Barbosa observed that the agrarian products such as rice, vegetables, sugarcane produced in the interior region were taken to Coastal towns namely Mirjan, Honnavar, Bhatkala, Baidur, Basaruru, Mangalore and Kumbala by means of Kavades (big stick with load hung from either end and supported on shoulder at the middle) on head loads, pack horses, pack bullock carts and asses. 346 Again, in 1522 A.D Paes also observed that the roads connected Vijayanagar with Goa, Bankapur, Banavasi, Honnavar and Bhatkala were fit for the transport of the agrarian products by means of carts and bullocks. It was from these roads that the agrarian products passed from one region to another. 347

Similarly, in 1623 A.D. the roads connected Ikkeri, Sagar and other interior towns were handsome plain broad almost totally direct here and these beset with green thick trees. 348 According to an English Traveller Fryer, the roads in Coastal Karnataka were broad, not in the bypass as in the nation called the Malabar. 349 The prominent ports in South Kanara were connected with hinterland by plain roads planted with four rows of trees having evergreen branches. 350 These roads were used for transporting the agrarian products from hinterland to the ports. Similarly, the roads running from Bednur, then the capital of the Keladi Kingdom to the seaports in the reign of Keladi Basavappa Nayaka II (1739-1756 A.D.), were very safe and well planted with trees and no stranger was robbed or molested there. 351 It was on such roads, large number of bullock carts laden with agrarian products such as rice, paddy, arecanut, coconut, ragi, Jowar, oil seeds, kachu
etc., used to move from the above and below the Sahyadri regions as evidenced by the indigenous records.  

Boats, large and smallships and rafts were used for water trade. It is interesting to note that the rivers in South Kanara such as the Netravati, the Pancha-Gangavali, Sitanadi, Sowparnika, Kalyanapura hole, Haladi hole facilitated inland traffic. These rivers were sufficiently wide, deep and navigable upto a few miles from the sea. 

The Portuguese sources refer to different types of local vessels. Although it is difficult to determine their size, capacity, it seems that they were boats with oars and sails. The local traders had their own vessels manned by the local people namely Mongeras, Karvis, Mukkavars etc. This is proved by foreign sources. For instance, the Portuguese records from 1560 A. D. to 1580 A.D. often refer to food convoys from Kanara to Goa. Further, a few Portuguese records inform us that the native ships carried rice, pepper and coconut to Malabar, Arabia and the red sea region. In the beginning of the seventeenth century, Francois Pyrard noticed the vessels, owned by the Kanares in the Maldiva Islands. 

Similarly, a few Kannada letters belonging to the second half of the eighteenth century, kept in the Cochin Archives, state that huge ships and rafts owned by the native (the people of south Kanara) used to carry rice and coconut to the ports in Malabar and South Kanara. 

It is curious to note that the ships and boats which used to carry the agrarian products were manned by the Muslims and the low caste Hindus, through their owners; and financiers were mostly the local high caste Hindus. The skill of the natives in manning the ships won the admiration of
the Portuguese. The latter used the Kanarese sailors and they dominated their crew. 357

Both Haidar and Tippu sulthan took interest in improving the communication system with an intention of increasing the agrarian trade in rice, pepper and coconut produced in the Kingdom. For instance, the state constructed boats for the sea trade. The state ships carried rice, pepper, sugarcane and coir to Muscat, Aden, Arabia and Red Sea region and even distant China. The state maintained roads and provided facilities to the traders. 358

It is also interesting to note that the rulers tried to exercise their control over the means of transportation both on land and water. For instance, the government control over the ferry and boat men in amply borne out by epigraphs and foreign sources. One of the epigraphs, dated 1671 A.D., informs us that Harigol Muddalinga and other boatmen of the Tunga river (Shimoga) appealed to Keladi Somasekhara for the grant of Umbali so that they might remain under the control of the Shimoga fort, and keeping Harigols ferry across passengers going and from taking money from them and would, when necessity arose, provide adequate number of Harigols for the service of the palace. In response to this request the king granted to them land assessed at 24 Varahas from the Kanahalli village in the Gajanur Sime. 359 Further the study of foreign sources 360 namely travelogues and records convince us that the rulers (the Nayakas of Keladi) still exercised their control over the passage of boats, rafts and ships laden with merchandise on the rivers in South Kanara.
Traders:

The traders in South Kanara, as in other parts of India, lived in keenly competitive world, but they accepted important limitation imposed by social connection. Business was organized around the family with an occasional trading partner from the same family group.

