

Indigenous Knowledge of Ilokano Farmers and Fisherfolks: Appreciation and Preservation

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Abstract – This study aimed to identify the indigenous knowledge of Ilokanos residing in selected agricultural and coastal areas of the Province of Ilocos Sur. It employed a phenomenological design, further triangulated by observations in data gathering. The study revealed that Ilokanos, residing both in agricultural and coastal areas in the province, rely heavily on indigenous knowledge (IK), which includes predicting weather plant harvested crops, ripening fruit crops, determining the best time for fishing, as well as preventing disasters. Farmers use these bits of knowledge derived from observations of and storing atmospheric and astronomic conditions, as well as animals' behavior, which often signifies various weather conditions. Fishermen likewise observe wind direction, moon appearances, and events through the months to predict what types of fishes would appear. Both farmers and fishers use medicinal plants found in their localities for these are organic, and costs less. The researcher recommends that both farmers and fishermen attend seminars to strengthen their knowledge in farming and fishing, and the LGU should heighten their support.

Keywords: indigenous knowledge, agricultural, coastal, medicinal plants, farmers, fishermen

1. Introduction

Indigenous knowledge plays an indispensable role in the life of individuals. Though not tested by science and technology, many believe that this is important because they coincide with reality, and if followed, can save lives. Lodhi (2010) defines indigenous knowledge (IK) as a complete body of knowledge, know-how, and practices maintained and developed by people through generations, generally in rural areas; it is the information base for society, facilitating communication and decision making. It is also uniquely dependent on culture. It serves as the basis for local decision-making in agriculture, healthcare, food preparation, education, natural resources management, and a host of other activities in rural communities. IK also serves many functions for the community, households, and individuals by functioning as a base of knowledge to help process information and promote efficient allocation and production of resources (Materer, 2001). IK also helps elders prepare for calamities.

Indigenous knowledge has the following characteristics: it is rooted in a particular set of

experiences and generated by people living in those places; it is orally transmitted through imitation and demonstration, is the consequence of practical engagement in everyday life, and is continuously reinforced by experience and trial and error, characteristically shared to a much greater degree than other forms of knowledge, including global science. Lastly, it focuses on particular individuals and may achieve a degree of coherence in rituals and other symbolic constructs; its distribution is always fragmentary.

IK is essential because it helps people realize the different ways of viewing the world and gaining knowledge about it. It also helps protect the endangered way of life and plays a vital role in local communities' development process. It provides a basis of problem-solving strategies for local communities, especially the poor.

Ilokanos possess indigenous knowledge to predict their family's luck, occurrences of death, and even the weather. For instance, IK weather relates to clouds, unexpected appearances (of what?), the sound animals make, the shape of the

moon, flowering of trees, location of moles, appearances of the rainbow, wearing particular types of clothes, among others. Also, several studies posit the richness of the IK of different ethnolinguistic groups.

Sabrihan Islam (2007) found some animal indicators that may warn the onslaught of cyclones. Cattles become restless and stop eating; bees move around in clusters; ants climb trees with eggs in their backs; birds fly without a specific destination; flies and mosquitoes increase in numbers; insects attack cattle; fishes jump in the river and ponds; crows and cockerels call/fly at night; foxes howl during the day; crabs crawl into the house and courtyard.

The study of Desalegn (2017) found that farmers in South Africa use a combination of meteorological, biological, and astrological indicators to predict weather and to make crucial agricultural production decisions. Meteorological and astrological indicators include direction and strength of winds, star and moon alignment, movements of the stars, the direction of the moon crescent, types of clouds, temperature conditions, lightning and thunder, and color of the sky, and rainbow. These are being observed to forecast the next rainy season.

In Uganda, IK on the onset of rainfall relates to the appearance of clouds. The appearance of nimbostratus and cumulonimbus clouds indicate a high probability of rainfall. While in Ethiopia, the appearance of a white feather-like column cloud in the sky indicates that rain is about to fall. In contrast, light clouds mean drought.

Biological indicators focus on the behavioral activities of domestic and wild animals, insects, and different species of plants for weather forecasting. In Uganda, the Mvule tree indicates the onset of the rainy season. While in Ethiopia, people observe the intestines of cattle, sheep, and goats to forecast the magnitude, severity, and duration of drought, drought-affected areas, disease outbreak, the prospect of peace, and conflict. In Tanzania, large flocks of swallows and swamps, roaming from the south to the north from September to November, indicate the onset of short rains.

Okonyas (2018) also mentioned the dry season indicators of Uganda. These include the

appearance and movement of insects (e.g., butterflies, red caterpillars, western honey bees), the wind blowing from the east to west, appearance of migratory birds, singing/calling of birds, a clear sky, trees shedding their leaves, coldness during day and night, new moon without a lining, the frequent appearance of the rainbow, presence of red clouds at sunset, movement of Columbus clouds from the east to west, warm wind blowing, bright moon, strong winds in the morning and evening, and appearance of fog in the morning. Contrariwise, the following indicate the rainy season: the appearance of nimbus clouds in the morning and evening; birds like cuckoos, ducks, and tutu of *tunyubo* start to call; the appearance of migratory birds; frogs start to croak at night; moon appears white/gray with a visible ring, and one of its sides is black; a feeling of excess heat during the night and day; the movement of clouds from east to west; the occurrence of whirlwinds; new leaves of trees sprout; cattle are restless and start jumping; ice cap on Mount Rwenzori is visible; the appearance of millipedes; and the presence of dew in plants in the morning.

