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AGRICULTURE IN KARNATAKA: A HISTORICAL VIEW AFTER THE FALL OF SERIRANGAPATANA

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Abstract

Not many authors have analysed the economic history of Karnataka and rarely do we find any systematic account of agriculture in the available historical material. Dr. Francis Buchanan's travelogue provides an excellent material for this. Dr. Buchanan travelled through the Mysore State after the fall of Tippu Sultan with a mandate from the British Governor to understand the people, culture and agriculture of the region under Sultan's regime Buchanan being a botanist and a medical practitioner had a penchant for details and the three volumes he drafted during the year of his travel bring out these details quite succinctly. These are about agriculture, people and culture of the erstwhile Mysore State. The focus of this paper is to understand agricultural organisation that prevailed during that period through a lens of present day's agriculture. The paper opens with an objective to unravel the historical details as provided by Dr Francis Buchanan and reaches to compare the situation with today's structure. It brings out quite a few interesting issues like land tenure, organic farming, crop diversity and learning from the history of agriculture.

Introduction

Economic history is currently one of the infrequently visited branches of economics in the melee of recent quantophernia overriding research in economics. It is no less important as it enriches the understanding and emergence of economic relations. The pages of history reveal the genesis and development of the society through different situations and the inter-relations prevailing then. This understanding, on one hand provides perceptions about the economic interface during those days and on the

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other it can help to manage some current real life situations through the process of mapping. It tells us the circumstances in the past but probably with a strong limitation of being guided by the conditions prevailing then. In addition to these, this indulgence also acquaints us with the probable wrongs being committed in the current situation. All these factors make it necessary to understand and analyse historical events. Understanding and researching in economic history does not go in the typical pattern of empirical economic research like objectives, working hypothesis and likes of an empirical methodology[2]. The methodological platform is epistemological, acquiring and churning the available information. One cannot either go out of the facts stated or artificially create some data on that. It requires only a truthful documentation and inferences are indicative as the facts are dictated by the circumstances prevailing then. Here we are attempting to learn from the historical pages about Karnataka's agriculture.

Brief History of the Region

Not many authoritative English language works are available on economic history of Karnataka, with a few exceptions. (Kamath, 1980, Salethore et al, 1983). But the historical documents in *Kannada* are plenty and have made great strides. Karnataka's history developed mostly through the beginning of the 17th and 18th century. It is authentically claimed that *Paninis* work first referred to Karnataka, wherein he has entitled '*karnadhaka*' as the *gotra* of people. The state as a territory is referred in the works of the foreign travelers from Greece, China and Persia in which one finds generous accounts of the rulers and the life of the people of Karnataka. The Vijayanagara dynasty then ruled present region covering Karnataka for a long time. This came into existence at a very appropriate time in South India to protect the ancient culture and tradition against the attack of new religions (Islam). It was ruled in four phases first by

[2] This work is not in the conventional frame of empirical research (objectives, hypothesis, empirical support and testing the hypothesis as desired by a reforce), and hence it should be read from the stand point of historical reforce methods and documentation. One cannot tamper with the given evidence and constrained to introduce any post-facto modifications.

Sangama Family (1336-1485), followed by Saluva Family (1485-1505). After them the Tuluva Family (1505-1570) ruled and in the period 1570-1646 the Arawidu Family ruled the Vijayanagara Empire (Stein, 1990). The state had trading connection with other South Indian states and with Western countries and China. Pepper, sandalwood, spices etc., were exported from the harbour of West Coast. For the last few centuries Karnataka has interacted with various cultures and absorbed them too and developed a culture of its own.

The Marathas, beginning with Shivaji's father had (Shahaji Bhonsale) their establishment in Karnataka. After conquering it from the erstwhile rulers the Bijapur Adilshahi had appointed Shivaji's father Shahaji Bhonsale as *Jahgirdar* of Bangalore *suba* in 1638. It is in the vicinity of Chickballapur that Shivaji had spent some of his early childhood years. During that regime a few strong forts were built and some towns were developed. Subsequently, Bijapur kingdom was conquered by the Mughuls in 1686 who after coming up to Bangalore in the South, reached Arcot. During the time of Mughals, Bangalore grew as a noted centre of weaving, and as also Doddaballapur (a town created by Hoysala Ballala II and known originally as 'Ballalapura') and Sarjapura which are also closer to Bangalore city. Thereafter, the rule passed on to the Mysore rulers (Salethore, 1983).