Before the Sixteenth Century, the Settis, the Banaligas and the Muslims were trading communities in South Kanara. For instance, on the eve of the Portuguese advent, the Settis controlled the rice trade in the port of “Basrur”. They were rich and had prosperous trade of agrarian products. The Muslims were rich traders of agrarian products such as black rice, pepper, coconut, sugarcane in the ports of Kasaragod, Mangalore, Honnavar, Mirjan and Goa. They owned and managed most of the ships and took share in the inland trade. The traders of other communities could hire space on these ships for Cargo and could travel with their goods. The Muslim traders controlled practically all the ships on Malabar coast. They employed other Hindu groups of low caste as sailors or oarsmen. Thus, instances of Hindus, Muslims together in close business relations were in vogue, although the main tendency was to keep business confined to within one’s community.

The Chinese and the Arabs were chief foreign traders in the ports of South Kanara. The former visited the ports of Mangalore and Honnavar for the trade of agricultural commodities.

However, the trade activities underwent a new turn in the beginning of the sixteenth century with the advent of the Portuguese. They tried to adopt a new method of trade with an intention of monopolizing the trade of rice, pepper and other products in the ports. This action of the Portuguese caused vexation to the indigenous traders. For instance, their (Portuguese) attempt
of monopolizing agrarian trade of rice and pepper in Bhatkala, Honnavar and Gerusoppe in 1502 A.D. and 1576 A.D. caused vexation to the native traders. In the year 1525 A.D the Portuguese destroyed the ships owned by the Malabaris who were trading in Mangalore. Similarly, the *Chatis (Settis)* of Basrur lost most of their sea trade, on account of the Portuguese by creating disturbances when the Portuguese ships came to Basaruru. The *settis* of that port took pleasure in supplying rice to the Malabari traders rather than to the Portuguese.\(^364\) At the same time, the Portuguese prevented the Arab traders from trading in the port.

However, from the beginning of the seventeenth century, the Portuguese trade faced opposition from the other Europeans. The Dutch and the English became serious rivals to the Portuguese in the trade of pepper and rice in the ports of Bhatkal, Basaruru and Mangalore. They faced stiff opposition from the natives in the port of Kasaragod.\(^365\) At the same time, the Portuguese could not prevent the Arabs from trading in Coastal towns.\(^366\)

Throughout the seventeenth and early decades of the eighteenth centuries, the Europeans tried to monopolize trade of agrarian products. They carried on trade by means of the *Fortress-Factory system*.\(^367\) According to this system, the Europeans established factories and constructed forts, which subsequently, became centers of their trade.

However, in the second decade of the eighteenth century both the internal and external trade of agricultural products passed on to the natives namely Gowda-Sarasvats, the Muslims (the mapillas) and Arabs. The following records substantiate this. One of the Portuguese records, dated 5\(^{th}\) April, 1748 A.D, informs us that Narayana Prabhu was a merchant at Ankola. He used to supply rice to the Portuguese in Goa.\(^368\) Similarly,
unpublished English records of 1742 A.D. refer to one "Hur Committee" in the region between Honnavara and Mangalore. He who contracted rice, pepper and other commodities demanded the interest if the payment was delayed and saw to it that the quantity of contracted pepper was duly delivered to persons concerned, some times through his agents. He had his trade centers at Honnavara, Basrur, Mulki and Mangalore. However, the actual sea trade operations were still carried on by the communities namely Kharvis, Mogeras, Mukharis and Marakalas. At the same time, the same local traders accepted the Portuguese system of participating in convoys of rice, several of which came from north to Goa.

During the period of Haider and Tippu sulthan (1763-1799 A.D) many merchant communities from different parts of India (Malabar, Gujarat, Kutch, and the interior regions of Karnataka) were invited to carry on trade of agrarian products like rice, sugar-cane, coconut, pepper in the ports of Karwar, Honnavar and Mangalore. Tippu sulthan invited the Chinese merchants to have trade in the ports and promised to provide records to them. It seems that they declined the offer. Thus on the eve of 1800 A.D. the agrarian trade was in the hands of local traders who belonged to the Gowda Sarasvats and the Muslims. At the same time, the Bunts too were beginning to pursue commerce.

