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*We have the special pleasure to let you know that the Review of our University, „Bulletin of Scientific Information”, having ten years of consecutive issue, it achieved the recognition of the National Council for Scientific Research in Higher Education (NURC), being comprised in the category „National Reviews — C Category”.*

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*This way, I express my gratitude to the contributors to our science magazine, to the authoritative academic and university personalities of whose studies are found in the selection done by the scientific board of our magazine with whom we have strong relations of partnerships in the development of jointed research projects.*

*I wish to our scientific science magazine many and consistent issues.*

**Prof. Floarea Nicolae, PhD**

**Rector of Bioterra University Bucharest**



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*„Bulletin of Scientific Information” was published at the initiative of several young researchers with the direct support of Bioterra University Board, having the first edition in 1998.*

*Years passed and this magazine has enriched continuously its scientific and didactic dowry becoming slowly but surely a veritable platform for academic information.*

*In 2008, this science magazine turned into a new more dynamic and attractive pattern, being published in special grafic features (full-color) and fully in English language. Also, since 2014, our science magazine benefits of a modern website: [www.bsi.bioterra.ro](http://www.bsi.bioterra.ro).*

*Every year the editorial team has increased the number of members; nowadays it brings together numerous personalities of the scientific and academic world from different foreign countries, thus being a guarantor of a high scientific level.*

*Thanks to all our readers and collaborators that through their suggestions, criticisms and feedback contribute to the improving of our science magazine quality.*

***Prof. Petculescu Nicole Livia, PhD***  
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## ASPECTS REGARDING THE MAIN MAIZE DISEASES

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### Abstract

One of the most important crops in Romania is corn. Corn grains are the concentrated fodder, the most important for all animal species. Of importance for animal feed is corn green mass or silage. Silo maize provides per hectare, with the exception of fodder beet, the production of nutrient units with the lowest production cost. This fusarium of corn has a wide geographical spread, being quite common in our country. It is harmful in years with humid autumn weather. It is found on many cultivated and spontaneous grasses. The rot of stems and cobs produced by *Fusarium roseum cerealis* is found in all maize-growing countries. The common or blistering of corn is a disease originating in America, from where it entered Europe and was first reported in Italy (1809) and France (1815) and later in other countries.

**Keywords:** *corn diseases, fusariosis, grains.*

### Introduction

The berries of this plant are used in the diet of people, in industry and animal feed. Corn kernels are widely used in the alcohol, starch, dextrin and glucose industries. The extraction from germs produces a very good quality oil, widely used in dietary nutrition. From 100 kg of corn grains are obtained the following: 77kg of flour, 63kg of starch, 71kg of glucose, 50-60kg of isomerosis (invert sugar) or 44l of alcohol.

Corn grains are the concentrated fodder, the most important for all animal species. An importance for animal feed is corn green or silage. Silo maize provides, with the exception of fodder beet, the production of nutrient units with the lowest production cost. Corn stalks are of particular interest for animal feed, and by the addition of urea and molasses, silage cocoons have a high nutritional growth and are a juicy fodder for ruminants over the winter. Corn cobs are also used in the pulp industry, and packaging cloths are woven. Corn has spread in culture due to special phyto-technical and biological features.

From Mexico to South America, corn is grown in different weather and soil conditions, such as in Canada, Russia, up

to 58 ° N, and in the southern hemisphere up to 42 °, in New Zealand. In the United States, the main area of corn cultivation is found in Minnesota, Nebraska, Iowa, Wisconsin, Illinois, Indiana, Ohio and Missouri, located between 40-45 ° N. In Europe, the main maize cultivation area is located around the lower course of the Danube. In Romania, corn is sown on 3-3.5 million ha. Of the area sown with corn, 70% is concentrated in the south of the country and the Western Plain.

In these areas the corn finding the best vegetation conditions. 17% of the entire area is cultivated in Moldova, in Transylvania, with an unfavorable climate (after Calvo Pamela, Nelson Louise, Kloepper J. W., 2014 and Bîlteanu Gh, 2001).

### Materials and method

#### **1. White flowering berries - *Gibberella fujikuroi***

This *fusarium of corn* has a wide geographical spread, being quite common in our country. It is harmful in the years with wet autumn weather. It is found on many cultivated and spontaneous grasses.

**Symptoms.** The disease can occur in all phases of vegetation of corn. If

infections occur early, the seedlings rot and die soon, just before emergence. As a result of the infection, the normal development of the roots is prevented. According to some authors, the fungus *Fusarium moniliforme* forms a toxin in the endosperm of the infected bean, from where it is translocated into the roots, thus inhibiting their growth.

The effect of seed damage is limited only to the rot of young plants. In more developed plants the attack is located at the base of the stem and on rotting roots and is covered with a pink mold. The most frequent, most characteristic and at the same time the worst, is the attack on the cobs, which is manifested by the cracking of the grains during maturity. (Fig.1)

The isolated grains or groups of grains on some parts of the cob are pink, then reddish-brown and are covered with a white or pink-purple, purulent mold, consisting of mycelium and fungal conidia. In case of strong attack, this mold covers the entire cob. Often the skin of the grains breaks, the contents become apparent, the grains taking on a characteristic appearance of "popcorn". Sick grains are lighter than healthy ones and have low germination power. The disease continues to evolve during the storage of corn cobs.

## **2. Stem and cob rot - *Gibberella roseum* f.c. *cereal***

The rot of stems and cobs produced by *Fusarium roseum cerealis* is found in all maize-growing countries. It occurs more frequently in temperate areas, with high humidity, producing in some years significant decreases in production, especially when cultivating sensitive hybrids. In our country this disease is quite widespread, producing attacks especially in the south and the western plain.



Fig.1. White flowering of corn kernels - *Gibberella fujikuroi*  
- section through an attacked cob  
(after: R. Munteanu)

**Symptoms.** Corn can be infected at all stages of vegetation. The attacked seedlings rot even before emergence, their roots and cotyledons being covered with a white-pink mold (mycelium and fungal conidia). This attack comes either from the infected seed or from the infested soil. Later in the silk-fertilization period, the disease is located on the roots and stems, usually on the basal internodes. Infected roots rot, turn red, and plants can be easily removed from the soil.

The first 2-3 internodes at the base turn yellow like straw, then brown, and the marrow is decomposed. In a section through the stem, a browning of the tissues and sometimes caverns filled with the mycelium of the fungus are observed. (Fig.2)

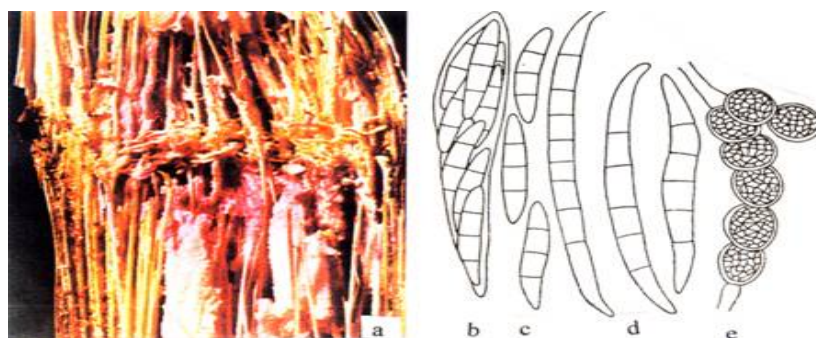


Fig.2. **Stem and cob rot** - *Gibberella roseum*. f. *cerealis*

a - section through an attacked stem; b - ascospores;

c - ascospores; d - conidia; e - chlamydospores

(after: R. Munteanu)

The pink-reddish color of the marrow allows the pink rot to be distinguished from the white one. Rotten stems can break at the base. The most typical symptom of the disease, which easily differentiates it from the white flowering of the berries, is found on the cobs in the phase of their maturity. This attack is the most common in our country.