Arnold (2017) likewise presents a myth with a strong connection with Japanese indigenous knowledge about volcanic eruptions. This myth was all about Tanobo, the ancient chief of the Fijian island of Ono. *Tanobo* had *Nabukelevu* rise and belch gas and burning rock into the air. Intimidated, *Tanobo* responded by weaving massive baskets to remove the mountain, then dropping debris in the ocean to create new islands. Nowadays, geologists consider that the small islands around Fiji were the result of volcanic rubble. Japan's people consider this story a simple saga of an angry god and a geological record of an ancient eruption.

Dev (2016) mentioned that black crows occupy a space in various peoples' IK. For some, they are ways of God's communication to humans, symbolizing magic, mysteries, intelligence, flexibility, destiny, predict tornadoes, rain, and other weather changes.

Many may scoff at IK, but some still believe, for different IKs from different groups are handed down from ancestors, and importantly IK could warn people, thus helping them prepare for, and

mitigate the effects of disasters. An integral part of local communities' development process shapes and defines people's existence, providing a foundation for their beliefs and practices. As such, Stevens (2009) suggests that passed down legends, keen observations of the environment, and indigenous knowledge must incorporate into contemporary bits of knowledge. Similarly, Habane (2010) also avers that indigenous knowledge should be recorded, promoted, safeguarded, and preserved; it can supplement government plans and strategies concerning natural disasters.

The researcher, being an Ilokano, deems this study important in preserving Ilokano IK. This study could create awareness among families and millennials, thus enabling the integration of IK in their lives, beliefs, and practices. Additionally, others may learn from these pieces of IK, which could result in the improvement of livelihood strategies, economic diversification, and social mobilization. Young people may further learn from the wisdom of their ancestors. The College of Teacher Education could also anticipate academic activities aligned with IK that may develop the entire studentry.

1.1. Objectives of the Study

This study aimed to determine Ilokano indigenous knowledge practiced by farmers and fishers in the province of Ilocos Sur. It specifically looked into the indigenous knowledge Ilokano farmers and fishermen observe and apply, and how they use indigenous knowledge in their lives.

2. Methodology

The researcher employed a phenomenological research design. It used in-depth interviews with 40 farmers and 30 fishermen (65-75 years of age) in selected agricultural and coastal towns of the province of Ilocos Sur. These results were triangulated by observations. The researcher considered the privacy and confidentiality of the respondents; records or documentation acquired were used only for this study.

Records are placed in a sealed envelope and stored in a safe box. It shall be destroyed/thrown a

year after the study is complete. The researcher used an interview guide, which was validated by the experts and the panel members.

3. Results and Discussion

The results' presentation is organized as follows: Part I discusses the indigenous knowledge in agricultural areas that serve as people's guides in their lives and farm activities to ensure better harvest. Presented, too, are the reasons why these are observed. Part II presents the indigenous knowledge which fishermen observe to be safe and to produce better catch. Part III presents how Ilokanos ripen their fruit crops to ensure the desired taste. Part IV shows indigenous knowledge of herbal medicines available in localities.

3.1. Indigenous Knowledge (Ik) of Ilokano Farmers

3.1.1. For seed preservation

Farmers are one of the most valuable people because of their crops and vigorous agricultural activities. Though they feed large communities, their living conditions are far from satisfactory. If crops do not yield much, then they are not capacitated to pay back borrowed money for their farming. Many rely on the Ilokano mantras "*Karkarukayen, tuktuktoken*" or "*No saanak a makabayad, ipabaluddak lattan; uray ta saanko met a pagtallikudan.*" Their lives depend much on the forces of nature and faith [God's blessings]. Hence, they apply indigenous knowledge for them to spend less on their farm activities and ensure better farm harvest.

The farmers interviewed described the following Iks to preserve their seeds, so as not to repurchase new seeds.

Bin-i nga palay, corn, and mongo would dry under the sun for three days. A farmer, aged late 70's, said that palay sundried for three days germinate well and is safe from pests or microorganisms (*buot*); corn must be in cooking areas for to be heated once in a while. Some remove the seeds and store these in big plastic

containers—the same process in storing mongo seeds.

Aruna's study (2014) confirms that drying of fruit grains then stored for future use, ensure that the presence of moisture is favorable for the growth of microorganisms and the germination of the seeds. Roberts (1988) and Sakshi (2016) state that the right temperature affects germination percentage and rate. Accordingly, seeds continuously deteriorate unless germinated—with the rate of deterioration dependent mainly on moisture content and temperature. Sun drying is thus a crucial process.

IK of farmers when they plant seeds. Ilokano farmers observe the clouds, moon, and rainbow locations before starting to plant seeds. For them, earthquakes, the croaking of frogs, animal and insect behaviors, the phenology of plants, the direction of the wind, and the atmosphere's color play a vital role. Through these, they can have their palay grow healthy, save water, and minimize expenses producing abundant crops.