It is interesting to note that the agrarian trade in south Kanara, to certain extent, determined and moulded the political events of the seventeenth and eighteenth centuries. Throughout these periods, the rulers of the region namely the Nayakas of Keladi, Haidar Ali and Tippu sulthan Sultan controlled the activities of the armed foreign traders by blockading their trade of rice and pepper in the ports. It is a known fact that these armed
foreign traders namely the Portuguese, the Dutch and the English depended heavily upon the rice and pepper supplies from South Kanara. Realizing this situation, the Nayakas of Keladi very often imposed a condition that the Portuguese should purchase from them every year a definite quantity of pepper at fixed price. For instance, by treaty of 1633 A.D, the Portuguese were obliged to purchase 350 Khandis of pepper every year from Keladi Virabhadra at the rate of 22 pagodas as Khandi. Subsequently, the Keladi Nayakas demanded more than the agreed rate and disputes arose. During the reign of Sivappa Nayaka (1645 A.D-1660 A.D) the reluctance or inability of the Portuguese to purchase substantial quantity of pepper from his kingdom became one of the primary causes of war between them, which led to the loss of the Portuguese fortress. From the middle of the seventeenth century the Portuguese pepper trade in South Kanara was determined by the Nayakas of Keladi who dictated the price of pepper. Similarly, the Nayakas refused to supply rice to the Portuguese whenever there was hostility between them and the Nayakas of Keladi or when the latter became strong. For instance, Keladi Sivappa, Chennammaji and Somasekhara refused to supply rice to the Portuguese when the latter showed high handedness in trade. Similarly, both Haidar and Tippu Sulthan prohibited the sale of rice and pepper in their ports on their accessions and there arose confrontation between them and the English.

The above study reveals that agriculture was heavily depended on rains for irrigation needs. The major criterion for selecting the crops for sowing was availability of rain water. Apart from rain water, a number of devices were used for artificial irrigation. Further, the region with extensive land area, different types of soils and varying climatic conditions influenced
the people to produce a large variety of agricultural products. During this period, political stability and enhanced production gave a fillip to trading activities. At the local and regional level the commercial or trading transaction were confined to food grains, salt, equipments of daily use and some other commodities. We notice that in such trading the flow of commodities was mainly from the village to towns. Different centers of the region had developed trade links, commodities from one region to another were carried through a network of land and river routes. The coastal region carried on this trade via sea route. The volume of trade increased manifold. Another important feature was the entry of few prominent European countries in the trading arena of South Kanara. The Portuguese had settled in the region by early sixteenth century. In the seventeenth century the French, Dutch and English also participated in large scale trading activities. Finally market controlled production and the overseas market exerted deep influence on the agricultural production. Trade, both inland and overseas was not static in purely quantitative terms either. On the other hand, prices and the volumes of trade were marked by upward trend. Those involved in trade became vigorous and even kept changing. The trade of agrarian production brought South Kanara within the frame-work of the world market. It is curious to note that even the conservative local traders adopted some of the features of the Europeans trade patterns.
Notes and references:

7. *Ibid*.
14. *MAR*, 1934, No.14; *SII, VII*, No.374; *KI, III*, No.11; *SII, IX, PT. II*, No’s. 632, 675.
15. *KI, III, PT.I*, No.11; *SII, IX*, Pr.1, No.620, 675, 694; *SII, VI*, No.210, 323.
25. *Ibid*.
29. Ibid, No.361.
30. Mudabidre copper plate inscription in possession of the Swamiji of Jaina Matha, Mudabidre, No.28.
33. SII, VII, No. 323.
34. Ibid, IX, Pt.II, Nos. 675, 694.
35. Ibid, No. 324.
37. ARSIE, 1936-37, No.283; SII, VII, Nos. 332, 348, 349, 387.
40. Humcha Copper plate Inscription, Unpublished.
41. SII, VII, No. 385.
42. Ibid, No. 299.
45. SII, IX, Pt.II, No. 417.
46. ARSIE, 1979-80, No. 173.
47. Ibid.
50. Ibid.
51. SII, VII, No. 177.
52. Ibid, No.189.
53. Ibid.
55. SII, VII, No. 389.
57. ARSIE, 1961-62, No. 630.
58. SII, IX, No. 525.
60. *SII*, IX, No.452.


63. *SII*, IX, No. 525.
64. *SII*, VII, No. 357.

73. *SII*, IX, Pt.II, No. 444.
74. *SII*, VII, No. 323.
76. *SII*, IX, No. 540.
82. *SII*, VII, No. 351.
84. *Ibid*.
85. *Ibid*.