The cobs are covered with a white mold with a ruby pink hue. The attack starts from the top and progresses to the base of the cob. When the infection of the cob takes place early and the humidity is high, it rots completely. A white-pink mycelium develops on the cloths and these, together with the silk remnants, remain glued on the cobs. The disease also develops in stored cobs.

Corn attacked by *Gibberella roseum* f. *Sp. cerealis*, is toxic to humans and animals. Serious cases of intoxication of animals are known, more often in pigs, due to the consumption of corn affected by this fusariosis.

### 3. Common corn embers - *Ustilago maydis*

The common or blistering of corn is a disease originating in America, from

where it entered Europe and was first reported in Italy (1809) and France (1815) and later in other countries.

In our country it is common in the Danube Plain, northern Moldova and eastern Transylvania. The damage caused is estimated at an average of 2-5% of the annual harvest, but in some areas the damage may be even greater. A higher intensity of attack is recorded when corn is grown in monoculture and in recent years is found in the production of hybrid seed, developing on the injured tissues following the rupture of the panicles.

**Symptoms.** The attack of the fungus is manifested after emergence or when the corn has 7-8 leaves and until ripening.

The main symptom of the disease is the presence of bags full of chlamydospores, on all aerial organs of the plant, sometimes on the adventitious roots. Stems and cobs are most frequently attacked, leaves and panicles less often. A strong infection of young plants results in their deformation and destruction. On stems, tumors usually form at the basal nodes or in the upper third of the plant, above the cob, and in this case the consequences of the attack are more serious. (Fig.3)



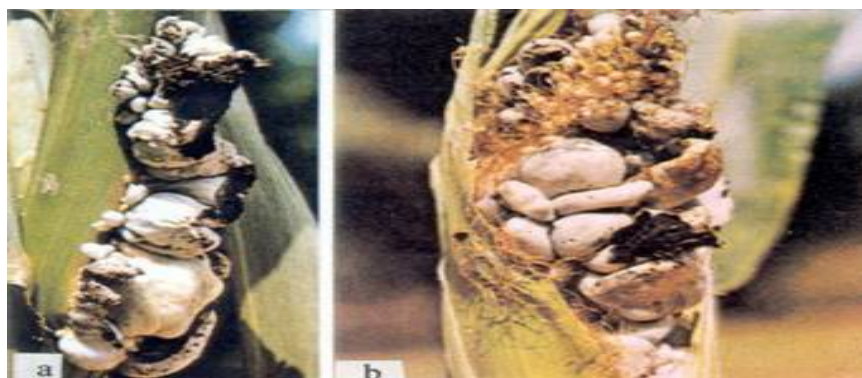


Fig.3. Common corn embers - *Ustilago maydis*  
a - attack on the stem; b - attack on cobs (after: R. Munteanu)

The cobs can be totally or partially destroyed; spore tumors occur more frequently at the tip or base of the cobs where they develop due to hypertrophied bracts and ovaries.

On the leaves the disease is manifested by the appearance of small tumors, as the pea located mainly at the base of the tongue, isolated or strung along the main vein. rare. On a diseased panicle, the tumors develop in place of one or more flowers, under their weight the panicle bends.

The shape and size of the tumors differ greatly depending on the organ being attacked. Their dimensions vary from 1 cm to about 20 cm, most often 9-10 cm in diameter. Also the number of tumors on a plant is variable depending on the number of infections. The largest tumors can be seen on cobs and stems.

They can reach 10 cm in length and 5-6 cm in diameter and in weight can reach 2 kg, which significantly affects production. Initially they are greenish, spongy, fleshy, then turn white. They are filled with a moist, greasy-looking sporiferous mass, which becomes powdery, being covered with a thin yellowish-white membrane. At maturity, the membrane dries and breaks and the chlamydospores are released, fall to the ground or are scattered by the wind. (after: Agrios G., 1978)

### Results and discussions

**Pathogen** - *Gibberella fujikuroi* (Saw) Wr. f.c. *Fusarium moniliforme* (Theld) Snyder, fam. Hypocreaceae, ord. Sphaeriales, cl. Ascomycetes.

The mycelium of this pathogen grows on the outside, on cobs and in grains. Under favorable conditions it bears abundant fruit and forms *Fusarium* conidia (macro and microconidia).

Macroconidia are spindle-shaped, straight or slightly pointed, curved, multicellular with 3-6 transverse septa, hyaline 41 x 4.3 arranged in chains.

The microconidia are oval, unicellular, hyaline, 10.5 x 4.2 being arranged in long chains or small glomeruli. The perithecia are blackish blue, 275-380 x 210-300 very easily detachable and contain numerous axes, cylindrical, colorless or slightly yellowish at maturity. In each spike develop 4-8 single or bicellular ascospores (rarely have 2-3 septa) elongated, placed in 1-2 rows.

The optimum temperature for ascospore germination is 22-25°C. The form of perithecia in the *Gibberella fujikuroi* mushroom was also observed in our country on corn stubble residues in 2015 in Fundulea. The high temperature favors the disease. It also evolves during the storage of cobs over the winter, when they are stored with too high a percentage of humidity or when there are unsuitable conditions in the warehouses (high



humidity, non-ventilation, etc.). The corn moth (*Sitotroga cerealla*) contributes to the spread of the pathogen. The fungus is transmitted from one year to another through infected seeds and the remains of diseased plants, left in the field as a source of infection, also serve different species of grasses that can be parasitized by this species of *Fusarium*.

**The pathogen.** *Gibberella roseum* f.sp. *crealis* Anyder si Hansen, fam ., Hypocreaceae, ord. Sphaeriales, cl. Ascomycetes. The fungus parasitizes corn, wheat and other grasses on which it develops mycelium and fruiting.

As organs of asexual multiplication they form spindle-shaped conidia, hyaline with 3-5 septa, slightly curved, sharp at the ends, 30-60 x 4-6. At the same time, many microconidia develop. (after: Agrios G., 1978)

The perithecia are spherical or oval, with a short, blackish neck, measuring 200-300 x 170-220, appearing especially in spring on the remains of stems left in the field. The axils are elongated, 60-76 x 10-12, contain 8 spindle-shaped ascospores with 1-2 septa, hyaline or slightly brown.

The fungus grows at a minimum temperature of 6°C, optimal being 21-30°C and the maximum 36°C. These values are variable depending on the parasitic plant. Wet weather favors the disease. In the spring, ascospores, carried by the wind, produce the first infections. During vegetation, the pathogen spreads through the conidia, in deposits it can be transmitted from one cob to another. The fungus resists in the soil on the remains of diseased plants and in infected seeds, these being the main ways in which it is transmitted from one year to another.

