

13. VALUE-ADDED PRODUCTS

VALUE-ADDITION

Value-addition takes place when enhancement is added to a product or service by a company before the product is offered to customers. In the case of bee products, they can be considered value-added if the original raw product, such as honey or beeswax, is somehow modified, changed or enhanced to increase in value. This incorporates them into other ‘secondary’ products that have higher net worth, so that each unit of the product can be sold at a higher price and achieves a higher return. To give an example from beekeeping, let us suppose that 0.5 kilograms of honey sells at US\$5. However, just a few grams of honey (worth just a few cents of that US\$5), if mixed with some other ingredients – that are in isolation also worth just a few cents each – may be combined to create a sweet-smelling cosmetic which, if attractively packaged and well marketed, may also sell at US\$5. The selling price of each gramme of honey has been greatly increased: value has been added.

Reasons for developing value-added products

- Increase sales by creating product diversity.
- Stabilise income by allowing income creation during off-seasons.
- Increase the profitability of beekeeping.
- Provide opportunities for other groups or sectors to create income from the products of bees.
- Provide an outlet for other creative talents.
- Make use of excess produce.

ADD PROFIT BY INCREASING PRODUCT DIVERSITY

Value-added products enable the beekeeper to increase sales by creating product diversity, and to increase and stabilize income. Product diversity is about offering a range of products that differ from one another, satisfy the needs of different market sectors, and involves differentiating products from those of competitors. The physical product need not change: changes may just be in packaging or a change in advertising theme. However, diversity may be achieved by changing the product in some way.

The objective of this strategy is to develop a position that potential customers will see as unique. If your target market sees your product as different from the competitors’, you will have more flexibility in developing your marketing mix. A successful product differentiation strategy will move your product from competing based primarily on price, to competing on non-price factors such as product characteristics, distribution strategy or promotional variables.

Product development is needed to achieve product diversity. To discover what might be popular products, talk to existing and potential customers: these are the best sources of information if the product is aimed at new markets. In addition, talk with competitor’s customers: they provide a good source of information on the strengths of the competitor’s products and why they do not buy from you. Lead customers are those who are the most advanced users of the product, who are already adapting an existing product to their own uses. During discussions with customers, it is essential to identify the basic customer needs. The objective is to understand their purchase decisions and how their particular needs are satisfied. Maybe customers are already using honey to make another, secondary product: in this case, the beekeeper could begin to create that secondary product, ready-made for the customer and no doubt others.

Creating products to sell to tourists

Beekeepers in some areas of some developing countries have good opportunities to sell their products to tourists. Tourists do not want to carry home a jar of honey – it is relatively heavy and breakage has bad consequences! Therefore, beekeepers need to look for ways to capture more of the tourist dollar by selling products other than just the usual jars of honey. Small, attractive and unbreakable packaging of honey can work, and candles and skin ointments can be successful for this trade.

Stabilise income

The manufacture of secondary products – especially those products made using beeswax, can be done when time allows, and therefore can help to even out any ‘dips’ in beekeepers’ income. Having a wider range of skills to make secondary products therefore helps to stabilise income and make people’s livelihoods more resilient. Out of season months present a problem for beekeepers who rely on direct marketing.

Allow control over pricing

As is the case with the sale of any raw commodity, if the producer can be responsible for adding value, it gives the producer much greater control over pricing and choice of sales outlets, because their product is no longer easily comparable with the competitors’ products.

CREATE EMPLOYMENT FOR OTHER SECTORS

Many beekeepers find that developing a value-added product provides a creative outlet that maybe gives another family member or other person a chance to be involved in the business. Creativity can be used to generate good labelling and packaging as well as to create attractive new products. The production of value-added products opens up income-creation from apiculture to many new sectors – cooks who can make food products from honey, or cosmetics using beeswax and/or honey, dextrous people who are good at making neat and functional candles or other wax models, carpenters who can make tiny wooden ‘crates’ to package small jars of honey. Traditional skills involving the use of beeswax include batik, and lost wax casting, both of which processes are described below.

