Our Heritage

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Study of Nutritional Benefits of Some Edible Insects under Sustainable Development

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Abstract

With a growing world population, increasingly demanding consumers, and a limited amount of agricultural land, there is an urgent need to find alternatives to conventional meat products. As the global appetite for animal protein increases , we need new approaches for its production if we want to avoid further biodiversity losses and environmental degradation. Before humans had tools to hunt or farm, insects may have represented an important part of their diet.. Many ancient entomophagy practices have changed little over time compaired with other agricultural practices, leading to the development of modern traditional entomophagy.. Consumption and receptiveness of insects in developed countries is less than that of developing countries. insects are cheap, nutritious, and—according to some supporters they . There are over 2,100 edible insect species, which offers a vast array of options for food dishes. As mentioned above, insects have been consumed by humans for thousands of years, starting from the time of ancient hunters and gatherers. The practice continued to evolve with succeeding civilizations. Mexico, Brazil, Ghana, Thailand, China, and the Netherlands are some of the countries where insect-eating is most widely practiced today

Keywords - Sustainable Development, Edible , Insects, Environment

Introduction -

There are over 2,100 edible insect species, which offers a vast array of options for food dishes. As mentioned above, insects have been consumed by humans for thousands of years, starting from the time of ancient hunters and gatherers . The ethnic people of Arunachal Pradesh consume about 158 species of insects, whereas tribes of Nagaland consume only 42 species of insects. The members of various tribes choose the edible insects on the basis of their traditional belief, taste and regional and seasonal availability. This paper discusses the opportunities for using insects as a valuable feed source for the production of livestock. Insects do not only provide excellent opportunities to replace fishmeal but may also have important additional benefits. These include positive effects on livestock health and welfare with opportunities to reduce antibiotic use in livestock production. In 80% of the world's nations, people eat insects – between 1,000 and 2,000 species of them. Insects play an important role in the dietary system of various ethnic groups of north eastern states of India. They provide nutritional security and cure various body ailments. The number of edible insects eaten in a state varies with the land and tribes. The ethnic people of Arunachal Pradesh consume about 158 species of insects, whereas tribes of Nagaland consume only 42

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species of insects. The members of various tribes choose the edible insects on the basis of their traditional belief, taste and regional and seasonal When examined as a farmed species, insects are much more environmentally friendly than poultry, pork and beef.

Observation and conclusion –

While insects are a sustainable, alternative protein source for the future, it will take time to develop a culture where people feel as comfortable eating insects as other foods. May be large-scale production and mass acceptance of insect-eating in other parts of the world. People of many ethnic origins living in Manipur capture and consume many insect species located in puddles, ponds, lakes, rivers, etc. Among the edible insects, aquatic insects are one of the most favourable groups among consumers due to their taste and high availability. During the rainy season, there is an abundance of aquatic insects in various inland freshwater lakes that act as a source of aquatic edible insects. Utilizing this food resource requires safeguarding their environment. Insect consumption addresses hunger and malnutrition, poverty, climate change, and conservation of terrestrial ecosystems. While more in-depth research on the nutritional benefits and technical aspects of raising insects for human consumption is needed, it is clear that insects offer opportunities in achieving sustainable development. The major role of entomophagy in human food security is well-documented. While more attention is needed to fully assess the potential of edible insects, they provide a natural source ofessential carbohydrates, proteins, fats, minerals and vitamins.

Commonly used edible insect -

Insect order	Stage	Percentage
Coleoptera	Beetles	32
Lepidoptera	Catterpillers	17
Hymenoptera	Bees,and wasps	16
Orthoptera	Grasshoppers, and crickets	12
Isoptera	Termites	05
Diptera	Flies	02
Odonata	Dragonflies	04

Nutritional quality is not only important for marketing the value of insect protein, but also for industry sustainability (i.e., higher quality outputs per input require less resources per gram of nutrient produced). Some insects contain substances harmful to humans that reduce their nutritional quality, such as cyanide or thiaminases .There is potential for insects to be used as a protein source in insect based pet food. Novel protein sources have possible benefits for pets with sensitive gastrointestinal tracts or food allergies, as the proteins are not recognized by the animal's body. Insects have also been shown to have a high digestibility in pets. There have been studies done evaluating the protein quality of commonly used insects and their

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nutrient values in comparison to traditional pet food protein. Producing 1kg of protein from cattle requires 200 square metres of cultivable land. For pork, the land take is a quarter of that ($50m^2$). The equivalent area for 1kg of insect-based protein is just 15 square metres. The iron in insect proteins is far superior to that of animal meats. Also, the nutritional profiles of insects differ, as Eat Grub's founders point out: "Crickets can contain 69% protein and have all essential amino acids. They are high in fibre and vitamin B12, as well as being a great source of iron, calcium and Omega 3 and 6.

In general, insects are important in plant reproduction, waste bio-conversion and in bio-control of harmful pest species leading to a variety of valuable food and non-food products used in applications such as maggot therapy .They are used as collection items and ornaments and in movies, visual arts and literature. Globally, the most commonly consumed insects are beetles (*Coleoptera*, 32%), caterpillars (*Lepidoptera*, 17%) and bees, wasps and ants (*Hymenoptera*, 16%), grasshoppers, Grasshoppers and crickets (*Orthoptera*, 12%), termites (*Isoptera*, 5%), dragonflies (*Odonata*, 4%), flies (Diptera, 2%).

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