**The pathogen.** The disease is caused by *Ustilago maydis* (DC) Corda asin. *Ustilago zae* (Beckm.) Ung.s, of the family *Ustilaginaceae*, order *Ustilaginales*, class *Basidiomycetes*.

The mycelium of the fungus is located in the infected tissues. The organs of propagation and resistance are

chlamydospores. They are spherical or oval, 8-12µ in diameter, brown, with a finely echinous episphere. After the winter rest period, the chlamydospores germinate giving rise to a cylindrical tetracellular basidia, on which basidiospores of different sexes are formed in an indefinite number. (Fig.4)

Mating takes place between two basidiospores of different sexes, or between two budding cells and results in secondary filaments of infection. This dicariotic mycelium produces primary infections, infecting various organs of corn by piercing the epidermis, wounds, stomata or insect bites. The mycelium develops intra and intercellularly, at the site of infection the characteristic pockets (tumors) are born and at maturity the mycelium forms by its fragmentation, a new generation of chlamydospores. They are spread by the wind and cause secondary infections. During a period of vegetation, several secondary infections occur. Generally, 2-3 weeks pass from the date of infection until the appearance of chlamydospores.

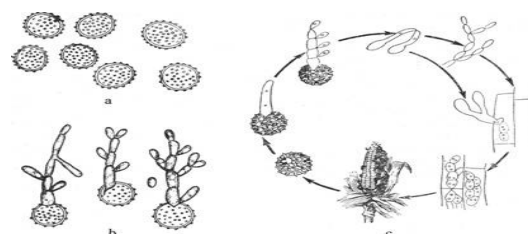


Fig. 4-a-chlamydospores; b - germinated chlamydospores; c- the evolutionary cycle (after: [www.google.com](http://www.google.com))

*Ustilago maydis* infection is local. The disease is favored by temperature: the optimum temperature for infection is 26-30 ° C. Moisture is also required for spore germination and plant infection. The evolution of the disease can also be influenced by drought - in conditions of constant humidity as in the case of a prolonged drought, a stagnation of the disease is observed.



In the soil, chlamydospores keep their viability for 3-4 years, so when corn is grown for several consecutive years, the attack is stronger due to the accumulation of a large amount of chlamydospores in the soil. Injuries caused by insects or hail, organic fertilizers (manure) excess nitrogen, high plant density, late sowing, favor the attack of *Ustilago maydis*. (after: Agrios G., 1978)

### Conclusions

**Combating the white bloom of the berries.** To prevent the disease, it is recommended to use healthy seed or treat it either by dusting with organomercuric products (Cryptodine, 100 g / 100 kg of seed), or by hydrothermal (at 55°C for 30 minutes). It is also indicated to sort the cobs and store only those with normal humidity (16-17°C) respecting the optimal storage conditions (aeration). It is necessary to periodically check the stored cobs, control the cob moths and apply phosphorus fertilizers to limit the attack. The safest measure is the cultivation of hardy hybrids.

**Fighting *Gibberella roseum* f.c. cereal.** The most important means of combating corn fusarium wilt is the use of healthy seed. Chemical treatment with organomercuric products has proven to be very effective in protecting the seeds in the soil against rot, in which the fungus *Fusarium roseum gramineorum* frequently participates.

In our country, the seeds destined for sowing are subjected to a semi-medium treatment with the Romanian product Tirodin 75% by wetting ("Slurry" method). This method consists in spraying the seed with a very small amount of dense suspension of the product in water. It is also recommended to comply with the complex of agro-phytotechnical measures provided in the technology of maize cultivation.

**Combating weed control** is recommended: gathering plant debris left after harvest such as collecting and

destroying tumors to avoid increasing the supply of chlamydospores in the soil. Deep plowing, observance of a 4-5 year crop rotation. Applying phosphorus fertilizers and avoiding fresh manure because chlamydospores retain their ability to infect even after passing through the digestive tract of animals fed on charred corn. Avoidance of mechanical injuries, destruction of harmful insects.

### For control it is recommended:

- *Chemical measures:* Tiradine 75. The most important measure is the cultivation of resistant hybrids. Thus among the early hybrids: HS 105 -Turda (*Zea mays convar.dentiformis*); among the semi-early hybrids: HD 225 - Fundulea (*Zea mays convar aorista*); among late hybrids: HS 415 - Lovrin (*Zea mays convar dentiformis*) have good resistance.

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## EFFECT OF FOOD TRANS ACIDS IN THE DEVELOPMENT OF CORONARY HEART DISEASE

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### Abstract:

There are many topics on which scientists disagree in medicine, but the problem of trans fats is quite clear - artificial trans fats are not healthy. Trans fats are a type of unsaturated fats; unlike saturated fats that do not have double bonds between the carbon atoms in the chemical structure, saturated fats have at least a double bond, and depending on the position of the hydrogen atoms around the double bond it can be cis or trans. High consumption of AGT is one of the risk factors for the development of coronary heart disease. According to conservative estimates, coronary heart disease causes about 660,000 deaths a year in the EU, about 14% of the total mortality rate. There is wide variability in the EU, where the disease coronary heart disease accounts for between 6% and 36% of total mortality for France and Lithuania. The costs associated with coronary heart disease are estimated at 0.5% of gross domestic product (GDP), and related healthcare costs can reach 2.9% of total healthcare costs healthcare.(1)

**Keywords:** *food trans fatty acids, coronary heart disease*

### Introduction

Trans fatty acids (TFAs) are a type of unsaturated fatty acid. They are defined in Regulation (EU) no. 1169/2011 as "fatty acids with at least one unconjugated double bond (ie broken by at least one methylene group) carbon-carbon, in a trans configuration".

High consumption of AGT is one of the risk factors for the development of coronary heart disease.

In the human diet of all times there were natural trans fats through the consumption of meat (trans fats represent 3-9% of the fat of beef and lamb) and dairy products (2-5%) from ruminants (goats, sheep, cows). They are formed when the grass eaten by animals is digested under the influence of bacteria in their intestines. Several studies have shown that moderate consumption of products containing these

trans natural fats does not endanger health. (2)

Artificial trans fats, on the other hand, are dangerous. They are created by introducing hydrogen molecules into vegetable oils, which transforms oils from liquid to solid. In this form, fats last longer and have a consistency similar to saturated fats. Numerous clinical studies, both observational and experimental, have shown that trans fats increase the risk of cardiovascular disease.

### Materials and methods

High consumption of AGT contributes to the risk of developing coronary heart disease, but the exact contribution to the overall health and economic problem is difficult to assess for the EU as a whole. due to the limited information that is available on the consumption of AGT worldwide European





Union. There is evidence that the introduction of legal limits for industrial AGT in Denmark, which almost completely eliminated industrial AGTs from the food chain of Denmark, reduced the mortality rate caused by cardiovascular diseases<sup>10</sup>.(3)

In the 3 years since the implementation of the legal limit, the mortality rate attributed to cardiovascular diseases has decreased on average by about 14.2 deaths per 100,000 inhabitants per year, compared to a synthetic control group. (4)

Most foods contain less than 2 g AGT / 100 g fat (lower limit established in EU Member States that have legislation on limiting AGT). Of these foods, 77% contain less than 0.5 g AGT / 100 g fat, according to an analysis of the latest data available on the presence of AGT in food in European food markets.<sup>(5)</sup> However, the data show, also that there are still products on the European food market that contain high levels of AGT (for example, biscuits or popcorn with values of 40-50 g AGT / 100 g fat).

