

# ENTREPRENEURSHIP IN CRISIS, DEVELOPING YOUR OWN BUSINESS WITH 100% NATURAL FRUIT JUICE

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## Abstract

*In a life of crisis the best solution is to give birth or develop a profitable business. Through this work I want to draw attention to the importance of developing your own business with your own or local products during the crisis. Since they own an apple and pear orchard, they want to develop a business in this field. First of all I want to develop a production line of 100% natural apple juice. And in the future, I have to develop a business with jams/sweets. I'm looking to get a high quality juice with as much nutritional value as possible. Unfortunately, the demand for valorization of apples in Romania is very low. Due to the seasonal ripening of apples, there is an imbalance between production and fresh consumption of these fruits. This led me to direct some of the production to processing in the form of apple juice. There are many fruit-growing areas in my area (Voinești, Dâmbovița, Romania) but many apple growers have secured another existing source. Interest in apple culture declined, orchards began to stop producing, grow old and disappear.*

**Keywords:** juice, apple, preserve, honey, intrapreneurship

**JEL Classification:** L66, I15, Z21

## 1. Introduction

Entrepreneurs must prove creativity, attention, ability to change to ensure their own success but also the growth of society. Entrepreneurial activity involves: mobilizing and using resources, how to satisfy, identifying needs and serving potential customers, creating products, identifying different opportunities.

Since I own an apple and pear orchard, I want to develop a business in this field. First of all, I want to develop a 100% natural fruit juice production line. I aim to do research in the field to obtain 100% natural fruit juices preserved with the help of natural preservatives or by light pasteurization so as to obtain a nutritional value close to that of freshly squeezed juice.

For the business of apple juice or combinations of other fruits to be profitable, the quality/price ratio must be very good. I obtained a 100% natural apple juice with a shelf life of up to 2 years and a special taste. For consumers and traders, taste, degree of ripeness, color, shape are particularly important criteria. In order to produce high-quality fruit juices, I am interested in the degree of ripeness, nutritional value, texture, type of aroma, quality, acidity and sugar content. The harvesting period is also very important. I have to make sure that the apples do not spoil during storage and that they are at a proper stage of ripening. The unripe apple is very high in starch and low in flavor. Some traditional varieties of apple such as Ionatan, Golden, began to disappear because they no longer resist diseases and pests. I cultivated: Sirius, ReD Topaz, Rozela, Florina, Ionagold, Idared and I kept a few Ionatan, Golden and Starkrimson trees to combine different varieties to get the best possible taste of apple juice.

100% natural apple juices are obtained by pressing and have a short shelf life, they are consumed immediately. Following the application of physico-chemical and microbiological analyses, the results show the need for immediate processing of 100% freshly obtained natural juices. Refrigeration at temperatures of 0 - 5 oC reduces the risk of contamination, but does not ensure the healthiness of the juice. Freezing at temperatures below -10 oC extends the storage time compared to refrigeration.

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We can also obtain them by pasteurization as I did (1.5-2 years shelf life, obtained by heating the juice to 80 degrees for 1-1,5 minutes) or other processes (inert gases, natural preservatives, etc.) The application of heat treatment is an effective method by using short periods of time and high temperature. (Glevitzky, 2008, p.595-599).(1)

I bottled the juices obtained by pasteurization in bottles or bags. The bags have a system that facilitates the preservation of the quality of the unsealed juice until its consumption, without requiring storage at refrigeration temperature.

In order to have quality apple juices you need to respect quality from apple cultivation technological proces to their comercialization mameley:

- To cultivate the apples the moment they are properly riped;
- To verifc the apples sensory quality;
- Storing the apples in adequate conditions (they do not store with vegetables or other food products, beacose they can interfere with their flovor)
- Cleaning the apples with or 3% aqueons sodium carbonate solution, then twice cleaned with water
- To respect juice storing conditions

In order to obtain the apple juice, you weed to take into account the humidity of the varieties used (betweed the variety we grow the type with, the highest humidity is Idared (aproximly 86%), and the type with the least humididy Jonagold 75%)

## **2. Improving the apple juice can be made through:**

### **2.1. Improving the taste:**

Combining the apple with different fruit or vegetables (pear, quince, raspberry, orange, carrot. Beetroot, etc.). We try combining fruits and vegetables in order to obtain a better flavor without beeing needed to add sugar or other sweetener. That's why we need to know the fruit varieties as well as possible. The degree of modification of the carbohydrate content during the storage perioddepends on both the variety and the storage conditions.

