Farm Structures
FACTSHEET

BRITISH COLUMBIA
Ministry of Agriculture, Food and Fisheries

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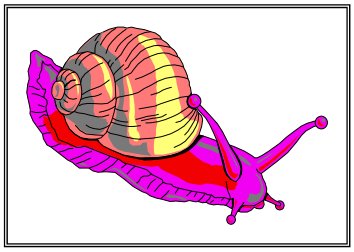
HELICICULTURE

CULTURE OF EDIBLE SNAILS

Snails are members of the phylum Mollusca which contains at least 80,000 species, and is the second largest phylum in the animal kingdom. Members of this group are found throughout the world. They are predominantly aquatic, but some are terrestrial. All farmed snails are members of the class Gastropoda and are land snails capable of breathing free air. The three principal types of edible snails grown in Europe are *Helix Aspersa* (Petit gris: small grey or brown snail, Western Europe and Mediterranean), *Helix Pomatia* (Burgundy snail: Central and Southeast Europe), and *Helix Lucorum* (Turkish edible: Central and Southeast Europe).



Achatina Achatina and *Achatina Julica* (Africa introduced into Asia and Pacific) and *Helix Aspersa Maxima* (giant North African) are increasingly harvested.

Snails have been farmed for food for hundreds of years and are a rich source of protein. Snail preserves were established in Rome in 50 B.C.

Physical features are expressed by variations in size, colour, and banding of the shell. Several varieties seem to be adaptive forms that can be successfully introduced. Because of their species potential for adaptation, they could possibly dominate the local snails if allowed to escape. Because of the domination aspect, **Helix group snails are banned in Canada**; only *Otella Lactia*, *Otella Emulata* and *Cedpaea Nemoralis* are allowed.

Japan currently consumes 10,000 tonnes annually, at roughly 50,000 snails to the tonne, where they are considered not only a delicacy, but an aphrodisiac. French consumption is 40,000 tonnes per year met by wild snails collected in Europe. Post-Chernobyl radioactivity has encouraged the French to purchase intensively grown snails.

To this end, four methods of snail farming have developed: plastic tunnels, intensive, extensive, and a mixed system of indoor breeding and outdoor fattening.

Plastic tunnels are a cheap way of protecting farmed snails from the environment and from predators; however, it can be difficult to control the temperature in the tunnel and is therefore not recommended.

In intensive systems, the snails are housed in an insulated controlled environment. There should be a constant temperature of 17°–22°C and a relative humidity of 80%–90%. Lighting must also be controlled to prevent the photoperiod effect from inducing hibernation. Suggested lighting patterns are 12 hours of daylight for breeding snails and 8 hours of daylight for young snails. The housing ideally should have a concrete floor and insulated waterproof wall and ceilings.

Soil, which should be moist but not wet, is the most common substrate used. The soil should be 10 cm

deep to facilitate egg laying, and should either be neutral to alkaline to provide calcium carbonate required for shells. Failing that, a source of calcium should be provided (bone meal, ground cuttle fish, natural chalk limestone or eggshell). Fertilizers, animal manure and compost should be avoided because of the risk of toxicity or contamination by moulds, bacteria or parasites.

Other common substrates are paper, peat moss and soil over gravel. Good hygiene is essential. The soil should be sterilized. All dead snails and uneaten food should be removed. The entire building should be cleaned and disinfected every two years. High densities affect juvenile growth rates and cause fungal disease that can decimate the stock within three days; therefore, 600 10-gram snails per square metre is suggested. This intensive system will produce market snails within four months

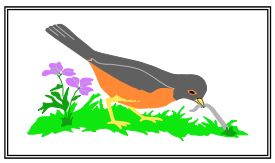
Extensive systems should be on neutral or alkaline soils which are self-draining. The site chosen should have some protection from the prevailing wind. Troughs made from wood or building blocks and covered with plastic netting to keep predators out are used with a sprinkler system to keep the substrate moist. Fenced enclosures up to several metres in size can be used. The fencing material can be close-meshed wire netting, woven plastic, corrugated metal or plastic sheets, and should extend 60 cm below the ground surface to give protection against burrowing predators.

To prevent the snails escaping over the top of the fences, the wire can be curved inward, or a galvanized sheet can be used as snails do not crawl on this material. Electric fences have been tried with two to six wires, 2 mm–4 mm apart, powered by a 6 or 12 volt battery. The enclosure should have plants for food and shelter. Stocking rates in this system are suggested at 350 juveniles per square metre, or 250 breeding snails per square metre, and will produce a marketable snail (20 grams average) within 18 months due to the hibernation period.

The mixed system incorporates indoor breeding (intensive) and outdoor fattening (extensive), and will produce a marketable snail within four months.

Feed is normally vegetable matter, canola, nettles, docks, sunflowers, melons, lettuce and carrots. To prevent deaths due to pesticide toxicity, these feeds should be organically grown.

Snails will also eat grain, manufactured concentrate feed, and small amounts of cellulose. Proprietary snail feeds for European intensive systems give food conversion rates of 1.5:1. Snails are usually fed at night or after rain, when they are least likely to desiccate and predators are less abundant. Predators include frogs, rats, mice, moles and birds; thus, buildings should be rat-proof and outside enclosures netted for protection from birds.



Health - Snails carry protozoa and many forms of salmonellae. They are subject to "Red Leg" disease caused by bacteria in the aquatic environment that can also be pathogenic to humans under certain conditions; therefore, normal health practices should be used when feeding them. The preparation of snails or snail eggs for preservation or use in restaurants will be subject to public health and federal meat inspections.

Transport - Snails must be handled carefully. They have a soft body (the word "mollusc" originates from the Latin "mollis," meaning "soft"), and although they are protected by a shell, they can easily be damaged. Care during transport is important. The International Air Transport Association (IATA) regulations for the shipping of snails by air can be applied to most methods of transport.

Costs - It is estimated that capital investment in a production unit (100 kg per week) will be $10,000 to $15,000. Production costs (labour, housing, feed, etc.) are estimated at $6 per kilogram.

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