Among these:

- **Foods** also include foods that are not prepackaged, such as products and containing AGT (> 2 g of AGT per 100 g of fat) (6)
- Fats have become a controversial topic over time. Polls show that two-thirds of Americans - the population in which overweight reaches 60% - do not know the difference between fat and cholesterol. (7)
- **Lipids** are macronutrients that are vital in the body and are an important source of energy.

However, it is not fully understood what types of fats are and what determines their classification into bad fats and good fats.

**Fats** are fats but not all fats are fats. Scientifically, "lipids" is the general term for water-insoluble organic compounds, which include triglycerides (fats), cholesterol, along with other substances. However, in the current language, the term fat is often used to include all types of lipids.

**Triglycerides** and **cholesterol**, although often found together in food and blood have very different structures and only a few common functions - triglycerides and cholesterol enter the structure of cell membranes, and some fats along with cholesterol enter the nervous system.

### **Conclusions**

Triglycerides are a source of energy in the body, which cannot be said about cholesterol. Cholesterol is a cellular structural component or part of more complex compounds, such as hormones and bile acids. Cholesterol is influenced by the amount of lipids ingested, while triglycerides depend on the total calorie intake (even if they do not come only from lipids).

It should also be understood that the final impact on AGT consumption (and health outcome) also depends on certain underlying factors, including:

- education of the population regarding nutrition;
- the eating habits of different demographic groups in Europe (different traditions, different sensitivities regarding price differences, etc.);



- levels of AGT consumption from ruminants (dairy products and other products from ruminants, which are part of a balanced diet);

- how food could be reformulated to reduce the content of AGT industrial. The full profile of the reformulated product must be taken into account to ensure that after reformulation, healthier food options are offered. For example, there are concerns on the fact that reformulation in order to reduce AGT could lead to growth content of saturated fatty acids.

Although it is preferable, from a public health perspective, for AGT to be replaced with cis unsaturated fats (which would lead to a 21% -24% reduction in the risk of heart disease if the AGT is replaced, representing 2% of the daily energy intake with unsaturated or polyunsaturated fatty acids), even the most unfavorable replacement with saturated fatty acids would, however, bring significant benefits to public health (leading to a 17% decrease in the risk of heart disease; the risk reduction has been estimated (8).

Studies that have monitored results in EU Member States have shown that while in some AGT products have indeed been replaced with saturated fatty acids, in most cases they have not there were major differences in the content of saturated fatty acids, that the sum of the content of AGT and saturated fatty acids was reduced in most cases and the reformulated products increased the content of cis unsaturated acids and overall have a healthier profile.

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## THE IMPORTANCE OF NATURAL FOODS FOR HEALTH

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### **Abstract:**

Natural products are a milder alternative to the problems faced by modern man. On the principle that the best treatment is prevention, the consumption of natural foods is the best doctor in disease prevention and maintaining our health. Consuming as many natural products as possible is not only a fashionable trend, but brings real benefits for maintaining our health. The use of medicinal products based on products and plants can be used with maximum efficiency and proven in the treatment of certain diseases, it is not just a myth. Lately, even though the pharmaceutical industry has evolved a lot and offers us an infinity of solutions and treatments, people are becoming more and more aware that the return to nature can offer the remedies used for thousands of years, with maximum efficiency. In addition, any minor condition should be treated first, using products that are as harmful to the body as possible. They can be just as effective as their chemical rivals. The medical problems we face often hinder us in our daily lives. From minor ailments, fatigue, stress, to chronic diseases or diseases that can endanger our lives, our body is tested throughout life. The balance of the body must be maintained and care for it is constantly manifested. From prevention to the correct administration of treatment and monitoring of the effects after its cessation. A healthy lifestyle involves a balanced diet, giving up habits that are harmful to the body, exercise, sports and respect for the body and mind.

**Keywords:** *natural products, treatments, health*

### **Introduction**

Let's try for the first time to help our body fight, giving it natural substances, without chemical additives. This statement derives from the many advantages that natural products have: they are natural and our body assimilates them much faster; they have fewer side effects because they are not manufactured by obstructive techniques and do not contain synthetic ingredients or toxic residues; organism (pesticides, herbicides or hormones), not genetically modified, the impact on the environment is minimal, not addictive, the properties of the raw material are not destroyed because their preparation and extraction is done by cold pressing. (1)

Lately, even though the pharmaceutical industry has evolved a lot and offers us an infinity of solutions and treatments, people are becoming more and more aware that the return to nature can offer the remedies used for thousands of

years, with maximum efficiency. In addition, any minor condition should be treated first, using products that are as harmful to the body as possible. They can be just as effective as their chemical rivals.

From the easiest ailments to malignancies, in an attempt to cure ourselves with as few side effects and negative effects as possible, we must try, with hope and confidence, more treatments made from plants and natural ingredients. That doesn't mean we have to argue with doctors. On the contrary, we must go to the doctor as often as possible to constantly check our general health and thus prevent the onset of severe diseases.

In a fairly varied range, accessible, effective, free of chemicals, at competitive prices, natural treatments are and must be preferred to modern and chemical ones. Diversity exists on the market at the moment, offering a wide enough range to effectively identify and treat most known



benign conditions. Colds or colds, low immunity, respiratory problems, tension problems, anxiety, depression, vitamin deficiencies, detoxification, colon problems, urinary tract infections, digestive problems, biliary and liver failure, circulatory problems, skin conditions and much more. find on the list of indications of many medical prescriptions of natural products. (2)

Although natural treatments work for a large number of ailments, their administration must be administered for a long time, without having effects or raising certain problems for some of the consumers. It is also dosed and supervised. Natural treatments, like any kind of treatment, cannot always be administered for a long time, without having effects or raising certain problems for some of the consumers.

The skin is not only the largest organ of the human body, but also one of the most sensitive, because it absorbs a large part of the substances with which it comes into contact, and this is especially true for cosmetics. (3)

That is why it is very important to choose natural cosmetics or organic cosmetics, which do not contain petrochemical mineral oils, synthetic preservatives, additives, parabens, paraffin, plastic derivatives and other ingredients whose prolonged use can affect the skin.

In extreme cases, these artificial ingredients can even reach the bloodstream, and from there they can easily migrate to other organs in the body, with long-term effects that are difficult to estimate even by specialists.

A conventional cosmetic product can contain as many as 20 such ingredients, and many of the basic ingredients are directly correlated with various hormonal imbalances, infertility, premature aging and, in extreme cases, even skin cancer. (4)

It is important to note that when assessing the degree of toxicity of ingredients in a cosmetic product, the combined effect of

all ingredients is not taken into account, as they are assessed exclusively individually.