Using various types depending on the consumer`s laste (eg: for more flavor we use 20% Starkrimson, 30% Golden (fig. no. 1) and 50% Jonathan; for sweet flavor taste, we use 70% Golden, 10% Starkimson and 20% Jonathan; for distinguished sweet-sour taste, we use 20% Sirius (fig. no. 2), 30 % ReD Topaz, 30% Rozela, 20 % Florina)



Fig. nr. 1 Golden



Fig. nr. 2 Sirius

### **2.2. Appearance Improvement:**

Clear juice sells much better than cloudy juice due to the fact that some consumers perceive cloudy juice as a juice with impurities. But through the obtaining process, the process of clarifying the juice removes beneficial components for health. We conducted a study among our apple juice consumers and observed the following:

- producers and traders of apple juice prefer clear juice for its pleasant appearance and because it has a much longer shelf life compared to cloudy juice.

- consumers with studies in the field of the food industry prefer cloudy juice because it is much healthier, it contains a greater amount of polyphenols. Fruit juices have antioxidant importance due to their content in anthocyanins, flavonoids, vitamin C, total polyphenols, the exploitation of the antioxidant activity of some fruit juices and apples. Juices extracted from fruits because they provide the cells and tissues with nutrients necessary for the vital activity of the human body. Antioxidant foods are important because they help reduce oxidative stress, neutralize free radicals and protect the body from their action. Due to the content in polyphenols, fruit juices have anticancer properties. They have a high nutritional value because in their composition we find almost entirely soluble compounds of the fruits from which they come. The amount of antioxidants in the juice depends on the quality of the juice sold, which in turn depends on the raw material, the time of harvesting, the conditions and storage time of the fruits, the technological processing conditions, the storage method, the type of packaging, etc. Antioxidants that form the quality of juices are polyphenolic compounds in the form of phenols, hydrolyzable gallicene tannins and condensed tannins originating from proanthocyanidins and catechins. During preservation, dynamic processes of changing the concentration of phenolic components take place. The quality of natural juices, the refreshing and aromatic taste of the juice is due to organic acids. Due to the high content of carbohydrates, the juices have a pleasant taste and have a special energy value, the presented juices are an important source of ascorbic acid, but the content can be considerably reduced during the thermal processing of the juices and their incorrect storage.” (Calmulțchi, L., Melentiev, E., & Stațuic, I. 2021, pg.7-15). (2)

Regular consumers prefer clear juice due to its pleasant appearance, considering cloudy juice as juice with impurities. The juice clarification process removes the beneficial health components contained in the apple pulp. And the producers aim to obtain a clear juice at the expense of the cloudy one and from a commercial point of view, but also due to the longer warranty period and the possibilities of storage and preservation in normal conditions (compared to much lower temperatures in the case of cloudy juice) of the juice clear.

### **2.3. The consistency of the fruits**

The consistency of the fruits represents the resistance they have when pressed. Consistency is important for determining when to harvest the fruits. Fruit consistency varies during storage. The storage time is a criterion for fruit sorting. Fruits with a modified consistency (stale due to long storage) do not give good juice. Those with a denser consistency are more resistant to storage than those with a soft consistency.

Fruits with a soft consistency, being rich in water, are perishable products, requiring certain conditions to keep them fresh. Their degree of perishability is the higher the lower the dry matter content and vice versa. The high water content in fruits favors the development of microorganisms and as a result they can spoil. A large decrease in the amount of water in the fruits causes a decrease in their quality, they shrivel, wither and lose a lot of their taste qualities. And they have a low productivity in obtaining apple juice.

### **2.4. The color and flavor of the fruit**

The color of the fruits influences the products obtained through their processing. The color is due to the presence of pigments and it can vary depending on the nature of the variety, the state of the weather during the harvest, the fertilizers, the position of the fruit. Fruits have one color for the peel, another for the pulp and juice. The skin has varying shades and thickness from one fruit to another. For some fruits, the specific color of the variety is the one at the time of harvesting, but for others it is the one at the time of ripening, such as apples. The color of the fruits appears with their

growth and formation. The color of apples is green at first and then often changes as the fruit approaches full maturity to different shades depending on the variety.

It was found that there is a close correlation between the color of the fruits and the duration of storage, taste and aroma. Thus, the more intensely colored fruits have a longer shelf life, there are some colored varieties that are sweeter and more aromatic than those that are less colored.

We also take into account the color of the fruits when we choose the fruits to obtain the juice because it influences their taste.

Fruit aroma. Aromatic substances are found in the tissues of the fruits, they give the aroma of the fruits. When they are ripe for consumption, the flavor reaches its maximum development. The aroma is expressed by the terms: no aroma, very weak aroma, suitable aroma, strong aroma. Aroma influences the taste quality of fresh fruit, as well as juices or other products obtained from apples. Apples have a weak aroma, but there are also some varieties that have a strong aroma, namely: Jonathan, Starkrimson (fig.no. 3) and Rozela.