Bamboo-like clouds in the west in the morning and frogs croaking (*kumaw-kawayan nga ulep ken panagganukgok dagiti tukak*). A farmer in his 60's and a farmer's wife in her late 70's agree that a rainbow in the west in early mornings followed by croaking frogs signals farmers the coming of the rainy season; farmers then prepare their seeds (*bunobon*) for germination.

Christensen (2018) supports the farmers' IK, saying cumulonimbus clouds getting more extensive and higher is a sign that heavy rain is on the way, which is common in the summertime while small cumulus clouds do not give rain. Moreover, black and low clouds sign a rainstorm in contrast to high and white clouds that signal a sunny and bright day (Zisovska, 2017).

The farmers' IK about male frogs croaking before a rainfall supports Patrick (2018) which states that when green male frogs croak to attract female frogs, this signifies that the environment best for reproduction is approaching. The rainy season is the best breeding time for frogs. Rain increases the number of vernal pools and temporary ponds for their tadpoles to develop.

Another farmer informant in his 70's believes that the ripening and falling of the fruits of molave

and *Nauclea Orientalis* signal the advent of rain. This IK supports Galacgac's (2009) findings and Mackwara's (2013) that birds, insects, and plants are rain indicators.

The wind (*amihan*) is blowing from North to South. The wind coming from the north is cold, but to farmers, this means summer has ended, and one must be ready for the planting season. One informant said when the wind is coming from the south and heading north, this indicates that dry season/drought is expected.

These farmers' IK supports Habby's (2018) study that wind direction influences the expected weather. A wind from the north tends to bring in cooler and drier air; a wind from the southwest will bring in dry air; a wind from the southeast will bring in the warm and humid air. Observing wind direction, a forecaster gains an idea of what type of air mass moves toward the forecast area.

Black ants/red ants are busy carrying/storing their foods; some animals become restless; the appearance of some insects signals something (*bunara nga agaw-awit ti bagas wenno marmaregme*). "When I see some black or red ants busy carrying their food in lines, goats are bleating; cows keep on pulling their ropes wanting to go home, I know that rain is coming, so we have to keep them safe. Dried seeds and some products must be placed in a safe place," stated a farmer in the late '60s. While a teacher/farmer from the second district said that whenever he sees a swarm of dragonflies on the ground, he will count few days, then monsoon rain comes, a farmer in the first district said, when spiders start to leave their web, rain is to be expected.

This IK supports Sujata (2013), echoing the entomologist Dr. D Jagadeeswar Reddy's statement that "insect movement and the changes in their behavior is 100% reliable for rain forecasting since insects can sense wind shift, humidity, and pressure change."

Ring around the moon (*nagsingsing a bulan*). The farmers' sensitivity to the moon's appearances is indispensable. Ten farmers in their 70's all averred that a ring around the moon meant that a typhoon is coming, so they have to postpone some farm activities such as seed sowing or *raep* (planting seedlings), believing that their crops would be washed away due to strong typhoon. On

clear nights, however, they observed the formation of ice crystals. Ice crystals make up cirrus clouds, the wispy-ribbon-like ones in the sky. Cirrus clouds are preceded by low-pressure systems, that after a day or two, low-pressure systems do bring precipitation storms. A ring around the moon (corona), according to Farmers Almanac (2009), happens because of diffraction, how a beam of light spreads into the region behind the obstacle.

The light waves interfere with one another. The small corona indicates more humid air, while the larger droplets reveal that the clouds are cirrus. These cirrus clouds do not cause rain or storms, but they do precede low-pressure systems that bring precipitation storms.

3.1.2. Ways to fertilize rice paddies and higher yield production

IK in Ilokanos' practices ascertained to an abundant productive harvest. These are the achieved through the following:

They are placing animal manure to the field/ submerging the field for 5-7 days (*Panagikabil ti lugit ti animales ken panagpalungsot sakbay ti panagraep*). Ilokano farmers often stock livestock manure, and wait for this to dry, and thus and ready to be dispersed before planting. They believed that dried manure can improve their crop quality and production. Manure is highly rich in organic matter and humus, thus improving soil fertility. This IK supports Tilley's (2018) study and Mikesell's (2015), who elaborated on manure's numerous benefits. It is pack with nutrients needed by plants such as nitrogen; manure keeps plants healthy and green, conditions the soil, increases soil carbon (which is an essential source of energy for plants), reduces runoff and leaching of nitrates in the soil, and saves money. Horse, cow, chicken, sheep, and rabbit manure are commonly used as fertilizers. However, cat and dog manure is not recommended as these carry parasites.

He is removing weeds (*panaggabut kadagiti ruot*). Weed control is necessary to have better crop production, and an easier way to invite people to harvest their crops. An informant in his early 70's said that he experiences headaches whenever there are so many weeds on his farm. It is even difficult for him to invite folks to help him with

the harvest. This Ilokano IK of farmers still observed by younger generation farmers, for the weeds, decrease yields because of the direct competition for sunlight, nutrients, and water. This in turn increases labor, input costs, and reduces grain quality and price.