The Mysore rulers tried to win over Trichinapally (Tiruchirapalli) in Tamil Nadu, to acquire control of Cauvery waters for irrigation. This was averted in the Carnatic Wars. As a result the Mysore kingdom became weaker and at that time (after 1761) Haider Ali (a hard core warrior) emerged to become powerful in maneuvering Mysore kingdom. Haider Ali conquered Keladi (1763) by skillfully using cavalry for quick movements of the army and demonstrated skills to meet the European techniques of warfare and overpowered the British. He established his capital at Serirangapatna with its 1.50 lakh people that became a strong link to Bangalore's economic activities. Hyder Ali established an unequivocal control on considerable Kannada speaking territories. After his death, his son, Tipu Sultan took charge as Sultan (Muslim Sovereign) of

Serirangapatna. Tipu was highly innovative, industrious and a Sultan with an eye on the economic development and well being of people. Under his rule agriculture and industry progressed well. Among industries he founded, were factories to forge guns at *Taramandalpeth* in Bangalore and at *Kanakanahalli* (Kanakapura) and produced rockets, as well as weapons of warfare. In agriculture he introduced sericulture by bringing experts from Bengal and, developed sugar industry with the help of Chinese experts. It is during this period that the agricultural sector received prominence and food as well as non-food sectors grew at a faster rate. Channapatna, Kollegal and modern Ramanagaram grew as centres of sericulture. Following the third Battle of Serirangapatna, East India Company conquered it in 1799 after defeating Tipu, and retained Malabar, Canara and areas in Tamil Nadu. As agreed with the Mysore rulers Britishers handed over Mysore to the family of Krishnaraja Wodeyar III (1799), a boy of five with Tipu's *Dewan Purnaiah* as his Minister (Kamath, 1980).

After the fall of Serirangapatana and defeat of Tipu Sultan, on 24th February 1800, the Governor General of British India commissioned Dr. Francis Buchanan to survey and report the conditions of the territory acquired from Tipu Sultan. As stated earlier and as also well known Tipu Sultan had introduced many new initiatives in his kingdom and it would be of interest and necessary to study and understand them. The mandate essentially included reporting on agriculture in the country acquired by the British that covers esculent vegetables that are in common use. In this report Dr. Franscis Buchanan was expected to report on the modes of cultivation machinery, manures, methods of tillage, food and vegetables used by the population. He was also to provide an account of the commercial crops like cotton, pepper, sandal wood, cardamom and the nature and extent of the trade. The natures of tenancy, land use, irrigation were also the integral parts of his reporting. But probably the important point of the Governor General's mandate was to look for commodities that could be traded outside India. It was stated that *"The next immediate object of your attention should be, those natural productions of the country, which are made use of in arts, manufactures, or medicine, and*

particularly those which are objects of external commerce (emphasis ours)." (Buchanan, (1870) p.vii). Francis Buchanan made an elaborate report, starting his journey on 23rd April 1800 and going through today's South Karnataka towards Madras, from Kaveri Pura to reach Coimbtore on October 11th 1800. He entered Mysore territory from Catcolli and reached Serirangapatanam. He visited the surroundings of Bangalore to reach Dodda Ballapur and Sira to get back to Serirangapatanam. From thereon he travelled towards South Canara and to Kaveripura and entered back into Madras presidency. His vivid descriptions reveal volumes about the region but imbued with the fact that some of the descriptions were season specific.

Before getting into the details of the report provided by Dr. Buchanan, and picking from his account about agriculture in Mysore state, it is necessary to understand a few important components. First, Buchanan was to report on the country, which British acquired from Tipu Sultan after the fierce battle, as a result the Ryots were under a constant fear. Therefore, it is quite likely that what was probably discussed or talked might have been reported under pressure. But that does not deride the in-depth understanding of Dr Buchanan. The devastation of the Battle of Srirangapattanam clearly gets reflected in his writings, *"Owing to the devastation of war the people near Priya Pattana are at present so poor that they are cutting off the unripe ears of corn and parching them to satisfy the cravings of appetite" (Buchanan, (1870) p 367)*. Second, Francis Buchanan was a representative of British Raj, and he was surveying the countryside mainly as a revenue generation source. Therefore, his understanding of the production relations was driven by the objective of revenue generation. Third, he was a medical practitioner as well as a botanist therefore, it was quite expected that his report will be permeated by his academic bend. This is visible when he writes *"I transmitted a considerable number of seeds to Dr Roxburgh, and made a collection of descriptions and drawings of the more unknown plants. These are published in 'Exotic Botany' by Dr James Edwards Smith" (Buchanan, (1870) page 11).* But we hardly come across Buchanan as the medical

practitioner reflected through his observations. He rarely makes some observations about the medicinal properties of a few plants but does not deal with that elaborately.

While reading history of agrarian economy we need to take note of a few important landmarks. First it is essential to understand land and land relations in the Sultan's territory. That is naturally followed by the land use and crop production process. The labour and productions relations get reflected as and when these appeared in the descriptions of Dr. Buchanan. We have not followed the chronological approach here but a structural description in of the agrarian economy. Dr Buchanan entered Mysore province during summer season when, fields were parched and barren while some irrigated fields had a few crops. That was also the beginning of the crop season and hence tillage operations had begun in most of the regions. Therefore, the observations recorded have to be understood with a caveat of the seasonal perspective.