Natural cosmetics have a basic formula that may contain, depending on the type, non-toxic ingredients such as plant extracts, natural preservatives, essential oils or vegetable additives. In other words, natural cosmetics do not contain chemical or synthetic ingredients.

In most cases, the ingredients are very carefully chosen, therefore the degree of safety offered by the use of these products is certainly higher than that offered by conventional cosmetics.

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In most cases, the ingredients are very carefully chosen, therefore the degree of safety offered by the use of these products is certainly higher than that offered by conventional cosmetics. The use of natural cosmetics also brings some significant benefits for maintaining long-term skin health:

- They are recommended by the dermatologist. Conventional cosmetic products can favor, in certain cases, the appearance of irritations or allergies. In the case of natural cosmetics, which do not contain chemicals, this hypothesis is excluded from the start.
- They are compatible with all skin types
- They do not have parabens, they have the role of increasing the lifespan of a product, being the cosmetic equivalent of artificial preservatives in food. Studies over time have shown that parabens have a harmful effect on the body, when they constantly come in contact with it, so it would be ideal to avoid products whose label states that they contain parabens. Of course, natural products also contain preservatives, but they are extracted from plants, not artificial (the most commonly used are



usually, those extracted from the grapefruit fruit.

- Contains nutrients. Natural cosmetics contain various oils and plant extracts (green tea, grapes, coconut, apricots, aloe), which are very rich in nutrients.

The use of organic cosmetics brings an important series of advantages:

- Compared to natural products, organic ones offer even greater safety in terms of long-term use, precisely because, in their case, the checks go to the source of raw materials, and the crops from which the plants come are carefully controlled and untreated with chemical fertilizers or pesticides.
- Furthermore, organic products also guarantee that these crops do not come from genetically modified seeds. (5)

### ***Materials and method***

In the following lines they will give some examples of plants, fruits and even fungi, frequently found in food natural products.

- **Noni Juice** is one of the most powerful antioxidants, with an important role in eliminating toxins from the body as well as free radicals, which slow down the normal activity of our cells. Scientific studies have shown that noni extract leads to a visible improvement of the immune system. and thus we acquire an increased resistance to diseases and in this category are included the new types of aggressive flu, which have appeared in recent times. This vitamin bomb also contains pro-xeronine, a precursor of xeronine, alkaloid responsible for proper functioning and healthy cells in the body.

**Noni** is a reliable ally in the fight against cancer, due to its impressive content of active compounds and antioxidants, which successfully act on cancer cells in the body. By default, a body

with fewer cancer cells can fight and succeed in the fight against the disease.

Noni juice effectively soothes all types of pain. It is also recommended against migraines and headaches, caused by vision problems. Thus, noni vitamin A improves vision and antioxidants reduce the level of free radicals, which are responsible to some extent for eye problems. (6)

- **Graviola** is a tropical fruit, which has long been used as a natural treatment for diseases of the digestive and respiratory systems. Graviola has many health benefits, from the ability to eliminate certain intestinal parasites to boosting the immune system and from relieving pain to preventing certain types of cancer.
- It has a calming and sedative effect, has an anti-stress effect, helps the health of the respiratory system, has a beneficial effect on the skin, lowers hypertension, lowers fever, fights diarrhea and stabilizes blood sugar in people with diabetes.;
  - may dilate blood vessels and lower high blood pressure, therefore it is not indicated for people who already have very low blood pressure, only after a medical consultation. Thanks to its high potassium content, it helps to stabilize blood pressure. And that's because potassium has the ability to filter harmful substances from the body, including salt. It is a fruit rich in vitamin C, a cup of juice (225 ml) of this fruit containing at least 46 milligrams of vitamin C. This powerful vitamin is essential for boosting immunity. (6)

**Aloe vera**, nicknamed the "*elixir of youth*", is a plant with multiple uses in alternative medicine and cosmetics. The ancient Egyptians called it the "plant of immortality" and placed it among the funerary gifts buried with the pharaohs, to





ensure, even after death, the health of the pharaoh's spirit.

The plant, or rather, the aloe vera leaf contains more than 75 active substances - some difficult to synthesize in the laboratory - including amino acids, minerals, vitamins, phytosterols, plant hormones, mucopolysaccharides.

Antioxidants neutralize free radicals, substances with a role in the development of pathologies, coronary artery disease, Alzheimer's, macular degeneration (ophthalmic disease, characterized by impaired central vision). The components with antioxidant effect from aloe vera make this plant an element with important beneficial effects in preventing cardiovascular diseases (diseases responsible for most deaths worldwide).

At the same time, antioxidants have an important effect when it comes to slowing down the cellular aging process. Aloe vera contains 6 antiseptic agents: lupeol, salicylic acid, urea, cinnamic acid, phenols and sulfur, all have inhibitory action on fungi, bacteria and viruses. Applied locally, aloe vera gel has a calming and analgesic action. (7).

**Turmeric** is a spice that has become popular not only for use in various recipes, but also due to its many therapeutic properties, it has long been used in Ayurvedic medicine (traditional Indian medicine), but also in traditional Chinese medicine, due to its many therapeutic properties. The benefits are due to the active substance in turmeric, curcumin, which helps treat inflammation.

- Protects the heart - as shown by several studies published in the journal *Pharmacological Research*, curcumin can protect the body against cardiovascular diseases, such as cardiomyopathy or arrhythmia (irregular heartbeat);

- Protects against skin diseases - curcumin helps neutralize free radicals and prevents damage to skin cells, accelerating and improving the process of collagen absorption. Curcumin can also help relieve

skin conditions such as psoriasis, dermatitis and acne.

Relieves rheumatic pain - a study conducted in 2016 showed that taking curcumin supplements for four weeks helped relieve the pain caused by osteoarthritis in people who already had this condition;

- Anti-inflammatory and antioxidant role - one of the most important benefits of curcumin is the ability to reduce inflammation by blocking certain enzymes involved in this process. At the same time, its antioxidant effect helps prevent arthritis, asthma or inflammatory bowel disease. Prevents blood clots - as studies have shown, curcumin improves blood circulation and prevents blood clots that could lead to serious health problems such as strokes, deep vein thrombosis or pulmonary embolism. (8)

**Ginger** is a true ally in the fight against various pathogens, so its benefits are not negligible. This ingredient prevents the appearance of digestive discomfort, bloating or indigestion, by stimulating enzymes with an effective role in the absorption of nutrients. At the same time, its anti-inflammatory properties relax the stomach muscles and allow the digestive system to process food. This ingredient is also known for its antioxidant properties: it supports cognitive function in the aging process and even contributes to improving memory and reaction time.

Research in the field of recovery medicine confirms the beneficial effects that ginger has as an adjunct in the complementary treatment of rheumatoid arthritis and osteoarthritis. It can help reduce the intensity of pain and improve mobility. In addition to joint pain, ginger compresses also help relieve menstrual pain, while relaxing the abdominal muscles. (8)

**Goji berries** rich in vitamin C, goji berries can be eaten to improve the function of the immune system.

The antioxidants that goji berries contain fully protect the body against oxidative stress.