They cut branches off trees that block the sunlight for plants (*panagpalungpong kadagiti sanga ti kaykayo a mangtinong kadagiti mula*). Sunlight is crucial for plant food reproduction. Plants get energy from light through photosynthesis. Most plants require large amounts of sunlight, while others survive on little. Allman (2019) posits that insufficient sunlight cause plants not to fully thrive; plants become spindly and tall as they search for light, a phenomenon called etiolation. Plants suffering from etiolation can never fully recover, but they can become healthy when moved into an area with adequate sunlight. However, plants that receive excessive sun become unhealthy and die; they may exhibit brown leaves and wilt symptoms.

Three perennial corn and rice growers in their late 60's said, "Sakbay nga agparaepnak wenno agpamulanak ti mais, masapul a pasalingsingak pay dagitay sanga ti kaykayo ti bangkagko, tapno dinto ket matinongan dagiti mulak nga pagay wenno mais. Ta no matinonganda ket langada ti aglalami ken saan a napuskol gipi, nakapuy dawa wenno saan ket aglang-aw. Ket no mais met ti matinungan, nagtatayagda nga agpayso ngem kasla lateg aso met lang kaddakkel ti bungada, no dadduma met ket tuppo-tuppol met. Ania ngarud serbina? Para baka lattan a." This IK supports Allman's (2019) idea on the importance of sunlight to plants.

They are spraying the crops early in the morning or late afternoon (*panagpasuyot ti insektisidio wenno pesticides iti bigat wenno iti male*). Proper timing is essential to successful plant pest and disease control. Whether the farmers are battling caterpillars or fire blight, aphids, or mildew, practical application of control chemicals depends on knowing how to coordinate spraying with plant growth stages. Every pesticide use has its timetable; the best way to maximize effectiveness is by applying chemicals at the right time of the day.

Two farmers in their early 60s said, "If I spray my crops, I see to it that I do it early in the morning or late in the afternoon so that it would be effective." This Ilokano IK supports the idea of Beal (2018) and Bonnie (2018) that plants absorb chemicals faster between 3 am, and 8 am and around dusk. Pores absorb foliar spray quickly during these times of the day, and air movement is more still than at other times. Most insects are active in the morning and early evening. Pesticides require between one and 24 hours of drying time to maximize benefits. They should never be applied when there is wind to prevent the chemical from drifting to non-target areas.

Ilokano way of ripening fruits. Waiting for the fruits to ripen makes farmers excited in tasting the sweet savor of the fruits. Ripening is a process that causes fruits to become more palatable. They become sweeter, less green, and softer. Ilokano farmers apply certain IK to make their fruit crops ripen in a shorter time.

They are burying the fruits in rice. A housewife said, if she wanted to ripen fruits naturally, she buries them in uncooked rice inside a bin or container. It takes just a few days before the fruits can be eaten. This Ilokano IK supports the ideas of Rogers (2011), Han (2011), and Kohl (2015) that a container of rice makes it easy for the fruit's ethylene to stick around longer and promote ripening faster. Ethylene gas, a natural plant hormone, causes the fruit to turn softer and sweeter. Ethylene is a hormone produced by plants that aids in the ripening and aging process of plants. Ethylene ripens fruits such as chico, mango, apples, and pears. It is a naturally occurring hydrocarbon gas that can also occur through combustion and other methods. Hence, it is used by commercial agribusinesses to speed up the ripening process of crops such as tomatoes.

3.2. Indigenous Knowledge of Ilokano Fishermen

Fishers earn their livelihood by catching and selling fishes. They go in the deep sea, though their families are anxious about their safe return. In their leisure period, they have to repair their nets and check their boats. If they catch many fishes,

their pleasure knows no bound. They use their IK to get better capture and to ensure their safety.

For fishermen's safety and abundant catch. Fishermen apply IK to avoid accidents when they go out to sea. They always think of their safety and returning to their families. The following are the IKS that fisherfolks observe.

When the wind is from south to north (habagat). The fishermen in their late 60s said that if the wind's direction is blowing from south to north, they have to stay in their homes because they believe they might encounter an accident. If there is *habagat*, expectedly there is lightning and thunder; they might suffer *Kalas-Kalas*, *ar-arabuob* (big waves), or *napalong*. If they compromise their safety, they do too, with the sturdiness of the *payaw* (artificial habitat of the fishes).

When the wind is from north to south (amihan). *Amihan or nortada* (north to south winds) means an empty stomach to the fishermen. They believe they should not go fishing far-off-shore because of the dangers brought by heavy waves. "No ti angin ket aggapu iti amianan, Awan manen ti inkam man lang makuna gapu ta awan man sumalogen kadakami, ta nadawwel man ti baybayen. Uray siksik lang ti ikan ket awan man makitamin." This is the sad testimony of a fisherman in his early 70's from Puro, Magsingal, Ilocos Sur.