A WAY TO USE EXCESS PRODUCE

For example, fruits often ripen at the same time and may go to waste if they cannot be used in some way. Some beekeepers have developed methods to incorporate fruit with honey to create value-added products, which provide an excellent way to use up any ‘less-than-premium-quality’ fruit. In today’s competitive and cosmetic supermarket culture, less than perfect fresh fruit often goes unwanted. Farmers that sell fruit to markets and restaurants that specialize in high quality, perhaps organic produce, know that fruit and vegetables must be in perfect condition. However, many fruits are not cosmetically perfect enough to sell, although the blemishes are minor and do not affect the quality of the fruit. Making use of these fruit for value-added honey and fruit products can be a way to save produce and create income. Fruit should be dried until it has as low a moisture content as possible before it is mixed with honey, but it should still be soft. Fruit may be placed whole, or as pieces of fruit into the honey, however if fruit still has too high a juice content, it will introduce too much water to the honey and cause fermentation. Pasteurization of both fruit and honey will improve hygiene and storage possibilities, and will reduce the risk of fermentation, but may adversely affect the flavour.

COSTS OF DEVELOPING VALUE-ADDED BUSINESS

Very small producers can use home equipment, but if the business is successful, middle-sized producers can find it difficult to secure appropriately sized equipment. Many of the additional costs will be extensions of normal operating costs, however, there will inevitably be new costs. In countries where consumer safety, product standards, sanitary and phyto sanitary conditions and Hazard Analysis Critical Point Control (HACCP) quality control systems are enforced, then kitchens will need to be installed according to government standards for food preparation and sanitation, and the necessary initial capital outlay will increase. In addition, there are potentially additional costs such as leasing of buildings, insurance and market fees. Government bylaws or regulations may be a determining factor in whether a beekeeper can or should expand their business to include new value-added products.

MARKETING VALUE-ADDED PRODUCTS

As is true for beekeeping, producing the product is the easy part of the equation. The hard part is trying to break into and keep up with good markets. Marketing is costly in time and effort, and in materials. Design work also is demanding in time and money, as design and logos are an essential component of marketing strategy.

A good logo can be important, and to keep an image fresh, it must be reviewed frequently to make minor adjustments. Each time beekeepers modify an aspect of their product or create a new one, they must reconceptualise their design. For example, if product diversity is increased by introducing new honey jar sizes, the labels will need to be reworked to fit with the proportions of the new sizes. Marketing efforts require plenty of time, energy and hard work. Beekeepers often develop personal relationships with their customers, who tend to be regular and loyal. However, on the open market they must compete with commercial businesses that may seem anonymous. Beekeepers have to market strongly and be proactive in explaining exactly the trees or area from which the honey is produced by their bees, how it is harvested, and why it is better than sugar, jam or another product that might cost less. Whether it is providing honey-taste tests, customer testimonials or offering photographs, beekeepers must pay attention to what works well and repeat it!

Pricing value-added products

Beekeepers can establish a price for their value-added products with experience and analysis of the overall market. People also have an intuitive sense of how much their product is worth, and they use this information to set their price. An artisan-made, value-added product will be priced higher than the supermarket equivalent, and people know that quality is worth the extra dollars. Part of knowing what to charge is knowing the customer-base. Beekeepers' Associations in many countries acknowledge that part of their role is consumer education. The general public need to be informed about the environmental value of bees and beekeeping, and that honey is a very special, local product that should not just be compared to other products on the supermarket shelf.

USE OF HONEY IN VALUE-ADDED PRODUCTS

The following text provides examples of the many types of products that can be made incorporating honey. There are many excellent books giving numerous recipes including honey: see further reading below and Chapter 16.

Honey in prepared foods

Honey can be used in place of sugar (sucrose) in almost any recipe. Because of honey's high fructose content, less honey is usually needed to reach the desired sweetness. The flavour of honey is best retained in foods that are not heated, such as salad dressings and sauces, and ice creams.

Honey in baked goods

There are many ancient recipes for different versions of cakes made with honey. Widely known today are the decorated 'gingerbread house' cakes of central Europe, pain d'épice (France), lebkuchen (Germany and Switzerland), Couques de Dinant (Belgium), basler Leckerli (Switzerland), baklava (Greece and Turkey), and many others.

The moisture-retaining properties of honey improve the keeping qualities of bakery products, and (depending on the honey used) can give a good colour and depth of flavour. It can be helpful to reduce baking temperature a little, to prevent over browning and retain the honey flavour.

