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HISTORICAL ANALYSIS ONTRADITIONAL TOOLS AND TECHNOLOGY FOR FARMING AND FOOD PROCESSING: A STUDY OF SOUTH ODISHA

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ABSTRACT:

South Odisha constitutes seven districts of present Odisha, where most of peoples belongs to scheduled castes and scheduled tribe and majority of them lives in hilly areas depending on nature. Sincelongback, these peoples are using traditional tools and technology to earn their livelihood. This paper attempts to highlight the different tools and technology adopted by the peoples of South Odisha in their day to day life and very particularly in farming and food processing. This work depends on primary sources collected from peoples through interviews and questionnaires. The Secondary source materials may be consulted for accurate interpretations of this work. The outcome of this work will be having traditional tools in food processing of South Odisha.

Introduction: South Odisha is having a reserve forest, rivers, hills, and many inaccessible development facilities. The peoples of south Odisha solemnly depend upon traditional tools and techniques in their food processing. Though tools are derived from the old English word "Tools," which means preparing."In general, the means of tools is a piece of equipment held in hand and used for a particular kind of work known as tools. Hence, the traditional tools have been invented in ancient times and used for a long time until recently or are still being used in various activities.The traditional food processing tools of South Odisha are mostly made up of local materials such as stone, wood, Bamboo, and iron by a local artisan. The standardized of the

artisan-made comparable with factory-made tools. The implement of traditional took saving money and time of the people for their Economic development[1]. Instead of their economic growth, the traditional tools are used both men and women in their food processing easy to mention their lives.

Historical Background: Agriculture is the chief occupation of ancient to till present India. More than 60%ofthetotal population depends upon agriculture. The beginning of agriculture goesback 11500 B.C to 11000 B.C in the world context. The beggining of agriculture in India goes to 9000 B.C. In undivided Indian context, Mehergarh is the earliest evidence of domestic animals and agriculture belonging to the period of 7000 B.C.[2]. The cultivation of plant goes around 7000-6000 B.C.suggests in Rajasthan from a study of the deposit of Sambar, the former salt lake[3]. The first rice cultivation village emerged in 8000-6000 B.C. at Humudi of south China is the first rice cultivative evidence in globally.[4]In the late 6th to early 5thmillennia B.C.Therewere muchof evidences reflectthe cultivation of the world. In the 5th millennia B.C.,Mexico's people were growing corn, beans, guard'setcs.

In India context, 5thmillennia B.C. has provide the evidence of spreading agriculture community of Kashmir region.[5] The ploughing field of Kalibangan and the food reserve hall of Harappa indicated the well and systematic cultivation of India in of Lothaland Rangpur in Gujarat were theearliest evidence of rice cultivation that belonged to 1800 B.C. The MarkendeyaPuranas also reveals the beginning of agriculture. ThesePuranas considered Brahma as the first inventor of agriculture.[6]According to AtharvVeda, Vishnu Purana andSrimadBhagwat Gita reveal that, the king named Pristhu son of Vana was the first inventor of agriculture.All this evidence reflected that the primitive people were greatly innovated by agriculture since past. But this was only possible for the fast growth of the population because there were appear some problem in collection of food. The hunting and gathering activities of people do not long last. However, it was forced to making innovative an idea about settled and productive life. Hence, agriculture was rapidly increased during the Iron Age. The innovative useof iron createsa revolution among the people for clearing more forestsfor agriculture. There after many tools and technology come in being, which are helped to human society for a productive life. The peoples of South Odisha are using some of the tools in their farming and food processing till today. Those are as under-

NANGAL (PLOUGH):

The prominent tools of agriculture are the plough. Its discovery and innovative use make agriculture too easier. The earliest evidence of ploughed field in world context was found at Prague Czech republic belonging from 3500- 3000 B.C (institution of archeology of CAS report). In Indian context ploughed field was found atKalibangan (Rajasthan) belonged the period of 2800 B.C. indicate about the use of plough in tilling activities of cultivation. is the prime evidence of knowing about the plough system of the world. Otherwise this, the terracotta model of the early Arid found at Banamali provides insight into India's agriculture tools. The

wooden made plough appearsin 4200-2800B.C. year ago in the Bronze Age. The evidences are reveals animalsdrawn plough come into being on between 2800-2000 B.C. during pre-Roman Age in various part of the world. Afterward that, the changing of mode plough frequently appeared in different region of India as well as world. Which is resulted that, the presently using types ploughs came into being. To making a traditional plough a bend bole or branches of tree is taken by a carpenter or who knows about making the plough and made up the plough[7]. According to RupadharBhatra, there are five or six subparts in a complete plough. These are