When the wind is from east to west (dogodog). "*No aggapu't daya ti anginna wenna dogodog, awan latta ti mapan sumalog kadakami. Mabalina nga no makasidsidaenkami ti Ikan ket ditakam la ig-igidna nga agsigay-sigay ta delikado met ti agpataaw kadakami. Kaskasdi nga adda panagdawdawelna ti bay-bay.*" (From the east wind, it does not permit us to go the far and deep areas of the sea; we just fishing in the shallow part since waves become bigger and bigger sometimes, the fisherman said.)

When the wind is from west to east. If the wind blows from west to east, the fishermen's hearts are full of happiness and joy. The sea is calm and inviting for fishing, and they expect to have an abundant catch, and thus increase in income. "Uray napuyatan ken palalo bannogmi, saanmi pulos marikna gapu ti kawadwad ti nakalapanmi," said a fisherman in his late 70's.

These informants statements prove the fishing rhyme "*Wind from the East, fish bite the least; Wind from the west, the fish bite the best; Wind from the north, few sailors, set forth; Wind from the south blows bait in their mouth*" and the old saying that "*Wind is the fishermen's friend.*" The statements of Reyes (2017) and Roduw (2018) reinforces this IK; the wind speed and direction are critical for fishing since it stirs up the food chain and provides more cover from the sun due to the action of the waves.

The expected time when fishes appear. The Ilokano fishermen are entirely accurate in determining the months when different kinds of fishes and mollusks appear. Squid (*Decapodiformes*), according to the fishermen informants, appears during summertime (April and May), especially when the night is very dark. Sea crabs (*dariway*) are also full of fat (*Napula*). *Baraniti* (*Rastrelliger kanagurta*), a fish from the sardine family and the blue marlins and yellowfins, are abundant from May to October. When the cool breeze starts, the *Scomberomorus mahimahi* and *durado* (*Coryphaena hippurus*) are visible to fishers. Other fishes like *monamon* (anchovy) (*Engraulidae*) appear from September to October.

Miramar, Magsingal, Ilocos Sur is genuinely blessed with Nile tilapia and a supplier of *bogi* or *semilya balang*, the fingerlings of big bangus. The residents always expect to see these fishes from April to August, and then, in November. According to them, it is already perennial that they appear on the said months, and their abundance provides them economic benefits.

3.3. Use of Indigenous Knowledge (Traditional Medicine)

Medicinal plants, also called medicinal herbs, have been discovered and used in traditional medicine practices since prehistoric times. Plants synthesize hundreds of chemical compounds for numerous functions, including defense against insects, fungi, diseases, and herbivorous mammals. Medicinal plants are widely used in rural areas because they are readily available and cheap.

Ilokano farmers and fishers utilize medicinal plants, especially if they cannot afford commercial medicines. The following are the common medicinal plants mentioned by the informants.

3.3.1. *Oregano* (Ilk.) (*Coleus Aromaticus Benth*) and *dangla* (Ilk.) (*lagundi*) (*Vitex Negundo*)

"When my seven kids had a cough in their tender ages, I used to extract oregano leaves and let them drink it. With God's blessing, they are healed," said a mother. The other mother informants mentioned the same.

Similarly, a mother in her early 70s recalls her mother, who was using oregano as medicine for headaches. She believes ever since that it can cure headaches because of its cooling effect and the leaves' sweet aroma. It is likewise useful for treating asthma. This IK of Ilokanos confirms Degrandpre's (2007) findings that oregano is not only used for cooking. It is also believed to cure different ailments such as colds, coughs, and digestive issues. When used as a steam inhalant, it helps clear sinuses.

On the other hand, Guiang (2011) posits that oregano's negative effect can boost menstruation discharge. So women should avoid using oregano when in their early stages of pregnancy. Nonetheless, some elements present in oregano are useful in producing soaps, lotions, and perfumes as Egyptians did in the early times.

Ten mothers in the late '60s and early '70s said that if their kids had cough or asthma, they used *dangla* or *lagundi*. They burned the *lagundi* leaves in a pot until it turned to ashes, and later they added some water in a pitcher. However, mostly, the *lagundi* user just boiled fresh leaves until the water turned light brown. They preferred *lagundi* because it is odorless and tasteless compared to oregano.

On the other hand, an informant from an upland municipality said that this wonder plant could treat *asthma* (*fever gotten from bathing immediately after coming from outdoors*). They also used boiled water with *lagundi* in bathing someone who is sick with flu. Moreover, the informant also said, that the plant was given to her daughter who suffered from *tig-an* (headache with

hard-to-explain fear) when she gave birth. This IK of Ilokano mothers parallels scientific findings of the Department of Health (DOH).

DOH recognized the effectiveness of *lagundi* since it has several verifiable health benefits. *Lagundi* also promotes good memory and eyesight, and *lagundi* tea relieves anxiety and promotes relaxation. Besides, an article from the *Indian Journal of Pharmaceutical Sciences* (2008) has proven the antibacterial properties of VN extracts with its root and leaf extracts as active against some bacteria as *B. subtilis* and *E. coli*. In (2006), it was also found that VN has a positive effect as an adjuvant for anti-inflammatory drugs ibuprofen and phenylbutazone.