87. *Mudabidre copper plate inscription in the possession of the Swamiji of Jaina Matha Mudabidre*.
100. *SII*, IX, Pt.II, No 471.
111. *SII*, VII, No. 190
113. Mudukeri Copper plate inscription, B. Vasantha Shetty, Barakuru (A Metropolitan City of Antiquity). Its History and Culture.
118. *SII*, IX, Pt. II, No.620. Hebbara is one of the popular surnames among the Brahmans in South Kanara. Wife or daughter of a Hebbara is called Hebbarati, though it was not used by them in records.
119. SII, IX, Pt. II, No. 694.
120. SII, VII, No's 210, 270, 299, 264, 261, 189.
   SII, IX, Pt. II, No. 457, 540.
121. i) Elinje copper plate inscription in Mulikeya Itihasa, p. 71.
   ii) Mudabidre copper plate inscription No. 7. In the possession of the Swamiji of Jaina Matha, Mudabidre.
122. SII, VII, No's 323, 389.
   SII, IX, Pt. II, No. 525.
123. SII, VII, No. 299.
124. Ibid., No. 262.
125. Ibid., No. 319.
126. Ibid., No. 326.
127. Ibid., No. 389.
128. Ibid., No. 225.
129. SII, IX, Pt. II, No. 675.
130. Ibid., No. 674.
132. Ibid.
133. Mudabidre copper plate inscription in the possession of the Swamiji of Jaina Matha, Mudabidre Date 1563 A.D.
134. Ibid.
135. Ibid.
136. SII, IX, Pt. II, No's. 542, 620.
138. Ibid., No. 465.
140. SII, VII, No. 190.
141. SII, IX, Pt. II, No. 512.
142. Ibid., No. 620.
143. Ibid., No. 620.
144. SII, VII, No. 351.
151. Copper plate inscription dated 1563 A.D in the possession of the Swamiji of Jaina Matha, Mudabidre.
166. *SII*, VII, No. 299.
We get similar examples of extension of agriculture in the later period. Kodladi (Kundapur Taluk) copper plate inscription records that in Bele or sea shore coconut plantation was undertaken by the government itself during the keladi period. *A Keladi copper plate from Kodladi* (Kundapur Taluk) B. Vasantha Shetty, *QJMS*, Vol. LXXVIII, Issue No.3-4.


188. *Ibid*, No.525.


200. Aigal, Manjeswara, AP.No.1.
202. EC. VII, ti.no.92.
   *SII*, VII, No’s 342, 357, 194, 385.
226. *Ibid*. 
228. *SII*, VII, No.375.
229. Mudabidre copper plate inscription in the possession of the Swamiji of Jaina Matha, Mudabidre. No.26, 1511 A.D.
236. *Ibid*, No. 385. *It is a loose soil and after ploughing, the soil gets further loosened. The land with this type of soil is also known as Kampa.*
239. *These names which exist now are not new ones, but the continuation of the same that existed in historical times.*
257. B. Vasantha Shetty, *Brahmavarda Itihasa*, pp.36-47.

258. ARSIE, 1931-32, No. 282, *Compare a similar provision in the famous Uttaramerur inscriptions of Parantaka I Cola.*


260. B. Vasantha Shetty, *Brahmavarda Itihasa*, p.45,

Similar regulations exist even now for the distribution of water from Chantar Madaga.


266. P. Gururaja Bhat, *the Economic and Social conditions of South Kanara in the 19th century. Souvenir, South Kanara Club*, Delhi, 1971

267. *SII*, VII, No. 233


270. ARSIE, 1961-62, No. 630.


274. Padmanabha Kavis statement quoted in *Mulikeya Itihasa* by K.G. Vasantha Madhava, p. 43.


289. *Ibid.,* No. 211.
301. *Mudabidre copper plate inscription No. 7, In the possession of the Swamiji of Jaina Matha, Mudabidre.*


326. Danvers *Op.cit* p. 411; Shastry B.S. *Studies*, pp. 204, 205 Pagoda or Pratap was equal to 4 to Rs. 5 .Of these days.


332. Gray (ed.), *The Voyage of Francois Pyrard*, I p. 236


338. Heras, PIHRC XI p. 113; Shastry B.S. *KAHP* pp. 51, 63, 98, 119, 112; *ARSIE*, 1939 Ap A No.1.


344 *E.C. V III Sa 123, TI Nos. 49, 42, 68, p 123, 171, 177.


349 CWE, p 224.


354 Pearson M.N., *Coastal Western India*, p. 77, 123, 125; Shastry B.S. *KAHP* pp. 153, 166, 173.


359. E.C. VII Sh No. 3.


369. SILB unpublished 1741/4, 3AP, 325; *Ibid* 1741/42. 198-79.


375 Boxer C.R. *Portuguese India in Mid – Seventeenth century*, p. 45.

376 Shastry B.S. *KAHP*, pp 66, 67, 145.