PDF - CHEMICAL COMPOSITION OF RAW AND COOKED WALNUT - researchcub.info**CHAPTER ONE**

1.0 INTRODUCTION

Nut crops such as walnut (juglas Nigra) and pecans (carya illinoenosis) have potential for small parts of Virginia. Growing and handling are specialized, and while marketing is hands oriented, demand can be good For fresh high quality nuts used both for eating out of hands and for cooking purposes (Carlson Jones 1940) there are many different edible net species found and gathered in the wild such as hickory (Shell Dark – Shag Dark, Carya sp) chest nut (Juglan Cineralal) is another once plentiful native nut but because of chest nut Blight Diseases, it is now a rare found in the woods (Cornel Disnmic Johnson 1970)

English walnut also called (Carpathan Peisan Walnut, Juglaus regia) almond (

prunus amygida cus) and nazdnut (corylvs avellena) represent significant activated and nut production, yet they are limited to specific adaptive areas. California the leading producer of English walnut as well as almonds, while Oregon growers produce 95% of all hazel/nuts (lmore in 1977). In the east, hazelnut are also retrend to as fiibrerts and there are several wild species found with a slumbly habits of growth. Nut production on Eastern filberts is variable and highly affected by weather conditions in the winter typically flowers (cat kins) open in late winter to yearly spring and thought frost tolerant, they can be damaged by hand freezing weather (Hamel, Dictoskey 1975)

Commercially sputhern pecan (also known as paper sheel type) is the most important nut crop for the Eastern US, followed by wild gathered natives black walnuts the pecan industry is centered in the south and south easts, with Creogia a leading state and in the Sothern plans, many acres are raised in Texas and okahlahoma and even as tarwest as new Mexico (Harloro , , Harrar, Harden white 1996) variety development for southern Pecans has been extensive and they are renow for their large size and very thin shells however as a starting points, good site selection is imperative for success one must have an understanding of the frost potential and season growing length as related to the flowering and fruiting characteristics of the chosen variety. (Moerman 1998) Native black walnut are found in most part of the state there are a number of improved black walnut varieties selection from the wild and from limited breeding programes. In general, timber characteristics (fester growth) has been the focus of these programs dual use potential for black walnut varieties for timber and as a high quality net crop is an important characteristics.

There are several outstanding black walnut varieties known for their nut qualities, including sparrow's Emma Rupert "Hay" and Lawik corp the latter is often used as an Purdue University have developed a lene of black walnut known for their faster growth for timber purpose as predictable nut bearing habits (Carlson Jones 1940). The Northern pecan is a native of the olio, Wabash and upper Mississippi inver basins and in recent years a number of outstanding selection have been made from the world, this Northern pecan is know for its high ,quality nut meats houch has more oil content and better flavor than the southern types, they do however have been much smaller units in comparison (country man et al 1985) while Native (Southern) pecan are not as common in Nigeria as in the Midwest may find adaptability in many parts of the states, including middle and southern Premont regions, Northern pecans are noted for their cold hardness, later flowering to avoid frost, and reduced nut maturely periods as compound to the southern pecan (Chenoweth 1995 black walnut) the Northern pecan selection have fair to good nut size (through at best 50 – 60% of the southern pecan). In addition the widow for grafting is narrow, and the propagator needs to have on hand the scion (top) wood of the selected variety colour the sap begins to flow. Recently several

keger nurseries have begun wider propagation of northern pecan and black walnut and certain named varieties are now available as poilted and pre grafter tries. (Fowels 1965) The objective of the work was to evaluate the chemical composition of walnut (C)

CHAPTER TWO
LITERATURE REVIEW

2.1 Harvesting

It is important to harvest the nut before the squirrels get them (Dana,. Lener 1994) the Nut are generally harvested after the first frost, the smooth, green endosing the nut turns blAck with time. Care has to be taken while rubbing off the hull because the residues are stain. (Gilmore 1997) the husk residues are than removed by rising the nut or by agitating the nut in a container of water, the nut are then kept dry and stored in mesh bags in a cool place the oil in the nut turns rancid if the nuts are not stored in a cool place. (Great plainness flora association 1986).