Aside from the health benefits of VN, it is also a good source of calcium, iron, manganese, and Vitamins A, C, and K. It has a folkloric use that VN leaves smoke drives away insects, particularly mosquitoes.

3.3.2. *Bawang (Ilk.) Garlic (Allium sativum)*

The Department of Health (DOH) reminds the public of the importance of regular blood pressure monitoring, given the fact that hypertension affects three in every 10 Filipino adults. Hypertension can be hereditary but can also be caused by modifiable risk factors that are lifestyle-related. It is a silent killer that shows no symptoms and is considered the most significant single risk factor for deaths worldwide. According to the World Health Organization (WHO), hypertension causes 7 million deaths every year, while 1.5 billion people suffer due to its complications. Dr. Dante Morales, President of the Philippine Society of Hypertension (PSH), said that "Twenty-one percent of Filipino adults are hypertensive; most of the time hypertension has no symptoms, and this makes the condition more dangerous as it remain untreated; the arteries and other vital organs in the body."

Garlic is used as a flavoring in cooking, but it has also been used as medicine throughout history. It can also prevent a wide range of conditions and diseases.

Some farmers and fishermen said that they have their first aid remedy if they observe that their family members suffer from hypertension. A

father in his 80s, and a mother in her 70s both said that if they ever observe somebody suffer from a headache after eating fatty foods and deduce that they suffer from hypertension, they give fresh garlic for the person to chew and dab vinegar in their faces. Scientific studies confirm this, having found that garlic contains allicin to control high blood pressure. Allicin is organosulfur from garlic. When fresh garlic is chopped or crushed, the enzyme alliinase converts alliin to allicin, which is the fresh garlic's aroma. It is also the defense mechanism of garlic plants against pests.

Some informants from the extreme northern mountainside of the province, said they used crushed garlic in treating toothache. They surround the affected tooth with crushed garlic. They also use this in treating asthma by drinking the decocted garlic. There were also two informants from the same place who used crushed garlic in treating dog bites. Garlic is accompanied by their "sumang." Currently, however, they have stopped doing this as doctors already outlaw such practices.

This IK of Ilokanos on the effectiveness of garlic supports the findings of Leech (2018), Axe (2017), and Nordquist (2017). Accordingly, garlic prevents cardiovascular diseases such as heart attacks and strokes. Also, garlic extract is as effective as Atenolol at reducing blood pressure. It also lowers total and LDL (bad) cholesterol. However, garlic has no reliable effect on HDL (good) cholesterol, and triglycerides do not seem affected. Garlic also contains antioxidants that may help prevent Alzheimer's disease and dementia, protects cell damage and aging, and enhances athletic performance. Garlic also helps detoxify heavy metals in the body (sulfur) and improve bone health by increasing females' estrogen levels.

3.3.3. *Sabila (ilk.) Aloe Vera (Aloe perfoliata, aloe indica royle)*

Wounds, burns, and hair growth are just typical problems of farmers and fishermen. Wounds may accidentally happen when they repair their tools or when bad luck comes, they say. They treat their burns as long as it is not severe. Financial

constraints impede them at times from consulting with a doctor.

A 67-year-old fisherman's wife shared that whenever her youngest child got wounded or burnt, he would immediately get some stems from their aloe vera plant and applied the extract to the affected area. Also, because her daughter's hair is thin, she advised her to apply aloe vera on her scalp. Days passed, and her daughter's hair became thick. Another informant even claimed that she used aloe vera to treat her child's *momo* (mouth sores).

Such IK of Ilokanos supports Leech's (2017) study that aloe vera is a prevalent medicinal plant that has been used for thousands of years. It is best used in treating skin injuries, sores, burns, and sunburns. It also reduces the pain associated with mouth ulcers.

Moreover, the Food and Drugs Administration first approved aloe vera ointment as an over-the-counter medication for skin burns in 1959, and as an effective topical treatment for first and second-degree burns. Malik (2019) also found that aloe vera contains proteolytic enzymes that repair dead skin cells on the scalp. It acts as a great conditioner and leaves the hair smooth and shiny. It promotes hair growth, prevents itching on the scalp, reduces dandruff, and conditions the hair.

3.3.4. *Parya (Ilk.) Ampalaya (Bitter gourd) (bitter melon) (Momordica Charantia)*

Ampalaya is generally known as bitter melon. It can grow to about 20 centimeters long. Generations proved that the ampalaya is sufficient for many ailments, especially for diabetic persons. Some Ilokanos do not like this leafy vegetable because of its bitter taste, especially children. Still, some like it, especially if they add mushrooms or mungo seeds to the dish. To a diabetic person, this vegetable is extraordinary.

One farmer said that his wife got addicted to soda; drinking three bottles a day. She drinks soda when she would rest from working in the field. Soon, she started feeling weak and suffered from backache. So, the farmer husband brought her to the doctor. He shared their plight with their friends, who advised him to prepare viands with ampalaya. After a few days of eating ampalaya and taking her medicine, she did not complain

anymore of any sickness, and stopped drinking soda. The farmer believed that ampalaya cured the ailment of his wife.