Fig. no. 3 Starkimson

### **2.5. Entention of validity term**

It is realised by respecting the temperature and obtaining process. If apple juice is pasteurized at 80 degrees celsius for 1 minutes, then put in bags at 72 degrees celsius, it can be stored at maximum 20 degrees celsius for 18 months.

I bottled the juices obtained by pasteurization in Bag in Box. The bags contain three layers of special foil, the juice does not oxidize because it does not come into contact with the outside air. They have a system that facilitates the preservation of the quality of the unsealed juice until its consumption (but not more than 30 days), without requiring storage at refrigeration temperature, by emptying, the bag contracts and the vacuum remains inside. The bag is filled with hot juice. The hot juice in contact with the packaging pasteurizes it and then it is hermetically sealed and cooled. We made a support to hold the bags when filling and we use special gloves (gloves that protect against high temperatures). The minimum sterilization temperature depends on the duration, microbial load, pH. If the sterilization time is exceeded, the juice acquires a boilet taste, it can no longer be sold.

### **2.6. Reducing the acidity**

After coonsuming 100% natural apple juice, some people acuse stomachaches, being bothered by its acidity. That`s why, we prefer using acidity corrector. Another way to reduce acidity is to use apples that have reached maturity, apples picked during their harvest period, growing an apple variety that has a low acidity.

The acidity can also be reduced by following the technological process so that the chopped apples do not wait until they are pressed and then the juice until it is thermally processed. The sugar from the fruit and the acidity in certain proportions give the juice a pleasant taste.

## **2.7. Creating a plantation corresponding to my needs**

In order to have a quality juice, we must also take into account the culture of the trees. To ensure the quality of fruit products, it is necessary to establish fruit plantations on irrigated land and use productive, disease-resistant and varied varieties to obtain the most varied assortments of juices. I carry out the irrigation with the help of the drip system and I chose the tree varieties in collaboration with the Voinești Research-Development Station for Orchard. The varieties must meet the requirements of the market, set fruit quickly, the fruits must have a pleasant appearance and be able to be stored for a long time. We planted the following varieties: Idared, Sirius, Golden, Rozela, Starkimson, Renet, Ionatan and Florina. Irrigation of trees is important in order to obtain superior fruit harvests in quantity and quality.

In order to obtain a harvest of superior quality in terms of color, taste and aroma, we make a selection of the fruit buds during cutting by thinning the flowers and fruits. Flower thinning can be done by chemical spraying to prevent pollination, we apply fruit thinning and do it manually. Fighting diseases and pests protects the quality of the fruits, we achieve this through a treatment scheme and take into account the warnings received from the Voinești Fruit Culture Research-Development Station.

We also carry out foliar fertilization by administering fertilizers, this having an important role in the growth and fortification of trees.

To ensure the quality of the fruits, an important role is played by the way we plant, respecting the distance between the trees, cutting and managing the growth.

Hail can destroy both trees and fruits, so anti-hail nets are recommended. They protect very well from hail but also from burns in very hot periods. Late frosts can destroy that year's apple production, so we use fumigation. (7)

## **3. Results**

After making several types of apple juices, we identified the most appreciated juice through sensory analysis (variation analysis method).

The most sought after juice was the juice obtained from 10% quince, 10% Starkrimson apples, 30% Golden apples and 50% Jonathan apples. I obtained a sweet-sour, fragrant juice pasteurized at 82 degrees for 2-3 minutes (without exceeding 5 minutes, if the time is exceeded the juice will taste like tea, boiled, and if we do not reach the temperature or do not keep the time the juice will have a shorter shelf life). By pasteurization, the nutritional value of 100% natural fruit juice decreases, so I will look for alternatives and continue research using natural preservatives, namely bee products and essential oils. Following research, the existence of antibacterial substances in honey, pollen, wax and royal jelly was proven. It has been shown that there is an inhibitory substance in honey that arises from the oxidation of glucose with the help of glucosidase. This enzyme was discovered in the pharyngeal glands of the worker bee. The antimicrobial capacity of honey is due to its high concentration in sugars. The hygroscopic power of sugar reduces the water content of microorganisms, and they die. Artificial honey and sugar solutions do not have antimicrobial action. In Asia Minor the population preserves food in honey. Animal products preserved in nectar honey kept their fresh appearance. (Antonov, C, 2004, p.15-17).(3)