1. Nangaldandi (plough stick)

2. Kasana (blade)

3. Chutiakhuti (small wooden pin placed at the end of the plough stick)

4.Dab (A small woodenrod which is usedto keep fit of plough stick)

All these parts are the essential to given complete replica of a plough, without these the ploughscannot perform itswork correctly. The length plough stick (2- 2.5m), blade (6-7 cm), the handle of plough generally (0.6-1m), 5-7cm thick and 7.5 -12.5 cm width and fitted to body of plough (Brahma Nijra,DaimaryLuke). The ploughs handlelocally known as Nangalkoti (handle) andthe plough's lean region is known as Sua.This types of plough is extensively used by the people of rural Odisha. Generally this types of ploughs are dragged by pair of oxen for tilling activities in cultivation for tilling activities.

JNUADI or JUADI (YOKE):

The Jnudi or yoke was one of the greatest inventions of human for agriculture. It eradicatedthe challenging situation to pulling of ploughs and cart on agricultural activity. It is a hand held toolmade fromavailable local material for quickly and effectively harnessing thelocomotive energy of oxen. The earliest plough pulling animals and oxen was reported in 400 B.C from southeastern Europe and western Asia.During this period, people were used the eared stone for making the yoke. But, the situation changed continuously which resulted that, the people were replace the branches of free for making the yoke. The uses of yoke are different from region to region. In the world context, forehead yoke are found from Austria, Germany and Switzerland.Similarly India was the largest concentration of working cattle globally and much variation of the other yoke continues to be used since past[8]. There are many kind of tradition occur among the people for training the animals to use them into dragging activities. The oxen uses in India are grounded in rich cultural tradition because its impact on the use and lack of changes seen in the system yoking tooxen. There are three types ofbasic yoke design seen on the way yoke used to capture the oxen. These are (1) the headyoke (2) the neck yoke (3) the wither yoke.The history reveals that, the agriculture become more sedentary of need for additional power from the draft. Because the animal becomestheessential equipment for agriculture and transporative used. Therefore the design of yoke isrequiredalmost needy and immediate adoption

for carried outbetter to maximize comfort and willingness of animals in work[9].The yoke design continues to have all lording to local custom and region of the world. The Indian tradition was to use the wooden yokes that went around animal nick. The bow is held in place by a pin. This tradition of yoke has been passed through the generation after generation and also prevail till today. According to an experiencedcarpenter(Banamali Mali) for making the traditional yoke, a straight branch of a tree is taken and used to making of yoke.The yoke is made for multiple purpose of like dragging of plough and pulling the cart according to their need. There are three or four types subpart used in a yoke. These are:

1. Wooden stick length of 6-6.2 ft and thick 3-4 cm.
2. Pachuradandi (12 -13cm) by length and (1-2 cm) thick.
3. Rope (twin) in stick (5ft) each.
4. Majikhuti (middle wooden rod) 2-3 cm.

All these part help to smooth ridding of plough as well as cart. The craft men of yoke used different tools for making the yoke. To making soft and smooth one they used dwarf knife, spoke shave acts. The most important part of a yoke is neck keeping place of oxen must to be free from cracks. The yokes placed on neck of pair of oxen while plough horizontally with help of rope. It is operate by male farmer (Brahma nijra ,Daimaryluke).

KUDAR (AXE):

Kudar (axe) is another essential handheldtools of Indian people since ancient past to till the present day. The uses of kudar appeared frequently in different region India. Those are find out from the multi archeological site of India. Gufkral is the chief evidence of stone axes from the Mesolithic to Neolithic period.[10] The axe was the multi-functional tool of India, which were extensively used byour past generation. The use of stone axe has been prevailing during the period from the Stone Age in various partsof India by helping the peoples in different agricultural activities. The changes of axe occurs fromthe Mesolithic to Neolithic period. In the earliest period stone axes were used for hunting purpose and according to the need modificated iron axes were used in battlefield and also clearing the forest, etc., in India. But now-a-days,the making axes purely changed than theold nature. The archaeological evidences reflect that, the first-hand axe was come into knowledge in 2.6 millennium year ago. During this period, axes used in butchery, digging tube, and hunting activities[11]. The Acheulian industryof Ethiopia (1.4 milenium year) and (1.2 m.a) of Olduvai George cave also reflected the earliest assembled handheld axesof world (MeryLuky). These are approved the familiarity of human with the axes since past. In the present day, the axes are primarily used by tribal and rural people of Odisha to cleaning the forest, choping the woods, and agricultural activities. The scheduled tribe of South Odishan districtsare mostly uses traditional types of axes in different activities. For making the axes in villeges, peoples were solely depend upon the local blacksmiths, who is champions for making traditional types of axes. According to (RamacandLohara), they were collected charcoal and metal from another