Another informant from a coastal barangay said that their schedule for fishing resulted in his low-blood pressure. So, he stopped from his fishing activity for a while. His wife went to other places in their town to barter the fish with bitter gourd leaves.

Among the fathers, several of them said that their wives gave birth during the times the ampalaya leaves are always stripped to almost nothing. They believe that bitter gourd leaves help with the mother's lactation.

Another informant, also from the second district, said that when her sons suffered from *pytiasis alba* (*kamanaw agdakkal*), she crushed the bitter gourd leaves and applied the juice to the affected parts. When her neighbors observed that her sons' skin problem lessened, she was generous enough to share what she did.

Many studies that found the benefits of ampalaya, both the leaves and fruits, support Ilokanos' IK. The study of Walia (2018) supported this IK, who found that bitter gourd helps maintain blood sugar levels, contains an insulin compound called Polypeptide-p or p-insulin, lowers harmful cholesterol levels, and reduces the risk of heart attack and stroke. It is rich in iron and folic, which are known to decrease stroke risk and keep the heart healthy. It also maintains glowing skin and lustrous hair, prevents skin aging, diminishes wrinkles, cures hang-overs, cleanses the liver, helps in weight loss, boosts the immune system, and prevents breast and cervical cancer.

The Department of Health considered ampalaya as an alternative in treating skin diseases, liver problems, HIV, and diabetes. Besides, it also has antibacterial, antipyretic, parasiticide, antioxidant, and anti-inflammatory properties. However, the study of Helen (2016) revealed that the substances that make ampalaya bitter could cause miscarriage.

3.3.5. *Bayyabas (Ilk) (Guava) (Psidium guajava)*

Ilokanos value the guava tree. It is the powerhouse of nutrients and is highly useful to Ilokanos. It is an antioxidant-rich which is rich in Vitamin C, potassium, and fiber. Ilokanos use

guava leaves as their traditional way of washing fish, frogs, and other animals to remove the unwanted smell and slipperiness. Moreover, Ilokanos use the decocted leaves in washing wounds and gargling after tooth extraction. Most importantly, it has antibacterial properties. It is useful in washing the genitals of men after circumcision, and for women after they give birth.

A farmer in his 70s said, "*No agpagabut idi dagitoy annakko ti ngipenda ken pati dakami ket agmulmog kami ti naanger a bulong bayabas. Agingga nga agsardeng ti dara ti gugotmin a, ken malagipko pay idi siak ti nag pakugit pinagnalngalnak idi ti Dios-ti-aluad na nga amak ti uggot tapno saan a nadara ken dinayadaysak met ti inanger a ta saankano nga agkamatis isu nga idi napan met nagpa kugittay kakaisuna nga putoko, no muna ket tagbat pay lang idi, kas kaniak ket pinagnalngalko met ti uggot ti bayabas tapno saan unay a nadara kunak, ken siempre ti panagdayasna ket tay inanger a bulong ti bayabas, ket kaasi ti apo saan met a nagkamatistay mabag-bagina.*"

The informants said decocted guava leaves could cure many skin diseases such as boils, eczema, skin asthma, and other skin problems. Also, chewing the young (uggot) leaves served as a mouthwash to have fresher breath and avoid halitosis. They resort to these remedies because it is difficult for them to go to a dermatologist. Also, since some doctors have expensive professional fees.

This IK support the findings of Brown (2018) that guava has numerous health benefits. Guava tea can lower blood sugar levels, decrease blood pressure, increase good cholesterol, decrease menstruation cramps, prevent diarrhea and constipation, and help weight loss. The high levels of antioxidants in guava could help prevent cancer cells' development and growth, slow skin aging, and treat acne. Nagdeve (2019) also stated that guava speeds up the healing process of wounds when applied topically, reduces the frequency of convulsion, epilepsy, and bacterial infection.

3.3.6. Pinya Rubya (Ilk.) Moses-in-the cradle/oyster plant (*Tradescantia spathacea* Sw.)

Few well-to-do Ilokanos use this as an ornamental plant. The leaves are pale pink, white and green on top and bright purple underneath. Small white blooms nestle in the leaves, earning the plant the nickname Moses-in-the-cradle.

Farmers and fishers use the pinya rubya as a medicinal plant, especially for married women. According to the mothers who are in their late 70s who suffered menstrual-related problems, they drank this decocted medicinal plant to soothe cramps and dysmenorrhea. Two mothers said, "*No agtiritirnak idin ti sakit ti pus-ong ken uraynak lang pumurawen, kasta unay agawa daydi inangkon ti mapan agdawat ti pinya rubya diay karrubamin gapu ta awan pay mula idi ni inangko, talaga a napait ngem kapilitan a nga inumek tapno sumardeng tay madi a marikriknak. Isu a pati annakko ket talaga nga isu ar-aramidek met idi adda binulandan.*"