Honey in confectionary

Another ancient food that is still popular today is the sweetmeat containing honey, nuts, dried fruit and egg whites. Variations on this theme are halvah (Turkey and Greece), nougat (France), pasteli (Greece), torrone (Italy), and turrón (Spain).

Honey in alcoholic drinks

World-wide there are many alcoholic drinks made with honey. Perhaps the most widespread use is to make honey beer:



CASE STUDY 10 - HOW TO MAKE ZAMBIAN HONEY BEER

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What you need: A calabash (gourd) or any other container (a calabash speeds up the fermentation process).

Ingredients (in parts by weight)

0.5 part sprouted maize or millet

0.5 part crushed brood comb

1 part comb honey or liquid honey

4 parts water

Procedure

Pound lightly the sprouted maize and pour the contents in the calabash.

Brewers brew can also be used though fermentation is slow and takes longer, some use roasted maize grit.

Add some crushed brood comb or bee milk or royal jelly.

Add 1 part water.

Leave overnight in a warm place to activate the fermentation process.

Then

Add 4 parts warm water.

1 part sealed comb honey (crushed).

Put the calabash with its contents in a warm place.

After 2 hours the fermentation should start. You can tell if the fermentation is taking place by observing rapid bubbles coming out of the calabash. The broth should appear boiling.

N.B. The first and second batches of honey beer are slower in fermentation since the starter or inoculant (sprouted maize/brood comb) is still building up. Reusing the starter and the calabash will allow much faster fermentation.

The first honey beer brew takes about 12 hours to be ready. The second beer brew takes about 10 hours. Continuous brewing of the honey beer using the same calabash reduces the time when the honey beer is ready to 6-8 hours. The starter can only be replaced after 3 months of continuous use of the calabash. Alternatively, you can add more starter when the fermentation process slows down.

Things to note

The mixtures should be in correct proportions as described above.

Using calabash assures you 90 percent good results.

Too much brood can cause acidity and off flour in the beer.

Too much sprouted maize can make the honey beer sour and rendered useless.

Using ordinary buckets prolongs the fermentation process to days or even weeks and there is no guarantee that you will get good results.

Too much honey in the mixture may slow down the fermentation process until the brew becomes sour or remain too sweet for days.

Too much water causes the beer to be very sour and set your teeth on edge.

The water for the mixture should be lukewarm.

Too hot water will spoil the broth and the fermentation will not take place and the brew becomes sour.

Too cold the water for the mixture slows down the fermentation process until the honey beer becomes sour and useless.

Honey beer is used or taken

- During the initiation ceremonies when boys/girls reach mature age.
- During traditional chiefs ceremonies.
- As in kind payments for cultivating or harvesting fields.

- When on a long walking journey.
- After a day's hard work.

Some people go to bed early and start drinking honey beer at 3.00 in the morning and by 6.00 they are ready for physical or manual work.

Honey beer cannot be stored for more than 48 hours.

It is advisable not to go for beehive cropping after you have taken honey beer. Local communities say that the smell of the honey beer from your mouth can irritate the bees so much that they will start attacking you straight away.

Women are the best-known honey beer brewers and sellers in Kabompo, Zambia.



Tej

In Ethiopia, honey is not made into beer but into *Tej*, which is honey wine. *Tej* is a very important drink in Ethiopian cultural life, served at traditional gatherings and special religious ceremonies. *Tej* is not necessarily alcoholic – often it is drunk before the brew has started to ferment, when it still has a strong yeasty flavour. This drink is called *birz* and is popular with children and, being non-alcoholic, is acceptable to Muslims.

Tej is made in huge wooden barrels, which are cleaned and then scoured with special leaves. The barrel is then filled, one part of honey with five parts of water. The barrel is covered with a clean cloth and left for a few days: fermentation begins. Now some very special leaves are added: these are *gesho*, leaves of *Rhamnus prinoides*, which have been chopped up and then boiled. About five kilograms of this boiled leaf is added to each barrel. After *gesho* is added, the sugars in the honey are converted to alcohol and the *Tej* increasingly acquires its distinctive dry and bitter flavour. Finally, just before serving, a further half bucket of honey is tipped in to give sweetness to the final brew.