place on the making of axes. They made it axes soft wedge flake and fitted with a wooden handle. The present generation used it to cut shrubs, chop the woods, and clear the forest for agriculture[12]. It has been using by the male farmer sincethe ancientto till present day. The use of axes isdisapproved except for the tribal community of any region.

KADKI (SPADE):

Kadki or Spade is another prominent agricultural tool of India.The farmer and labour use it in different regions of the country. The Spade is the ancient agricultural handheld tool used to shape the soil, remove the weeds, clear the ground harvesting the root crops, and dig the soil. The Spade was first occurring in summeria civilization (GilmondD.C). The chief deity Enlin was credited for spade tools (Peck T.H, Colby F.M). The most essential handheld agricultural tools made up of iron on the working area and wooden handle are fixed and easy to operate. The functional area of Spade is square and rectangular (hue implement of[13]). The ancient Spade in India was found from **Barudin (Singhbhumdist of Bihar) and Kuchai region (Mayurbhanj district of Odisha**), which are belonged to the new Paleolithic period[14]. The spade handle's present shape comprises 90-100 cm (wood) and thick 1.5 -2 cm. the working part of Spade is consists in iron 0.20* 0.16 cm breadth. The local blacksmith was champion in this work. According to HariLohara about the making ofspade, more skill is required for making the Spade neither the Spade did not last anymore. The Spade is mostly used to clean the shrub, the knurl ridge of agricultural field, irrigation channel, and dig or move the soil[15]. The male farmers were mainlyhandy with the Spade. These tools somehow disappeared for the unwillingness of the presentgeneration.

LEVELER (KOPAR):

Kopar or leveler is the most immediate agricultural tools of India. It is played the most crucial role in preparing the agrarian field. The use of leveler knows as through the Sangam literature. The Sangam age fall in the period from 500-300 B.C indicates that agriculture is the chief vocation of Tamil people. It is revealed that the adoption of the tools in agriculture of Tamil country. The book of Tiruvalluvar in his Tirukkural emphasizes that the need for various steps to careful manner to get good crops. The wooden leveleris known as **Palli or Morom** in the book of Tiruvalluvar,which was used to level the ploughed land.[16] The Traditional sowing practice followed two principles 1**. Koparbuna** (after sowing the seeds,theleveler has use to level ploughed field) 2**.Uparbuna** (before sowing the roots, the ploughed land has dropped) only after the heavy rain when the farmer cannot plant in dry moister[17]. The length leveler 6-7 ft. and thick 1.5-2 cm supported by the wooden stick of equal length is suitable for moving the ploughed f

KHOTLA (THRESHER):

The harvesting crops (Rice) can be kept together in a place for Threshing.After harvesting, the crops are separated from the straw. The earliest threshing system was reported from the Harappan civilization. Otherwise, the Sangam literature (500-300 B.C) reveals the system'sthreshing of various crops. One of the quotations of Sangamliterature given under:

They thresh out the grain with the bull, remove the chaff and straw and dry the grain by sifting in the west wind with their hand. The grain thus heaped in marutham hamlet rich resembles meru grand the northern mound.[18]

The quote[19] indicates that the farmer of Sangam period adopted the threshing system in their crop by using oxen. The farmer separates the paddy from straw with the help of animal power. They fix a wood in the ground and tied six to seven bullocks with rope to move around the paddy so that seeds separate from the straw. This threshing system is known as DeieMindani; otherwise, the South Odisha district farmer adopts another Threshing method to separate the seeds from straw; for this, the harvest crops have a litter on the ground moving the wooden roller with the help pair of oxen. The wooden rollers are locally known as**khotla**(wood made thresher). The khotla is made up of a wooden bole approximately (one quintal) length of 4-5 ft. It is supported by a wooden stick length of 6 ft. the wooden bole is fitted with two wooden farmer only.