Nut are hulled, bagged and sold to processors who clean the outside and dry the nut to extract moisture specification (Haniel Chiltosky 1975) processors are used to crack the shell by running the nuts between large stell wheels the nutmeats are separated from the shells by passing the cracked shells through another series of wollers with saw teeth the nut pieces are then graded, sterilized, boxed sea ledi and made ready fro transport (Thomas and schumann 1993)

2.2 Nutritional Profile

Walnut are an excellent source of anti inflammatory omega – 3 essential fatty acids, in the form of alpha – linoleni acid (ALA) (Harlow, Harrar 1996) walnut are also rich in antioxidantss including being source of copper, many other minerals are provided by walnuts in valuable amounts, these minerals include calcium, chromium, iron, magnesium, phosphorus, potassium, selenium vanadium and zinc (Hart J Cummings Carlson 1997). Vitamins BG while not especially concentrated in walnuts, may be more bio available in the food. In items of .phy to nutrients, walnut contain omit oxidant and anti inflammatory compounds including more than a dozen phenolic acids numerous tannis (especially ellagistamins including tellima gradins) and a wide variety of falconoids the vitmin E composition of walnuts is also of special mention, since there is an unusual concentration of the gamma to copherol form of vitamin E in this tree nut (Johnston Tim 2000)

2.3 In Depth Nutritional Profile

In addition to the nutrient high lengthened in our ratings, chart, an in depth nutritional profile for walnut is also available (Moerman 1999) this profile includes information a full array of nutrients, including carbohydrates, sugar, soluble and insoluable fiber, sodium, vitamins, minerals, fatty acids, amino acids and more (Rydberg 1932)

2.4 Adaptation

Black walnut produces a toxin, known as ‘juglona’ which inhvotts the growth of other plants around it, thereby reducing competition, juglone deprives sensitive plants of energy needed for photosynthate production the symptoms of plant being affected by juglona include foliar yellowing, writing and eventually death the largest sources of juglone on the tree are located in the buds, roots and nut hulls.

2.5 Management

Black walnut is a very intolerant tree, planted in fairly dense stands or under forest competition the tree

develops a tall and well formed, clear bole, this bole form results from the tree putting its resources into competing for sunlight and it ideal for wood tuber production

2.6 Medicinal and Non Food Uses

The walnut product have a history of medicinal uses American Indians used inner bark tea as an emetic and lative. They chowed the bark for toothaches the bark is still used as a dietetic in Pakistan the husk is chewed for colic and use as a particle for inflammation. Juglous from fronts and back of J. Nigra acts against dematomy cosis. It was used by Greeks and Romans to cure coetaneous mycoses. Walnut pollen is a common allergen. Ellargic acid and juglone is being studied for use as phytoestrogen body cream and together with Ginserg can be used for making vaginal lubricants

A strong tincture of the leaves and nuts of black walnut has been used as a remedy in the treatment of bilious and cramp colic the decoction has also been used as an effective vermifuge the rind of the green fruits has been used in the treatment of ringworm, felter and diphtheria the nut is a food source rich in manganese that is important for nervous and cadlege.

It is important that you exercise caution who considering using walnut products for medicinal purposes seek professional advice before using them

2.7 History of Walnuts

While a walnut tries have been cultivated for thousands of years the different types have varying origins the English walnut originated in India and the regions surrounding the Caspian sea, hence it is known as the Persian walnut in the 4th century AD, the ancient Romans introduced the walnut into many European countries where it has been grown since (Hodge Garrentt and J Bratton 1999)

Throughout its history the walnut tires has been tightly revered not only does it have a life span that is several time that of human but it uses includes food medicine, shelter, tye and lamp oil. It is thought the walnut grown in North America gained the monices “English walnut” since they were introduced into America via English merchant ships Black walnut and white walnut are native to North America (Hutchens Alma R. 1991) spastically the central Mississippi valley and Appalachian area. They played an important role in the diet and life style of both the Natives American Indians and the early Colonial producers of walnut in the world (Jones J 1989) with about 236,000 metric tons produced per year the united stated is second with about US about 90% of all walnuts are grown in California, particularly within the sanjoaquin and sacramen to valleys the annual combined walnut output of Iran and Turkey is approximately the same as the United States and the Ukraine and Romania are next in the line in terms of total walnuts productions (Jones James E. Reta Muller and J. W van Sambeck (Eds) 1998)

2.8 Uses of Black Walnut Shell

The shell black walnut is one of the most difficult shells to crack while this creates a challenge for processors, it also creates market opportunities the hard sheel is an important product in its own right.