Land Relations

During British regime land revenue was the major source of income for the state. Therefore, land details were important components of enquiry by Buchanan. He observed wetlands, dry fields and garden lands in the region. Largely it was a feudal countryside with the State appointed officials governing the land revenue and through that exercising control over the ryots. The land distribution was also mentioned by Buchanan. He mentions that a person owning 'one plough land' (2.5 acres) was considered as poor, whereas, for a family he records 'five plough land' as the basic requirement. He mentions that a farmer who had two ploughs of land also owned 40 oxen and 50 cows in addition to four buffaloes, three male buffaloes and 100 sheep and goats. Whereas, a rich peasant would have 200 cows and other cattle in proportion (Buchanan, (1870) p 367). A clear indication of inequality in access to land was revealed and that was further strengthened by the ownership of cattle. Land revenue collection was operated in the same system as in the north India, established during Akbars' kingdom. The state appointed an *Amildar* who was responsible

to collect the revenue from the village headman *Gauda.* Farmers were required to pay the land revenue to *Gauda*. But in addition to this, the village headman received payment from the Sultan. Buchanan writes, "*The Gaudas are not here hereditary, but are appointed by the Amildar, with the consent of the farmers; for the Amildar never attempts to put in any person contrary to the wishes of the people. These Gaudas received a fixed pay of 20 Fanams, or 13s. 5 ¼ d. a month, and perform the sacrifices, which in other places are usually offered by the hereditary chiefs of villages*". (Buchanan, (1870) P.85).

Tenancy Relations

Land was considered to be rented out by the State and the land revenue collected by the agents of the State represented as rent. Besides this, renting out land was quite prominent during Tipu Sultans' period. The *Gauda* or chief of the village preferred to get the rent (revenue) equal to one third part of the crop. Both cash as well as fixed tenancy were prevalent and land was rented in from the *Gauda* (cultivating castes), Brahmins or *Amildars*. The village *Gauda* also acted as a State intermediary to manage the land revenue and hence vested with the revenue collection powers. The rent paid to the landowners was always greater than the land revenue to be paid to the *Amildar,* in the process the landowner became richer by appropriating the additional rent received. In every village, a piece of ground was allotted to the village *Gauda*, and he was not expected to pay land revenue for this land to the *Amildar*. Interestingly, if the crop is deficient the renter was not expected to pay any rent to the landlord, and that was one of the reasons through which cultivators sustained in agriculture as profession. The property rights of the farmers were fixed until the farmer continued to pay land revenue to the state fixed in the matter of valuation made by *Jagdeva Raya.*

Interestingly, in Tipu Sultan's kingdom there is a mention of a new method of valuation devised; however this seems to have been never implemented. Usually the paddy tenants paid the share of the crop as rent, whereas in the dry lands it was fixed money rent. Thus the

responsibility of facing the risk was on the cultivator in the dry lands but landlord shared the risk with paddy growers. The area that has not been occupied by anybody earlier attracted no land revenue during the first year of cultivation (by a new cultivator) but the revenue started accruing during subsequent years in such a way that by the fourth year the cultivator paid full rent. Buchanan writes elaborately about the change in the accounting of land revenue from the old system (*Vir Raya Fanams*) to the new system (*Canter'-Raya Fanams*). The description suggests high land revenue in Sultan's regime but by the end of the description quite contradictorily Buchanan adds "*My informant does not think that the land tax under that judicious prince was by any means exorbitant*" (Buchanan, (1870) p 438).

An interesting property relation was observed by Buchanan, where it is not customary to change any man's possession of land, so long as the person pays a fixed rent to the government. However, if a person is not able to pay such rent and finds himself in utter poverty may seek permission from the state, represented by the *Amildar*, who in turn would give such permission or loan to purchase stock and seeds. The method of collection of rent was not exploitative as was prevalent then in Bengal, where the landlord prevented even cutting of the crop until the rent was not paid. In Sultan's kingdom the crop was allowed to be harvested and the grains collected in stacks or heaps. Several stamped pieces of clay were put on the surface. The grain used to be in that position till the cultivator satisfied the renter (Buchanan, (1870) p2). This indicated a mutual trust between the renter and the cultivator. At the time of sowing the *Amildar or Gauda* used to offer Tacavi loans to the farmer so as to meet the current expenses. Buchanan writes "*During Tippu's reign, Tacavi loans were advanced to the farmers and they were expected to repay immediately after harvesting the crop. Some farmers received such advances and not all" and further he writes "They are, however, a favourite maxim of Indian policy; partly as having a popular appearance of liberality, and partly as opening a great field for corrupt partialities*" (P. Buchanan, (1870) P.421). These loans continued further

during British Raj. The system's metamorphosis could be seen in crop loan system in independent India and the concept of the favourite maxim also applies today in totality.