Tej is served in special glasses called *birrille*. These are like small glass vases with bulbous base and narrow neck. For drinking, the *birrille* is held in a special and rather dainty way between the first two fingers and thumb. *Tej* has a good flavour, something like cloudy, strong mead. The quality and amount of *Tej* served at a marriage or other celebration is directly linked with the wealth of the host. Evelyn Waugh (1931) reported, "The Emperor's *Tej* was a very different drink, quite clear, slightly brown, heavy, rich and dry. After luncheon we were given some of the liqueur distilled from it – a colourless spirit of fine flavour and disconcerting potency".

In Africa it is usually women who brew beer, make *Tej*, and sell these products. There are no statistics on the extent of these activities, the volume of honey involved to the numbers of people making income in this way. Beekeeping text books often dismiss beer brewing as a 'waste' of honey – since the honey used is indeed often of very low quality – however these drink making activities must create significant income.

Beer making from honey is not restricted to Africa of course – it is made in many countries, as are honey wines and other honey based liqueurs. Honey wine in many countries is known as *mead* (in English) (*met* in Germany, *madh* in Hindi, *mede* in the Netherlands, *mede* in Welsh, etc.) and if herbs are added, *metheglin*.

Honey in medicines

The reasons for honey's use in medicine are described more in Chapter 12 on Apitherapy. Many thousands of tonnes of honey are used to make honey remedies for colds and flu; mixed with aspirin or other drugs to make hot drinks, in sweets and cough medicines, and in cures for hangovers. Honey is also used as a dressing for wounds, and Manuka honey from New Zealand is the ultimate example of successful value-addition: a honey that has created a strong unique selling point and is now sold at very high prices because of its medicinal value.

Honey in soaps and cosmetics

Honey cleansers, face packs and hand cream are just some examples of many possible products, the use of beeswax in cosmetics is described below. Honey water (a few spoons of honey mixed with rainwater) is an old recipe for rinsing hair, and today honey is incorporated into many shampoos and soaps.

USE OF BEESWAX IN VALUE-ADDED PRODUCTS

Beeswax in cosmetics, soap and ointments

Top quality, pure beeswax can be used to make fine soap, shampoos, skin ointments and cosmetics. If used this way, it is possible for beeswax from just one bee colony to generate more income than from all the honey harvested from the same hive. Scrupulously clean, careful, neat and attractive packaging are essential for success with these value-added products.

Basic method for making skin cream

Melt a piece of clean wax in a small, clean container floating inside a cooking pot with water. Mix the melted beeswax with hot almond oil, groundnut oil, coconut oil or edible oil. One cup of beeswax should be mixed with three cups of the oil. For softer ointment add more oil, and use more beeswax to make it more solid. Add a few drops of rose oil, geranium oil, or another perfume or menthol to give the ointment a good scent, and stir it. While the mixture is still hot and liquid, pour it into the final small containers. These containers can be small jars, empty 35 mm film containers, or whatever is available. The price depends partly on how nice the product looks in the market, so the more attractive the container, the better the price it will demand. Put the lids on the containers and let them cool. Never touch the surface of the ointment once it has set. Experiment with different types of oils, different perfumes and colours for the final products. For women, floral and sweet smelling fragrances can be used. For ointments to be used by men, more savoury fragrances might be used: menthol, lemon balm or sandalwood.

Batik

Batik is a craft traditionally known and practised in many developing countries, whereby pictures or patterns are created on material by dyeing it while selectively applying or removing layers of beeswax to create patterns.

Lost wax casting or *cire perdue*

This method has been used for centuries to make small metal jewellery, ornaments and other items. It has been used by artisans working in the great civilizations of Mesopotamia, Africa, China and Greece. Lost wax casting, also known as *cire perdue*, is the process of metal casting that may be used to create hollow and solid metal items. The sculptor makes a model in plaster or clay that is then coated with wax. If the finished item is to be very small, the whole model can be made from wax. This model is then covered with a plaster or clay mould, which has somewhere in it a hole or outlet pipe. When heated, the wax melts and the mould “loses” the wax when it is run out of the hole or pipe in the plaster. Molten metal is then poured into the space formerly occupied by the wax. After the item cools, the sculptor breaks the mould, removes the plaster core if there is one, and finally polishes the metal product. The advantage of the lost-wax method is that it eases the casting of any sculpture with intricate shapes and elaborate curves.