Due to its rich beta-carotene content, the consumption of goji can help maintain healthy skin;

Due to its strong antioxidant effect, goji berries are also among the ingredients of cosmetics, especially sunscreens and anti-aging products. (8)

**Tibetan Mushroom (*Cordyceps Sinensis*)** has been known and used in traditional Chinese medicine for its therapeutic properties for thousands of years. , amino acids, polysaccharides, magnesium and calcium. These substances make Tibetan Mushroom an extraordinary means of restoring health and increasing the vitality of the body. (10)

The **Reishi mushroom of Japanese origin (*Ganoderma Lucidum*)** contains several hundred active elements with effects on the immune system that make it an exceptional medicinal mushroom. (11) In addition to proteins, vitamins and amino acids, polysaccharides, triterpenes, fatty acids and alkaloids, Reishi is rich in various forms of beta-glucans (1.3D and 1.6D) and organic germanium well known for their anticancer and immunomodulatory effects. (12)

The Ling-Zhi variant also known as Red Reishi, meaning red Reishi, has been shown to be the richest in the polysaccharide complex that gives it a pronounced anticancer therapeutic character. Polysaccharides are organic beta-glucan substances that have been shown in clinical trials to activate the anticancer components of the immune system. (13). Reshi @Cardyiceps is a natural supplement that can be found in the *Bleu Diamont* store, a 100% Romanian company, which owns a wide range of natural products, covering several categories: health, care and beauty.

### **Conclusions**

Natural products are a milder alternative to the problems facing modern man, with the following conclusions:

- they are natural and our body assimilates them much faster;

- have fewer side effects because they are not manufactured by obstructive techniques and do not contain synthetic ingredients or toxic residues;

- they are accessible, without the need for a medical prescription, you can find them in specialized pharmacies or health food stores;

- have not been treated with substances harmful to the body (pesticides, herbicides or hormones);

- are not genetically modified;

- the impact on the environment is minimal;

- does not create addiction;

- the properties of the raw material are not destroyed because their preparation and extraction is done by cold pressing;

- addresses all ages.

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## IMPLICATION OF CORN AND WHEAT PLANTS WITHIN HUMAN NUTRITION

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### Abstract:

Cereals have been around over time and will always be plants of greater importance for human existence and activity. Their beans are used in human nutrition, for animals feed and as a raw material in industry. The grain has the advantage that can be stored and kept for long, time. The two stages of the cereal growth and development cycle listed the vegetative and generative stages. Seed germination occurs in the presence of three factors: water, heat and air. Twinning is actually the branching of the stem at the base, from the nodes formed at shallow depths in the soil. Vegetation conditions that positively influence twinning are: temperature of 8-12 ° C, sufficient light, balanced fertilization, optimum humidity and density. The twinning capacity can be controlled with very good results by increasing or reducing the density of plants. Wheat quality can be greatly impaired due to the attack of the grain bug.

**Keywords:** *grains, wheat, corn, human nutrition*

### Introduction

Cereals have been around over time and will always be plants of greater importance for human existence and activity. Their grains are used in human nutrition, animals, as well as as a raw material in industry (for obtaining starch, dextrin, glucose, alcohol, beer, oil, etc.). Due to the favorable ratio between protein and carbohydrates, cereals are used in relatively large quantities in the daily ration of food. Also residues which are obtained by industrialization conditioning and their use as feed. Cereal by-products (straw, cochineal, chaff) are used as raw materials in the pulp and paper industry, as animal feed, packaging, braids, etc. Cereals also have the advantage that they can be stored and stored for a long time, they can be easily transported over long distances, etc. For all these qualities they have a large share in trade between countries.

### Materials and method

The two stages of the cereal growth and development cycle listed the vegetative and generative stages. The

vegetative one is divided into germination, root formation and twinning and the germination stage begins with the time of stem removal and continues throughout the stem formation and in the following phases, namely sprouting, bean formation and maturation.

Seed germination occurs in the presence of three factors: water, heat and air. For the germination of cereal grains the absorption is equal to 50% by weight of Table 1.1.

**Table 1.1. The amount of water that the grain grains absorb for sprouting (Bilteanu Gh., 1991, 1998)**

Species	Absorbed water (% of grain weight)
Wheat	45
Maize	44
Rye	58
Barley	48
Oat	60

The minimum germination temperature is 1-3 ° C for wheat, rye, barley, oats and at least 8 ° C for corn. The

access of water and oxygen to the mentioned temperatures determines the activity of the enzymes, to transform the complex reserve substances (starch, fats, proteins) into substances with small molecules. The reserve substance thus transformed elongates the epithelial cells in the endosperm mass, at the embryonic node, from where they are directed to the bud and root. In optimal germination conditions, the emergence of cereals takes place after 4-5 days.

Twinning is actually the branching of the stem at the base, from the nodes formed at shallow depths in the soil. Vegetation conditions that positively influence twinning are: temperature of 8-12 ° C, sufficient light, balanced fertilization, optimum humidity and density. The twinning capacity can be controlled with very good results by increasing or reducing the density of plants.

#### Straw formation.

Autumn cereals go from twinning to straw elongation only after they have gone through the vernalization stage (a period of 45-50 days with low temperatures of 1-10 ° C in late autumn and early winter).

The stem, with very short internodes, is formed, in its incipient state, since autumn. However, straw elongation takes place in spring, when the temperature exceeds 14 ° C and is done by increasing each internode (intercalary growth). In the phase of straw formation and the appearance and differentiation of the reproductive organs, the consumption of water and nutrients is very high.

#### The appearance of inflorescence.

Along with the elongation of the straw, the inflorescence also develops, which before its appearance is protected by the sheath of the last leaf (the bellows phase). When the upper third of the inflorescence comes out of the bellows, the cereals are in the sprouting phase. Flowering consists of the opening of the blades and the appearance of stamens on the outside. The flowering of cereals can

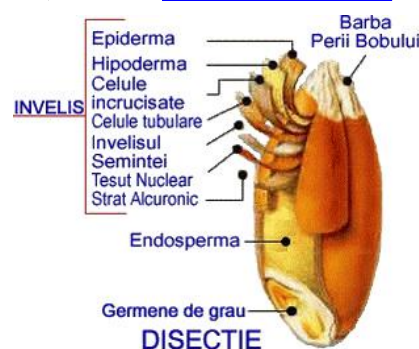
occur at the same time as the appearance of the ear for the first time in barley, after a few days in wheat and a longer time in rye. The flowering of the ear begins from the middle to the extremities, and in the panic it begins from the upper part towards the main axis. Pollination is autogamous (with cases of halogamy) in wheat, barley, oats and allogamous in rye and corn.

#### Forming and ripening grains.

After fertilization, immediately begins the formation of berries, which grow and reach maturity in a period of 24-45 days. In the milk ripening phase, the grain contains about 50% water of its weight, in the yellow maturation phase about 30%, and in the full maturity phase it decreases to only 15-16% (according to Ana Hulea et al., 1982 and Constantin Banu et al., 1991, 2007).

**Wheat - the genus *Triticum*** family Gramineae belongs to **wheat**. For the species *Triticum vulgare*, *Triticum durum* and *Triticum turgidum*, after separating the grains with special machines, they remain in the floral covering of the plants. Wheat appears at harvest as an oval-shaped dried fruit with one part having a sac-shaped hollow and the other part convex. If a cross section is made through the wheat bowl, the following parts are distinguished : the fruit shell or pericardium, the seed coat or spermoderma, the aleurone layer, the endosperm and the embryo figure 1.1. (After: <https://www.google.ro>).