Soils and Productivity

The soils were categorised into four broad components, namely, dark black soils (*Eray, Crishna, Mucutu*), red soils (*Cabbay, Kempu Bhumi)*, light brown soils (*Marulu*) and sand and angular nodules *(Darays)*. Use of farmyard manure was quite common, and every farmer maintained a dunghill. This was a large pit dug near the farm in which animal dung as well as other farm waste was dumped and this provided farm yard manure to the crops. Buchanan puts the cultivated land at about 30 per cent of the total land mass but also observes large pressures on land and 40th part of the cultivated land being under irrigation (Buchanan, (1870) p. 22). He noted garden lands being irrigated through well irrigation for cultivating usually *betel leaves*. He records a few patches of saline land locally called *soulu munnu*. These were described in two types one impregnated with carbonate of soda and the others with the muriate of soda and magnesia (Buchanan, (1870) p.98). The land was treated with green manure, taking branches of *Euphorbium Tirucalli.* A large number of green manures are used in paddy cultivation, and Buchanan mentions quite a few such manuring plants. He recorded *cogay soppu, hongay soppu, tumbay soppu, ugany soppu, atty soppu, umutty soppu and yeccada soppu.* It comes out clearly that land was largely maintained with organic manures and therefore the productivity was also better in Mysore province compared with the other region he traveled through. That also clearly indicates a strong animal husbandry sector along with agriculture and a farming system approach towards agriculture. He observed largely huge patches of barren land, but probably it was because of the season, and not necessarily to indicate lack of cultivation.

Land Use Pattern

The land use pattern during the British regime was dominated by large spans of uncultivated barren and pasture lands. The paddy fields are

separated not only by the bunds, as practiced today, but also about eight to 10 ft. land was left uncultivated in between two fields where trees were planted. This was observed as a common practice in the Serirangapatanam and other regions. The trees planted in the wet hinterland in between the two fields were *Mimosas and Elate sylvestris.* Irrigation was not very common and largely depended on the local tanks. Paddy was the main crop in the irrigated region, whereas, the dry land was utilised for many other crops. Buchanan makes specific mention about the forest and shrub forest, on his way to Serirangapatanam. Tenancy was very much prevalent, which reflects the land relations observed during his travel.

Irrigation

The cultivation of crops was mainly rainfed and irrigation was available in sporadic patches. Largely, the fields were irrigated with canals generated from a reservoir. Buchanan also mentions well irrigation as another important source of irrigation. He writes "*The watered lands receive a good supply from reservoirs, constructed like those below the Ghats. The rice on the fields looks well, but cannot occupy more than a twentieth part of the arable lands. At present the dry fields look very ill, being quite perched up; for the want of water seems to be the predominant feature of the eastern part of the Upper Carnatic".* (Buchanan, (1870) P. 20). He also noted the irrigated lands on Mysore side and around Kolar (colar), he came across dry parched fields and very little vegetation. He passed through Kolar region on 8th July 1800, and by then cultivation had begun in the other parts of Mysore State. He found the country side as 'poorly watered' and often suffering from want of rain. Further he states that famines were quite common in this region. (Buchanan, (1870) p193). Very interestingly, like elsewhere in the country, the drought prone areas have their own mechanism of adjusting to the natural calamities. Here too Buchanans' finding is quite interesting which says that weaving is the main profession (agro-processing) and the farmers have constructed small tanks and water bodies to collect the rainwater. There is an evidence

of individuals constructing tanks and he writes, "*In the country around Colar, the irrigated land is watered entirely by means of reservoirs. When any rich man builds one of these, in order to acquire a name and reputation, it is customary to give him and his heirs, free of rent, one-tenth part of the land, which the reservoir waters, and also for every Candaca of watered land thus formed, he obtains, free of rent, six seers sowing of Ragy-land, which amounts to about 146 acres of dry field for every 1000 acres of that which is irrigated*". (Buchanan,(1870) P. 194).

Largely irrigation was carried out with the help of *Yetam or Pacota*. A land measuring one *Canay* (1.18 acres) required about four labourers to supply water. He describes the sources of irrigation and specifically writes about *Gunta* (A well from where water could be taken out easily for drinking purposes). This is quite similar to the *Bavadi (Boudi here)* construction in *Adilshahi* kingdom. Buchanan describes: "*The reservoirs are numerous, but small; many of them are designed for supplying cattle with drink, and not for cultivation, and are of the kind called Cuttay. The tank formed, like those in Bengal by digging a square cavity into the area, is here called Gunta. Above the Ghats, however, this manner of procuring water is not very common; but the most usual manner of coming at a spring is by digging a large square pit with sides almost perpendicular, and called Boudy. The workmen dig till they find the water which is often twenty or thirty feet from the surface. Afterwards, a narrow passage, with a gentle slope, is cut in one of the sides and a stair is formed in it, by which the women descend to bring up the water in earthen pots. It is from these wells, chiefly, that water is drawn by the Capily, or leather bag wrought by two bullocks descending on an inclined plane"* (Buchanan, (1870) P. 132).

It is quite evident that among the crops sugarcane and paddy were taken as irrigated crops but usually irrigation is used for cultivation of horticultural crops. The horticultural fields were called *Tota.* "*In the Ashta Gramas there are four kinds of Tota, or cultivated garden lands,.*

(i) Tarkari Tota, or kitchen-gardens; (ii) Tayngana Tota, or orchards, literally Coconut gardens; but many other kinds of fruits-trees are planted in them; (iii)Yellay Tota, or Betel-leaf gardens; (iv) Huvina Tota, or flower-gardens" (Buchanan, (1870) P. 76). The land revenue for irrigated land was fixed at a higher rate than the other lands and *Gauda* was responsible to collect this rent to be forwarded to the *Amildar*. "*Instead of dividing the crops, as usual in most parts of the country, the farmer here cultivates his watered land as he pleases, and pays for each Candaca of ground ten. Candacas of paddy, which are equal in value to 1120 seers of rice. The average price of this is about 20 seers for a rupee. For this area, therefore, he pays to the government 66 rupees, which is at the rate of 1l.3s. an acre*" (Buchanan,(1870) P.85). The management of tank was vested with the village headman and a person designated as *Neeraghanti* assisted the *Gauda* in water distribution. All these indicated the water management practices independent of the direct State interventions.