Metal cleaning and polishing: processes eastern block walnut shell is the perfect medium for cleaning jet engines, electronic circuits boards ship and automobile gear system, this soft grit abrasive is well suited for air blasting operation, de – burning, de – scaling and polishing operations because of its elasticity and resilience, giving great durability Eastern black walnut shell is non toxic and dust free and it can be used on plastic, aluminum and soft alloys

2.9 Description

Walnut are a delicious way to add extra nutritious, flavour and crunch to a meat while harvested in

December, they are available year round and a great source of those all important omega -3 fatty acids.

It is no space surprised that the regal and delicious walnut comes from an ornamental tree that is highly prized for its beauty. The walnut kernel consists of two bumpy cobes that look like abstract butterflies the lobes are off white in color and covered by a thin, light brown skin, they are partially attached to each other the kernels are enclosed in round or oblong shells that are brown in color and very hard.

While there are numerous species of walnuts trees, three of the main types of walnuts consumed are the English (or persian) walnuts, juglans rogia: the black walnut, juglans Nigeria and the while (bulternut) walnut, juglanscinera the English walnut is the most popular type in the United States and features a thinner shell that is easily broken with a nut cracker the black walnut. The black walnut has thicker shells that are harder to crack and a much more pungent distinctive flavour the while walnut features a sweeter and ovier taste than the other two types although it is not as widely available and therefore may be more difficult to find in THE market place within these basic types of walnuts, there are dozens of different varieties (also called cultivars). It is not uncommon to see research studies that evaluates several dozen difront cultivars of English or black walnuts there is a surprising amount of nutrimental variety the bottom line is to not to get caught up in thinking that one main types of walnut (for example English versus black) is best, but to take advantages of the Nutritional variety offered by walnuts overall.

2.10 Establishment

Black walnut is difficult to transplant and therefore, propagation by seed is recommended seeds should be planted in the fall in moist, well drained, deep soil that is rich in organic matter black walnut prefers full sun.

2.11 Management

Walnut is a very intolerant tree planted in fairly dense stands or under forest competitions the tree develops a tall and well formed clear bole, this bole form result from the tree putting its resources into competing for sunlight and is ideal for wood fiber production logs 10 inches in diameter juglone are found in virtually no other commonly eaten foods, other phytonutirents like the tannin tellimagrandin or the flavonol morin are also rare and valuable as antioxid duts and anti inflammatory nutrients this anti flamatory nutrient and antioxidant phyto nutrients also help explain prostate cancer and breast cancer in relationship to walnut consumption

2.12 Storage of Walnut

When purchasing whole walnuts that have not been shelled choose that feel heavy for their size their shells should not be cracked, pierced or stained as this often times a sign of mold development on the nutrient which renders it unsafe for human consumption.

Shelled walnut are generally available is prepackaged containers as well as bulk tins just as with any other food that you may purchase in the bulk section, make sure that the bins containing the walnuts are covered and that the store has a good product turnover so as to ensure its maximal freshness weather purchasing walnuts in bulk or in a packaged container avoid those that look rubbery or shrived if it is possible to smell the walnuts do so in order to ensure that they are not reduced.

Due to their high poly unsaturated fat contents, walnut are extremely perishables are showed be taken in their storage. Shelled walnut should be stored in an airtight containers and placed refrigerator, where they will keep for six months or the freezer, where they will last for last for one year. Unshelled walnuts should preferably be stored in the refrigerator although as long as you keep them in a cool, dry dark place they will stay fresh for up to six months

2.13 Uses

Walnut products have a history medicinal uses American include used bark tea as an emetic and laxative, they chewed the bark for toothaches, the bark is still used as a dentifrice in Pakistan the husk is chowed for colic and use as a poultice for inflammation juglans lusularis is used in Cuba as an herb decoction used in bath water for treatment of various skin diseases of children fruit husk juice used for ringworm juglone from fruitks and bark of J.

Nigra acts against dermatomycosis, it was used by Greeks and Romans to cure coetaneous my coses walnut pollen is a common allergen. Ellargic acid and juglone is being studies for use as cancer therapy drugs the leaf extract has been used as phtytoestrogen body cream and together with

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