**Figure 1.1. Section of wheat grain**  
(Source: [www.google.com](http://www.google.com))





### The chemical composition of wheat.

Wheat grains consist of non-nitrogenous substances, protein substances, H<sub>2</sub>O, minerals and cellulose. Azotate extractive substances represent 62-75 , 5 % of the grain weight. They consist of 90% starch, lower amounts of fructose and dextrin.

The most important part in terms of nutritional value and quality for the bakery industry is protein substances. They have a large amplitude of variation of the proportion - between 8-24%. The content of wheat grains in protein substances is influenced by genetic factors and vegetation factors. The richest in protein substances are the varieties belonging to the species *Triticum durum* (durum wheat). Grain in areas with dry climates is significantly richer in protein than grains in oceanic climates.

Under irrigation conditions, the content of wheat grains in total nitrogen and substances is positively influenced by the richness of the soil in nitrogen. That is why nitrogen fertilizers increase the protein content as well as the quality of gluten. Protein-rich wheat is produced on nitrate-rich chernozems, especially in low rainfall years. The richest parts of the wheat grain in protein substances are those from the outside, especially the aleurone layer, as well as the embryo.

Protein substances in herbaceous plants consist of: 40-50% gliadin, 30-40% gluten, 6-10% globulin and 3-5% albumin. Gliadin and glutein, made up of many amino acids, the largest proportion having glutamic acid. The quality of wheat flour is determined by gliadin and gluten for bread making. Although richer in gluten, grains from *Triticum durum* are inferior to common grains in baking, due to the poorer quality of gluten. In contrast, *Durum* wheat provides high quality dough for pasta, which is “tasty, with a high water absorption capacity, with flexibility and breaking strength, with superior boiling qualities and a preservation

capacity” (N. Săulescu, quoted by Bîlteanu Gh. Et al. , 1991 ).

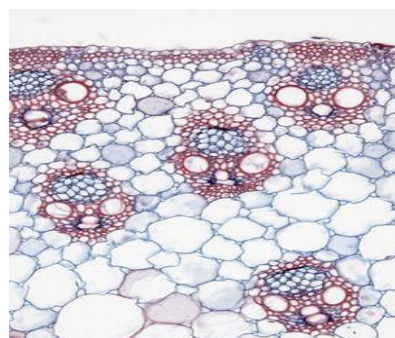
Wheat quality can be greatly impaired due to the attack of the grain bug. Fatty substances in wheat grains vary between the limits of 1 , 5 -2% and are stored in the embryo. Cellulose is located in the peripheral parts and varies between 1 , 9 and 2.5%. Mineral substances ( 1.5 - 2.3%) are represented by phosphorus, potassium, magnesium, etc. and are located mainly in the peripheral parts of herbaceous plants. That is why raw flour is richer in these substances than 000 flour. Wheat grains also contain vitamins B1, B2, E and PP, especially in the peripheral parts of the grain ( after: Ana Hulea, Gh. Tasca, C. Beratlief, 1982)

**Corn - *Zea mays* L.** In the Gramineae family there is lead, from the species *Zea* . By appearance, corn in the form of grains differs from other cereals, due to the prismatic shape, round shape or elongated shape. Their dimensions vary and can be: length 5-23 mm, width 5-11 mm and thickness 2 , 8 -8 mm. Their size, shape is not uniform along the cobs. The color of the berries can be: yellow, white, purple, orange or red with different shades. The anatomical structure of the corn grain is similar to that of wheat. Figure 1.2 (after: <https://www.google.com>)

**Figure 1.2. Corn cross section**

(after :

<https://www.google.com/search?q=Xanthomonas+translucens>)





### ***Results and discussion***

The chemical composition of the herbaceous plant is made up of extractive substances, proteinaceous substances and H<sub>2</sub>O. The small quantities there lipids, along with the corn may also contain minerals, vitamins, enzymes, etc. A large amount of non-nitrogenous substances, proteins are found stored in the endosperm, from fats and minerals in the embryo, and from cellulose in the pericardium. The protein substances in maize belong to globulins (fractionation soluble in neutral salt solutions), prolamins (fractionation soluble in alcohol) and glutelins (fraction soluble in dilute solutions of alkalis or acids). The largest part of the protein of the corn grain (about 45%) is formed by prolamins, namely zein followed by gluten (about 35%) and globulins (about 20%). The main protein of corn kernels is zein, which is characterized by a high content of glutamic acid and leucine. The tryptophan content is very low and the lysine is almost completely absent, which greatly reduces the biological value of the proteins in the corn grain. (after: Agrios G., 1978)

In our country, the hybrid HS 335 was made, richer in lysine by 45% and in tryptophan by 54% than HS 330, the total protein content in both hybrids being insignificantly modified. The highest percentage of protein in the grain is the varieties and hybrids between varieties. The environmental conditions in which maize plants grow influence the content of grains and protein substances. The conditions of climate, soil, nutrition and others create much greater differences in the protein content of corn grains than genetic factors ( after: Bailey JE, 1974).

Of the daily caloric requirement for man in proportion of 50% is provided by cereal products. Due to climatic conditions, cereals are grown as follows:

- For wheat, the temperate zone is mainly used;
- In warmer climates rice, corn and millet;

- In colder areas, rye, oats and barley are cultivated.

The grains are made up of the bark, germ and endosperm. The bran resulting from the grinding of the wheat grain shell , represents about 14% with a high content of cellulose, small amounts of minerals, proteins, and beef complex. B. Endosperm composed of small amounts of protein, starch, and trace minerals. The upper layer of the endosperm is made up of cubic cells that contain higher amounts of protein and vitamins. (after : Bailey JE, 1974).

Approximately 2 - 3% of the weight of the grain is represented by the germs and contains almost all the amount of lipids and vitamin E. The corpuscle is caught by the grain through a scutulum rich in vitamin B1. Wheat is an indispensable cereal in human nutrition because:

1. Contains substances essential for the good growth and development of the organism;
2. Due to the very easy absorption, the processing of wheat for consumption is easy;
3. It does not require special conditions to be stored.

Corn has a lower content of more protein compared to wheat, but with a content of over 4 g of cellulose and lipids. Because there are large amounts of lipids in corn , it promotes the extraction of oil that is nutritionally more valuable.

The protein content of rye is 1–2 percent lower than wheat values. Also, the consumption of husked rice has nutritional properties due to its rich starch content but is reduced in B-complex vitamins because they are found in the pericardium of the rice grain. (after : Bailey JE, 1974).After grinding the grains, they can be found in two forms, namely: if after grinding there are larger particles, semolina can be obtained and if there are fine particles , flour is obtained. The more the degree of extraction differs from one assortment to another, the more the flour passes through several sieves, we can obtain more



varieties of flour. White flour compared to wholemeal flour, has a lower content of nutrients but excels at the content of fibrous material and phosphorus.