Crop and Cultivation

In a year two crops were cultivated known as Hainu and Caru crop each at rainy and dry season respectively. It is also referred as male and female crop. Paddy and ragi dominate the crop pattern and this was noted even during Neolithic age. These grains were found at *Tekkalakota* remains (Kamath, 1980, p.3). But diversification was noted in the entire Mysore region. For these three different methods was used for sowing the rice; i) dry seed cultivation, ii) sprouted cultivation and iii) transplanted cultivation. First method of sowing was suitable for both Hainu and Caru crop, while other two were for Hainu crop only. While selecting the mode of cultivation, high fields were cultivated after the dry seed sowing. On other hand, lower areas were reserved for sprouted and transplanted cultivation. Sugarcane was taken as a crop on irrigated lands and there was a rotation between sugarcane and paddy. Two varieties of sugarcane were cultivated namely *Puttaputti and Restali. Puttaputti* is planted in the month of *Shravana on Magha nakshtra* whereas; *Restali* was planted in the month of *Chaitra (Buchanan,(1870) P 65).* Crop rotation was followed

between sugarcane and paddy and informers told Buchanan that sugarcane is never repeated in the following year. Nearly eighteen varieties of rice were cultivated here (p195). Buchanan gives the span of the crops as shown in table 1.

Management of *Hainu* Cultivation

Hainu formed a principle rice crop. For the purpose of *dry seed cultivation*, the fields were ploughed from 14th February till the 23rd of May. After the fourth ploughing field is manured and after the fifth ploughing field was watered. Three days after that seeds were sown. Thinning of the plant density and weeding were carried out three times; first on 45th to 50th day; 20 days afterwards; and finally 15 days after the second weeding. For conducting the sprouted cultivation of Hainu crop, ploughing at times double ploughing was under taken done in the month of *Ashada*. By the first of *Sravana*, field is manured and was ready after the fifth ploughing and thereafter continuously supplied with water for 24 days.

Table 1: Types of Cultivars of Paddy

Sl. No.	Names	Months required to reap	Sl. No.	Names	Months required to reap
1.	Doda Batta	7	11	Dodda Caimbutti	4.0
2.	Hotay Caimbuti	5.5	12	Sana Caimbutti	4.0
3.	Arasina Caimbuti	5.5	13	Guti Sanna	4.0
4.	Sucadass	5 .5	14	Punoe Raja	4.0
5.	Murargilli	5.5	14	Garuda Nellu	3.0
6.	Yalic Raja	5 .5	15	Toca Nellu	3.0
7.	Conawaly	5 .5	16	Cari Toca Nellu	3.0
8.	Bily Sana butta	5.5	17	Gany Salli	4.0
9.	Putta batta	5.5	18	Cali Yuga or Caliga Byra	6.0
10.	Caraculla	5.5	19	Gyda Byra	5.0

Source: Buchanan, (1870) Page 58 and page 195. All names as used in original text.

Caru Cultivation

Caru crop is divided into three kinds (*Cumba, Tula and Mysha)* according to the time of sowing and the *Nakshtra* at that time. There was no dry seeding for *Tula* crop, whereas for *Cumba* and *Mysha Caru* all three methods were used for cultivation. One of the interesting methods of *Caru* cultivation described by Buchanan was the sprouted cultivation, what was known then as *Mola* cultivation. He writes *"The manner of preparing which is as follows: The ears must be cut off, the grain beaten out immediately, and then dried in the sun three or four days. It must be preserved in straw or in jars. When wanted for sowing, it must be exposed to the sun for a day, and soaked in water all the following night. It is then put upon a layer of the leaves of the Yecada, or Asclepias gigantean, or of the Harula, or Ricinus Palma Christi, mixed with sheep's dung, and is surrounded by stones, so as to keep it together. It is then covered with Bandury leaves, and pressed down with a stone (P. 255)".* The management of *Caru* cultivation has been described in detail as in the *Caru* season rainfall is largely unpredictable and the crop needs supplementary irrigation.

Tarakari Tota

Along with rice and other food grains Buchanan has recorded good number of gardens existed in this place, especially *Tara Kari Tota*. Most of which is cultivated either for family consumption and small amount for supplying to the nearest town. However, he remarked that, the cost of cultivating *Tara Kari* garden was much higher than that of rice. A variety of vegetables were grown and that shows the diversity even in horticultural cultivation.