An informant from a coastal barangay shared one rare use of this medicinal plant. She said, "*Idi ubingak adda nagtubo toy tengngedko, agluptak-Luptak, nabudo, ken nagpardas nga agadu, adda nakakita kaniak nga lolang baketko, ket dagus a kinuna nga kulibriya (*herpes zoster*) kano ti adda kaniak isu nga imbaonna ni inangko a napan nagdawat ti pinya rubya diay karrubami. The informant realized that the extracted juice of this plant is effective in curing *herpes zoster*. This IK of the Ilokano women supports Stuart (2016), who stated that this herbal plant is a blood refrigerant and has anti-fertility properties, decongestant, expectorant, anti-inflammatory, insecticidal, antimicrobial, and anti-cancer. However, the plant's sap is poisonous. Contact causes stinging of the skin and eyes. Ingestion may irritate the lips, mouth, and throat and can cause abdominal pain.*

3.3.7. Niyog (Ilk.) Coconut (*Cocos nucifera*)

Since the province is blessed with beaches, expectedly there are coconut trees that add beauty to its shores. Ilokanos treasure this wonder tree because of the benefits that can be derived from it. Coconut trees are beneficial because they have

various parts that can be utilized for various purposes. These are the trunk, coconut shell, coconut husk, coconut leaves, coconut spathe, guinit, coconut milk, coconut oil, and coconut water.

"*Gapu kinarigat ti biag, ni Inangko idi ket agsinglag ti niyog tapno agbalin nga lanami, no kalutluto dayta nga Lana isu idi paglabaymi, Naim-imas pay ngem manteka. No napigsa ti anginna, kursing ti kalaban, diay Lana ti ipulagidmin a toy kudilmin, ken gapu ta Awan pay met lang idi shampoo ken tapno nalaklaka nga itagod tay sagaysay. Ket no sarsaripiten kami idi mapan met umuli ni tatangmi ti kalog, ket tay digo na isu ti ipainomna kadakami. Ket kaasi ti Apo maawan met tay sarsaripitmi.*" This was the statement of mother informants living in coastal communities. Hence, coconut oil is a substitute for vegetable oil, commercial lotion, and conditioner. Also, coconut water helps cure their urinary tract infections.

Another informant from the coastal area in the first district said that she used to drink coconut virgin oil every time she got pregnant to prevent prolonged labor. Furthermore, the *manghihilot* also used the said oil to relax her body after the delivery to prevent her from postpartum ailments. In bathing her babies, she also applied coconut oil to their whole bodies, especially the face, to prevent them from suffering from pimples during their adolescence.

A hardworking mother informant had fissures or cracked heels. She uses coconut milk instead of lotion or petroleum jelly. She also narrated an instance when one of her children was dehydrated because of LBM. She gave her some coconut water to regain her energy. The coconut water plus a pinch of salt is a substitute for the commercial intravenous fluid or dextrose.

This Ilokano IK supports the ideas and findings of Spritzler (2018) and Ahmed (2019), citing that coconut water prevents crystals from sticking to the kidneys and other parts of the urinary tract. It also reduces the number of crystals formed in the urine, improves blood cholesterol, improves skin and hair's health and appearance, treats dry hands, prevents skin cancer, keeps skin young and beautiful, and prevents scalp infections.

Moreover, Axe (2019) study found out that coconut oil prevents Alzheimer's disease, prevents heart disease, protects the liver, reduces inflammation and arthritis, cancer prevention treatment, antibacterial, antifungal, antiviral, reduces stomach ulcers and ulcerative colitis, improve skin issues, prevents gum diseases and tooth decay, prevents osteoporosis and Type II diabetes, and helps in building muscles, and losing body fat. Coconut is not just a wonder tree but a wonder medicinal plant.

4. Conclusions and Recommendations

Ilokano farmers and fishermen possess indigenous knowledge (IK) that they apply in their lives. For the farmers, indigenous knowledge is important so their harvests will be abundant, and free from pests. They were able to predict when to start their farm activities best, hoping for an abundant harvest and fewer expenses for their farm activities through rain signals. Moreover, this study also presented how the research informants ripened their harvested fruits naturally to ensure palatability and preserve natural sweetness.

On the other hand, fishermen are also aware of indigenous knowledge, which helps them to have an abundant catch, ensure their safety, and prepare themselves in receiving blessings from the sea. The wind's directions, the different phases of the moon, and the months of the year hold significant meaning for them.

The farmers and fishermen from the province still employ first aid or self-medicate by utilizing available medicinal plants instead of commercial drugs. Financial constraints is one of the primary reasons why they resort to using these medicinal plants. Some of the informants have common knowledge on the usage of these plants, while for others, they used it to treat health problems. These medicinal plants are natural and freshly available from their backyards. They perceive these affordable, and at times free, because they can ask these plants from their generous neighbors.

Based on the findings and conclusions drawn from this study, the researcher forwards the following recommendations: (1) both the farmers and fishermen should strengthen their knowledge in farming and fishing by attending seminars

conducted by the Department of Agriculture (DA) or the Bureau of Fisheries and Aquatic Resources (BFAR). The Local Government Units should also provide financial support or in-kind to assistance towards farmers and fishermen to alleviate their economic status as well as to not compromise their safety in case of disasters. (2) People in the communities, particularly in the mountainous parts, should be well informed of the health benefits of the medicinal plants found in their respective places. They should also be taught on how to effectively use these plants.

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