SICKLE:

The sickle is ancient agricultural handheld tool of India. It has been discovered in Mt Carmel, which suggests the harvesting of grains from the era about (ten thousand years ago) (Unger Hamilton, 1985). The use of sickle frequently occurs in the NeolithicAge.The iron sickle object of Barid-in Singbhumdistrict&Chhotnagpur belt of Jharkhand given of Carbon dating period 1040—1807B.C.Similarly the word **"Datras" (Ha)Rigveda** also reveal the use of sickle in Vedic Age (1500-1000).The sickle is a multifunctional traditional tool of India or Universally harvesting equipment.The sickle is hand using agricultural tools.Mostly used for harvesting crops like cereal,pulse,millet,paddy,wheat,etc.The design of sickle"C"or crescent moon-like in shape.With the view to is harvesting operation.The working area of the sickle is made of iron and a handle made upof woods. Thefunctional area sickle comprising 20-22c.m.length, thewidth 2-3c.m. handle made of woods contain 5sc.m. It is operated by both male &female.In rural content, blacksmith of a village was champion to make various sizes& shape of a sickle.

CART:

The innovation of the wheelsiswell known for its revolutionary consequence in the world. The technological evidence was effectively divided to both inland and water transport through the ample indirect light on the Harappan civilization's transport technology. For inland transport,abullock cart was used. It was found from the Harappan site. Piggotobserved

that the ox carts were extensively used in the Harappan culture for slower and heavier transport. The models of the cart were found from the pre-historic site of Punjab and also in Sindh. The cart was recently reported from Sindh, which isthewidth of 3 feet 6 inches. Though it is fixed in the3rd century B.C., S.R Rao describes that the Rigveda also refers to the spooked wheel, drawn by a pair of the bullock.

The long distance journey made through the bullock cart or horse drawn cart in ancient period. It is indicate that caravan trader were used the cart of pack-oxen.

QUERNS (JATA or GHURANA):

Jata or Querns isa house handheld traditional tools of Odisha.The hilly inhabitant of this state wasan excellent artisan in the making of Querns. The maximum of rural families were handy with thistool. The earliest evidence of querns reported from Chopnimando on phase-iii said that the querns were used for grinding and food processing activity[20]. Otherwise, this archeologist department discovered the querns deposit site at kiari in Ladakh.Carbon dating has given the period of-1000 B.C. all this fact reveals the use of querns in our past generation. The traditional querns are rectangular & circular contain-2 –3 c.m.width and 3-4 c.m thick Twin equal size circular stone. The top of a stone fix of wooden pogo moving the Querns and middle of upper stone then lowerstone fixed a wooden pin for easy riding and poured grain into a hole. A female member of the family mostly used the querns for making flour of various grains & Dal's to the whole pulse.

KOTNI (**PESTLE OR MORTAR):**

Pestlewasanessential tool for pounding grains in ancient times.A wooden mortar was occurring in 3300—3000 B.C in Harappa civilization.it indicates that the implementation of wooden mortar of ancient times of India. (Singh Upinder). The people of Harappa use thepastel for pounding the grains[21].

The traditionalpestles are used in the food processing application for the Husk of grains. Today, many people also used a mortar and pestle in their home to pour Rice, chilly, turmeric,etc. There two types of pouring tools are used in South Odisha; these are;Kutni&Dhinki.

KUTNI or PESTLE:

It is extensive using tools in rural villages ofSouth Odisha;they mostly use for living the husk of Rice. It is contained length 2fitt wooden bole of 0 -2c.m .thick .which was fitted in the underground for smooth working. The wooden bole placed twin holes of 4-5 cm dig and 3-4 cm width. The length pestle contains 35 - 40cm and thick 2-3 cm made up like circular shape. The pestle's working area was fixed with an iron of 2-3 cm to clean the grains quickly. Women mostly operate it[22].

DINKHI(THRESHINGHORSE):

Dinkhi or Threshing horse is another prominent pouring wooden made tools of Nabarangpur district. The threshing horse's length is approximately 6-7 ft. and thick 5-6 cm supported by a twin wooden stick wall containing a strong wooden rod connected totheside of Denkhiwalls. These help to comfortable operating the threshing horse. The working area of Denkhi is fixed iron of 3-4 cm for quick removalofthe husk of grains. Female members mainly use it.

Conclusion: The above interpretations and narration proves that the traditional tools and technology make rural peoples of South Odisha easier in particular and Odisha in general. Though, we have developed a lot in science and technology but failed to support rural and hilly people in farming. Traditionally cultivating and preparing food tradionally has been proved scientifically better for health.So, it should not be stpped rather promoted for more practice. This traditional tools and technology also provides more employability to rural and tribal peoples of South Odisha.

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