Table. 2: Three Kinds of *Caru* crops

Varities of Caru Crop	Ploughing time
Cumba caru	If seed is sown at most favourable land
Tula Caru	If seed is sown too early
Mysha Caru	If crop is sown too late

Table 3: Management of *Caru* Cultivation by Different Method of Sowing

Varities of Caru Crop	Different Method of Sowing		
Cumba	*Dry seed* Ploughng season in Bhdrapada and seed is sown by the end of Margashira	*Sprouted Seed* The seed is sown about the 16th of Pushya	*Transplantated* The groud is ploughed in the end of Kartika and seed is sown on the 15th of Pushya
Tula	No Tula Caru is sown in dry seed	The seed is sown on the 1st of Karthika	It is sown about the 30th of Asuja
Mysha	Ploughing commences on 1st of Chiatra and seed is sown at the feast of Chaitra Purnama	The seed is sown about the 16th of Vaishaka	About the 15th of Vaishaka transplanted seed is sown

Source: Buchanan, (1870) Page 61

A few important points emerged from the reading of Buchanan's account of crops and cultivation in the period of Sultan. First, there was a good diversification of crops and not only many crops were grown in Mysore territory but the region also had many varieties of the same crop. Paddy, Ragi, Jola, Maize, Same, Bajara, Harica, Navonay, Carlay, Haralu, Huts Ellu, Moong, Uddu and Thogaray are the crops prominently mentioned by him. The diversification of crops in the dry region therefore, is quite understandable but he found this in the irrigated lands also. Diversified crop pattern also a featured in *Vijayanagara Empire* (Kamath, 1980, p.191). It is known that diversification was practiced as a tool to maximize income but during those days when marketable surplus was negligible it was undertaken as an adjustment to yield risk. Buchanan writes "*When ragy succeeds the leguminous plants are oppressed by it and produce only small returns, but when ragy fails they spread wonderfully and give considerable returns"*. (Buchanan, (1870) p69).

Table 4: Vegetables Grown

Sl. No.	Tara Kari	Sl. No.	Tara Kari	Sl. No.	Tara Kari
1.	Badana	17.	Davana	33.	Bassalay Suranu
2.	Hiray	18.	Kiray	34.	Taynagana
3.	Somaty	19.	Dantu	35.	Adicai
4.	Cumbala	20.	Mentea	36.	Balay – plantain
5.	Budu cumbala	21.	Columari	37.	Nimbay
6.	Swary	22.	Sopsica	38.	Kictalay
7.	Padawals	23.	Holichicay	39.	Hayralay (Biiter orange)
8.	Hagala	24.	Chicotra	40.	Jambu (Guava)
9.	Chick Hagala	25.	Doda Gorai	41.	Dalimbay
10.	Bendy	26.	Mulangay	42.	Halasu
11.	Pudichira Cumbala	27.	Iruly	43.	Mau
12.	Gori	28.	Beluly	44.	Nerulu
13.	Happarada Awary	29.	Arisana	45.	Nelli
14.	Neela Cotalay	30.	Sunty	46.	Hunishay
15.	Meneshena	31.	Ghensu	47.	Ammuttay
16.	Muscuc Jola	32.	Kissu dentu	48.	Humtica

Source: Buchanan, (1870) P 76; Names as used by Buchanan.

He also provided yield of prominent crops of the region after discussing with the locals. These are shown in the table 6.

Table 5: Yield per Hectare of crops in Mysore region

Crop	Yield/Acre (in Bushels)	Increase over Seeds (no of times)
Rice	31.0	20
Ragy	23.35	52.5
Avaray	0.889	8
Tovaray	0.889	8
Harica	15.56	30
Navonay	15.56	30
Shamay	15.56	30
Chica Cambu	15.56	-
Jolla	15.56	120
Hurali	15.56	30
Huts Ellu	1.12	10
Wullu Ellu	1.334	12

Note: Measurements were more volumetric. One Bushel = 2219.36 cubic inches. The measurements are 14 seers equalled One *Colaga;* 20 *Colagas* made One *Candaca and that was equal to 9 Bushels.* Buchanan,(1870) Page. 68

Disposal of Produce or Product Distribution

A very good description about product distribution or disposal of product existed at that time has been provided. This also speaks of religious and social outlook prevailed at that time. Buchanan has noted the elaborate practice involved in the crop storage and processing. i) Grain is preserved in husk and pits called *Hagay*. They were fifteen to sixteen feet deep with floors, slides and roofs lined with straw. These pits contain from 15 to 30 candacas or 83-167 bushes. If paddy is wanted to be beaten out into rice whole pit is emptied at once. ii) *Canajas*-or store *houses* built in such a way to protect from Bandy Coots. No opening for air and iii) *Cylindrical Stores.* It is made up of clay, mouth of it covered by an inverted pot. Lastly *Mudy*, a kind of bag made up of straw was used.

The total produce was distributed as shown in the tables 7 and 8 and at the same time some surplus used to go to the nearby markets. Having assembled the village officers and principal farmers, they informed Dr. Buchanan that the merchants of Bangalore frequently advanced them money to pay their rents, and were later contented to take one half of the crop for the advance, and for interest. These advances were made sometimes even six months before the crop was reaped.