Wax candles

Before starting candle production, consider if it is not more income generating to use the wax for making ointments or other more expensive products. The local price of candles produced from paraffin wax is often very low, and it will be a waste to make beeswax candles if they are to be sold at the same low price.

There are three basic types of candles: moulded, dipped or rolled. It is possible to buy expensive silicon moulds to make candles of various sizes, shapes and patterns that can generate a good price. If candles have to be produced in a village without equipment, the simplest way is to make ‘dipped candles’. This is where one or more cotton strings are repeatedly dipped into a container of melted wax. The wax has

to cool on the wick before it is dipped again. The dipping is continued until the candle has reached the desired thickness. Another way is to place the wick centrally in a mould and pour in molten wax. The mould can be made from a piece of papaya stem or piece of bamboo. The wick is kept in place by some small sticks. When the wax is solid, the mould can be opened and the candle is ready for use. The fastest way to make a candle is to pour molten wax over a metal plate that has been smeared with soapy water. The wax will cool immediately to a thin layer that can be easily removed because of the soap. The wax layer can then be rolled around a wick. The wick can be made of a cotton string or pieces of cotton cloth. Nylon cannot be used. The thickness of the wick is important; it determines how fast and well the candle will burn, and how much light it will give. Best of all is to use properly made candlewicks, using the right size for the diameter of the candle. Beeswax candles do not smoke as most other candles do, and have the very best aroma as they burn, that some people are willing to pay for. For people who appreciate the beauty and aroma of a beeswax candle, burning a paraffin wax candle can deign to seem like lighting an old car tyre in the house!

Beeswax furniture polish

This is the best polish for any wood. The simplest recipe for polish is to mix beeswax with a suitable solvent such as white spirit or turpentine. Proportions should be 200 grams of beeswax with 0.5 litre of solvent: the proportions can be varied to give the consistency required. If less solvent is used, the mixture will be more of a paste than a liquid. The method is to heat carefully the solvent in one pan, and the beeswax in a separate pan, until the beeswax melts. With both liquids at the same temperature, pour the solvent into the wax and stir very well. Pour into prepared glass jar or tin containers.

If it is available, carnauba wax (from leaves of the fan palm *Copernicia prunifera*) makes an excellent ingredient for polish and removes the slight stickiness of beeswax. Carnauba wax has a high melting point (83-85 °C), gives hardness and a high gloss finish. If this was is available, substitute 50 grams of the beeswax in the above recipe with carnauba wax.

USE OF PROPOLIS IN VALUE-ADDED PRODUCTS

Propolis tincture

Collect scraps of propolis: as far as possible ensure they are just pure propolis. Mix it with an equal volume of 100 percent alcohol (vodka or grain alcohol). Put in an ovenproof jar with a lid and heat very gently in an oven. Do not allow the temperate to rise above 80 °C, and keep shaking the bottle every 15 minutes or so until the propolis is dissolved. When it has dissolved, allow the mixture to cool, strain it through a filter and then bottle – the best container for tincture is a dark-coloured ‘dropper’ bottle, if these are available. Using this type of bottle it is easy to apply a drop or two of the tincture on to any minor skin cut or abrasion.

Propolis cream

Instead of making tincture, prepare a medicinal and soothing cream by melting gently together one part beeswax, four parts liquid paraffin, one part grains of propolis and one part honey. Stir the mixture continuously until it is melted and combined, and continue stirring as it cools and thickens.

Further information

There are many books with recipes for using various bee products²⁵.

²⁵ Two of the best are: Krell, R. 1996. Value-added products from beekeeping, *FAO agricultural services Bulletin* No. 124, FAO Rome. This text is also available on the internet at: <http://www.fao.org/docrep/w0076e/w0076e00.htm>. This book gives hundreds of recipes incorporating every bee product. It is available free of charge on the internet, and is highly recommended as a source of recipes, further references and information. Also White, E.C. (1993) *Super formulas*, p. 120. The formulas in this book are not just recipes for food items, but for making other products. Some are familiar as candles, mead, and vinegar. Others are less thought of as containing bee products: beard softener, mascara, paint stripper and theatrical grease paint.