Only natural honey not subjected to heat treatment possesses antimicrobial properties. The consumption of honey has nutritional and therapeutic benefits on the human body (Artiomov, 2018, pp. 319-320). (4) Honey added to the juice obtained from fruits with a low fructose content (Renet apples) gives it a pleasant taste, nutritional value, therapeutic value and higher shelf life compared to freshly squeezed 100% fruit juice. Renet apple juice 50%, Rozela 30% and 20% acacia honey can be stored at refrigeration temperature for up to 14 days without changing its taste or appearance. The juice pasteurized at a temperature of 70° C for 10 minutes and with the addition of 20% acacia honey when bottling can be preserved in

appropriate containers (bottles, bags) for up to 1 year. After a few months, a change in the appearance of the juice is observed. Thus, by adding honey, the pasteurization temperature of the juice decreases and its nutritional value increases. I will continue research in this area. Pollen is a protein food, it contains very large amounts of vitamin P, vitamins from the B complex, as well as vitamins A, D, E, C and mineral salts, it contains proteins, free amino acids, various carbohydrates, mucilages, fatty substances. In addition, pollen is an aphrodisiac, biological anabolic, antibacterial, antidepressant, anti-inflammatory, anti-parasitic, antipyretic, anti-toxic, dietary biostimulator, anti-anemic, reduces bleeding, lowers cholesterol, euphoric, improves brain, gastric, large intestine, liver, sexual, of the thyroid, intervenes in the process of growth, birth, improves the structure of the skin, rejuvenates the mind and brain, strengthening blood capillaries, the heart and the immune system. Enzymes and hormonal substances, natural antibiotics and believed to be other active ingredients, still unknown to this day, have been found in pollen. (2)

In order to improve the taste of juice obtained from apples with a low carbohydrate content, we made a juice from Renet apples 20% (apples with the lowest sugar content) and Ionatan apples 50% with honey 10% and pollen 10%. I got a juice that tasted good but that lasted at refrigeration temperature for 24 hours.

After pasteurizing the apple juice from the above recipe at 80°C and adding honey and pollen to bottling, it lasted for a year stored at a temperature below 20°C. Pollen settles on the bottom of the bag during storage, so it must be shaken before consumption. By adding honey and pollen, the nutritional value of apple juice increased, but its preservation was not improved.

#### **4. Conclusion**

By developing the apple juice business and pursuing its improvement, the profit from my plantation increased by 20%. Due to the crisis and the increase in the prices of substances applied in the treatment of fruit trees such an increase is of vital importance to my business. I no longer have apples that spoil due to storage until they are sold for consumption, because they are sent from the field directly to obtain the juice. I can also use the whole apples, which have fallen during the harvest, to obtain the juice. And if due to the year with less sun with a lot of rain during the ripening period of the fruits, they are not sweet enough, I use honey to help complement the sweet taste. The trust of my customers has increased due to the taste and the pleasant appearance that I obtained from the apple juice through my own recipe.

#### **5. Future perspectives:**

In the future I propose:

- to extend the shelf life of my juice using natural preservatives.
- to stay on the market all the time with a very good quality of my products and with new recipes.

- to develop much more by developing intrapreneurship. Through intrapreneurship I can encourage fruit production because there are many orchards in my area, especially apples. I will develop and grow my business to employ other apple growers in my area.

Intrapreneurship represents that way of organization that allows employees to use their creative potential in order to establish professional working relationships and to implement their projects in such a way as to satisfy their personal needs as well as those of the company they belong to.

If the employees come up with new ideas, they receive a bonus by the fact that they use their apples through the company where they work and can use the information received in their orchard (spraying program).

Human resources represent the most important business capital. They must be allowed to develop, encouraged to use their full potential, if they don't prefer to go out of business.



The benefits of intrapreneurship:

- Stimulates creativity.
- Motivating employees by offering bonuses.
- Company morale increases.
- Employees involved in their work.
- Decreases staff turnover.
- Increases staff loyalty and dedication.
- Increases job satisfaction.

Not all new ideas will be good or great, but if an organization can motivate and inspire its employees to think innovatively, it can have a huge impact on growth and perhaps empower a particular business. Intrapreneurship within an organization can prevent its products from becoming outdated or obsolete. Employees who are motivated and inspired to practice intrapreneurship keep the business on its feet, they constantly generate new ideas.

The employee becomes an entrepreneur in an organization when he comes up with new ideas and undertakes innovation without having to bear the risk, the employee does not have to depend on his own finances or funds. All resources are provided by the employer so there is no personal loss involved.

It is a win-win situation as the organization benefits from the employees (prosperity and innovative thinking within the company) and the employee does not have to worry about the risks involved as they are still the responsibility of the company and not the individual.

I want to emphasize motivation, employees who are consistently motivated tend to perform better, stick with the company, want to grow it, and feel more confident in communicating their valuable ideas to those who will listen.

When you are appreciated and feel good at work it increases creativity, confidence and even the way you process information. (6)

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