Table 6: Manner of Distribution of the produce.

Distribution	Quantity (Seers)	Distribution	Quantity (Seers)
Gods (Brahmans, Jangamasa)	5	Measurer	4
Charity	5	Tarugara	7
Priest (*Panchanga)*	1	Gauda	8
Poor Brahmin	1	Shanbhoga	10
Barber	2	Watchman	10
Cumbara	2	Chief of village	45
Vasaradava	2	Niragunty	20
Agasa or washer man	2		

Source: Buchanan,(1870), Page No 185

Table 7: Manner of Dividing the Ragi

Distribution Among	Quantity (Seers)
Gods	10
Mendicant Brahmans	20
Brahmin	10
Astrologer	10
Accountant	20
Watchman	10
other	10

Source: Buchanan,(1870), Page 186

Processing of Crops

Two methods prevailed in converting paddy into rice, one by boiling it prior to beating and the other one was just include beating alone. Further, first method was again done in two different ways. The detailed descriptions about the procedure involved in the two methods are shown in table 9.

Control of pests and diseases on the crops was not mentioned elaborately by Buchanan. Probable reason was that the journey was in the early part of the year but the outbreak of pests and diseases occurs only after the rainy season receded. But one interesting occasion he mentioned was about the Locust attack. The seventies and eighties we have not heard of instances of Locust attacks and therefore unaware of the devastation these insects used to cause. Buchanan writes about a fight of locusts passed over the town on 16th May evening.

Table 8: Different methods of paddy processing

Method	Paddy Processing
Aydu Nagu Aky (Five Piece Rice)	**First Method** A pot is filled with equal part of water and soaked over night. In the morning it is boiled for half an hour. Then it is spread in the shade for fifteen days and thereafter dried in the sun shed for two hours and later it was beaten. In that process each grain was broken into (five) pieces. The process acquired the name of *Aydu Nagu Aky* as the grain was considered to be broken into five pieces. This kind of rice was used only in the family of *Rajas* and high castes.
Cudupal Aky	In this method, five parts of paddy were put into one pot and boiled for nearly two hours till a few grains burst. After that it was spread in the sun for two hours continuously for two days and then beaten. About ten parts of paddy gives five parts of rice. One part of the rice was given to the person who beat the paddy. This type of rice was usually used by the other castes and *Shudras*.
Hashy Akky	**Second Method** *In this paddy is a not boiled and directly exposed to sun for two hours. Immediately it was beaten. This kind of rice was generally used by the* Brahmin *community.*

Source: (Buchanan, (1870) P.52 and 63)

Buchanan describes, "*It extended in length probably about three miles; its width was about a hundred yards, and its height fifty feet. The insects passed from west to east in the direction of the wind, at the rate of six or seven miles an hour. The whole area, and every tree and bush, was covered with them; but each individual (the insect) halted for a very short time on any one spot*". Further it is stated that "At a distance they appeared like a long, narrow, red cloud near the horizon, which was continually varying its shape. *The locusts were as large as a man's finger and of a reddish colour*" (Buchanan, (1870) p39).

In the Footsteps of History

One of the important pursuits of history is learning from the experiences. A prominent branch of economics namely econometrics is a well developed branch and has mathematics and statistics as its roots. But another interpretation of this branch of knowledge is the method of learning from history or what is termed as error learning model. Buchanan's travel and description of Mysore after the fall of Sultan is interesting but reveals quite a few attention-grabbing issues in culture of development in this part of the country and sets on error learning model. First, the region was self sufficient and had diversity of occupations. Innovations and new methods of cultivation and many cultivars indicate the propensity to accept different innovative traits as well as experiment with the new crops and practices. Second, farming was a well diversified profession and strongly supported by allied agricultural activities. That spread the risk across crops and vocations. Third, farming was totally organic and soil rejuvenation as well as soil health was high on the agenda in the cultivation practices. Fourth, as elsewhere in the country the land tenure system provided scope for over-exploitation of the tenants and peasants but the evidence of that happening during the Sultans' regime is not noted. Lastly, the organisation of agricultural sector as a whole and the village in particular retained the equilibrium in production and distribution.

Annexure 1

Terms used by Dr Buchanan and Current equivalents

Used by Dr. Buchanan	*Usage/ Meaning in English*
Adical	Betel nut
Adilshahi	Bijapur Kingdom
Agasa	Washer man
Aky	Rice
Amildar	Position of a Revenue Officer
Ammuttay	Vegetable
Arasina Caimbuti	Variety of Paddy
Arisana	Turmeric
Ashada	Hindu calendar month
Ashta Gramas	Group of Eight Villages
Atty Soppu	Type of Green Manure
Avaray	Type of Beans
Aydu Nagu Aky	Five Piece Rice
Badana	Brinjals
Balay- Plantain	Banana
Ballalapura	Name of a Town
Bassalay Suranu	Yam
Bavadi	Big Open Well
Beluly	Garlic
Bendy	Lady Finger
Bhumi	Land / Soil
Bily Sana butta	Variety of Paddy

Budu Cumbala	Ash Pumpkin
Cabbay	Type of Soil
Canajas	Storage Bin
Canay	Measure of Grains
Candaca	Measure of Grains
Canter'-Raya Fanams	Land revenue system
Capily	Water drawing device
Caraculla	Variety of Paddy
Cari Toca Nellu	Variety of Paddy
Carlay	Oil Seed
Carnatic	Karnataka's
Caru crop	Second rice crop
Catcolli	Name of a Town
Chaitra	Hindu calendar month
Chica Cambu	Variety of Paddy
Chick Hagala	Small bitter gourd
Chicotra	Green Vegetable
Cogay Soppu	Green Manure
Colar	Name of a Town (Kolar)
Columari	Coriander
Conawaly	Variety of Paddy
Crishna	Deep Black Soil
Cudupal Aky	Type of Rice
Cumba	Hindu Zodiac sign
Cumba and Mysha Caru	Crop Season
Cumba Caru	Crop Season by Zodiac sign

Cumbala	Pumpkin
Cumbara	Potter
Cuttay	Masonry Bund
Cylindrical Stores	Storage
Dalimbay	Pomegranate
Dantu	Green Vegetable
Davana	Aromatic Plant
Dewan	Minister
Doda Bhatta	Variety of Paddy
Doda Gorai	Vegetable Crop
Dodda Caimbutti	Variety of Paddy
Elate sylvestris	Tree
Eray	Shallow black Soil
Gany Salli	Variety of Paddy
Garuda Nellu	Variety of Paddy
Gaudas	Village headman
Ghats	Hilly Track
Ghensu	Sweet Potato
Gori	Cluster Beans
Gunta	Area Measure
Guti Sanna	Variety of Paddy
Hagala	Bitter Gourd
Hainu crop	Principle season Rice Crop
Halasu	Jack fruit
Happarada Awary	Vegetable Type of Beans
Harica	Small Millet

Harula	Castor
Hashy Akky	Type of Rice
Hayralay	Bitter orange
Hiray	Gourd
Holichicay	Green Vegetable
Hongay Soppu	Tobacco leaves
Hotay Caimbuti	Variety of Paddy
Humtica	Vegetable
Hunishay	Tamarind
Hurali	Horse gram
Huts Ellu	Niger Seeds
Huvina Tota	Flower Garden
Iruly	Onion
Jagdeva Raya	Person who introduced kand valuation
Jahgirdar	Landed Intermediary
Jambu	Guava
Jangamas	Priest
Jolla	Sorghum
Kanakanahalli	Name of a Town
Kempu	Red Soil
Kictalay	Orange
Kiray	Cucumber
Kissu dentu	Green Vegetable
Mau	Mango
Meneshena	Chilly
Mentea	Fenugreek

Mimosas	Tree
Mola	Variety of Paddy
Moong	Green Gram
Mucutu	Coarse soil
Mudy	Barber
Mulangay	Raddish
Murargilli	Variety of Paddy
Muscuc Jola	Maize
Mysha	Hindu Zodiac sign
Mysha Caru	Crop Season by Zodiac sign
Nakshtra	Hindu Zodiac classificationStar
Navonay	Small Millet
Neela Cotalay	Vegetable
Neeraghanti	Water supplier / Regulator
Nelli	(Amla) Goose Berry
Nerulu	Jamoon
Nimbay	Lemon
Padawals	Snake Gourd
Panchanga	Almanac
Priya Pattana	Name of a Town
Pudichira Cumbala	Variety of Pumpkin
Punoe Raja	Variety of Paddy
Putta batta	Variety of Paddy
Puttaputti	Type of Sugar CaneRice
Ragy	Ragi
Restali	Type of Rice Sugar Cane

Ricinus Palma Christi	Variety of Castor
Sana Caimbutti	Variety of Paddy
Serirangapatanam	Name of a Town
Shamay	Small Millet
Shudras	Social Group
Sopsica	Green Vegetable
Soulu munnu	Loamy Soil
Sravana	Hindu calendar month
Sucadass	Variety of Paddy
Sunty	Ginger
Swary	Vegetable
Tacavi	Crop Loan
Taramandalpeth	Name of a Town
Tarkari Tota	Vegetable Garden
Tayculum	Name of a Town
Taynagana	Coconut
Tayngana Tota	Coconut Garden
Tekkalakota	Type of Rice
Toca Nellu	Variety of Paddy
Tota	Garden Land
Tovaray	Red gram
Trichinapally	Name of a Town
Tula	Hindu Zodiac sign
Tula Caru	Crop Season by Zodiac sign
Tumbay Soppu	Type of Green Manure
Uddu	Black Gram

Ugany Soppu	Type of Green Manure
Umutty Soppu	Type of Green Manure
Vir Raya Fanams	Land Revenue system
Wullu Ellu	Sesame variety
Yalic Raja	Variety of Paddy
Yecada	Variety of Paddy
Yeccada Soppu	Type of Green Manure
Yellay Tota	Betelnut garden

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