### Conclusions

From the above it is observed that the pericardium and corpuscle of a bean are the components that are most easily lost, and for this reason the nutritional value decreases. Due to this, whole products appear on the market. The bran resulting from the grinding process can be used in the diet, being an important source of dietary fiber. Depending on the type of flour used, the digestion of the bread is done differently. (after : Bailey JE, 1974). Bread made from raw flour is harder for people with a small intestine to bear and is harder to digest. The presence of phytic acid, which promotes the elimination of calcium and iron along with feces, deprives the body of these minerals. A further advantage of wholemeal bread is the greater amount of cellulose. It trains and eliminates food-borne cholesterol along with feces. (after : Bailey JE, 1974). Consumption of cereals stored in improper conditions can cause mycotoxicity, due to the mold that develops on cereals. Cereals may also contain traces of pesticides that have been treated in the field and may cause poisoning, especially to those who come into direct contact with them. (after : Bailey JE, 1974).

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## EUROPEAN FOOD SAFETY IN THE CURRENT CONTEXT

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### Abstract:

Starting from the definition of food safety and from the consumer's right to a nutritionally correct and safe food for consumption, the food safety policy at EU and national level is clear, correct and effective through its 3 important links: appropriate legislation, data obtained through basic and applied research and implementing measures specific to this integrated food safety system. COVID 19 pandemic is a new global phenomenon with important implications in people's lives from a medical, social, ethical, political, economic, food-nutritional and educational point of view. Food safety can only become a real fact if it is the responsibility of all those involved in the field (legislators, economists, researchers, processors, controllers, consumers). COVID-19 pandemic presents major challenges for the European Union, for the food industry, for the whole agri-food chain, for consumers ensuring the world's food supply must be guaranteed, even when there is a risk of infection and during quarantine.

**Keywords:** *food safety, risk assessment, COVID-19 pandemic challenge, european consumers*

### Introduction

European consumers have the right to a safe and healthy diet. In order for food that reaches the consumer's table to be safe, it is necessary to have common standards throughout the European Union, as well as the existence of a legal framework at European level for their implementation. Thus, the European Union (EU) has taken on the role of coordinating food safety strategies and developed an integrated approach, with the aim of ensuring the right of European consumers to healthy eating.

Food safety represents a set of measures regarding the observance of the hygienic-sanitary norms, undertaken by the producers, in order to ensure the innocuousness and the nutritional value of the foodstuffs for the elimination of biological, physical and chemical risks, in all stages of preparation, processing, manufacturing, packaging, preservation, storage, transport, distribution, handling and marketing, to ensure the health of the population. Food safety assurance refers to the maximum limits, set as critical limits, on the content of additives, pesticide

residues and veterinary medicinal products, allergens, pathogens, insect infestation or parasites.

Romania's opening to foreign markets within the World Trade Organization and the fact that it is a full member of the European Union imposes the need for continuous adaptation to the international requirements of food safety and quality systems.

Starting from the definition of food safety (and from the consumer's right to a nutritionally correct and safe food for consumption, the food safety policy at EU and national level is clear, correct and effective through its 3 important links: appropriate legislation, data obtained through basic and applied research and implementing measures specific to this integrated food safety system.

Specific binding legislation adopted at Community level provides for a high degree of consumer health protection based on the risk assessment system, the application of the precautionary principles (at the risk management stage), the traceability and authenticity of food and the principle of transparency; harmonizes





national food safety standards, facilitating the free movement of foodstuffs. Additional special consumer protection measures related to the use of certain substances in agricultural raw materials (pesticides, antibiotics, food additives) with a direct impact on its health are also included. Thus, the health and welfare of animals, the health of plants that become raw materials for food, the safety of processing activities (food, beverages), the safety and hygiene of food storage / delivery / transport are ensured.

### ***Materials and method:***

Foods must be considered as important factors in the external environment, which favorably influences both the physical and cerebral development of man, as well as his health and ability to work.

According to the method of production and presentation, the food is distributed as follows:

- natural foods (meat, vegetables, fruits),
- industrial foods (bread, pasta, preserves),
- foods that have undergone a process of transformation in the household (culinary foods).

Substances which foods must normally enter the human body are grouped into two categories:

- energetic substances, which through metabolism in the cells of the body provide the energy necessary for life, movement and the main vital functions. These are carbohydrates, proteins and lipids;
- essential substances without which the normal functioning of the body is not possible, the maintenance of active life, the relatively easy adaptation to environmental conditions, self-defense against microorganisms, resistance to intellectual effort. These are represented by: vitamins, essential microelements, monounsaturated and polyunsaturated fatty acids and essential amino acids. Such substances indispensable to life

cannot be synthesized by the human body and therefore their intake with the food consumed daily is essential for the life of each individual.

**Food safety** represents a set of measures regarding the observance of the hygienic-sanitary norms, undertaken by the producers, in order to ensure the innocuousness and the nutritional value of the foodstuffs for the elimination of biological, physical and chemical risks, in all stages of preparation, processing, manufacture, packaging, preservation, storage, transport, distribution, handling and marketing, to guarantee the health of the population.

**Food innocuity** represents the integrative concept that reflects the complex of information on the health status of food, through the level of microbiological contamination, mainly pathogenic, of contamination with chemical and biological substances, chemical residues, fertilizers, sanitary-veterinary substances; all of them aim to affect the health of the human body.

### **Risk Assessment**

According to the Codex Alimentarius, "Hazard" is defined as any biological, chemical, physical agent that is found in a food product or that can get into it and has the potential to have a negative effect on human health.

It should be noted that any hazard can present a certain degree of risk. The risk is the estimation of the probability and severity of adverse reactions on the health of the population exposed to the presence of food hazards.

The global Risk Assessment process contains the following steps:

- risk assessment
- risk management;
- risk communication - includes the interactive exchange of information and opinions between risk assessors and managers on the one hand and consumers and other stakeholders on the other:



- Political, socio-economic and technical considerations;
- Public perception of risk.

Once the risks have been identified, it is important to consider how these risks may contaminate the product. The discovery of contamination points will be made by the entire team using cause-effect analysis.

Risks associated with foods can occur throughout the agri-food flow and are of four types:

1. biological - microbiological (viruses, pathogenic bacteria, saprophytic bacteria, molds);
2. physical - can be determined by a multitude of causes: radionuclides that can reach through long and complex chemical and physical processes in food: following nuclear explosions, nuclear power plants, radioactive mining, uranium metallurgy and fuel production nuclear or that determined by floating insoluble elements (the most recent type of pollution-contamination, characteristic of intensely developed areas);
3. chemical - excess additives, traces of cleaning agents, pesticide residues;
4. technological - the exaggeration of the heat treatment can have negative implications on the nutritional value and can even form substances with toxic action; It is widely applied in the food industry in order to ensure the desired effects, such as: destruction of microorganisms, inactivation of enzymes, formation of desired organoleptic characteristics (color, taste, aroma), improvement of digestive utilization coefficients of nutrients etc.

Related to the issue of food security at EU level, it follows two main directions:

- protection of human health and consumer interests;
- promoting the European single market.

It is necessary to take measures to ensure the confidence of consumers and business partners through an open and transparent development of food law, anti-fraud and measures taken by public authorities to inform the public in cases where there is reasonable grounds for suspecting that a food presents a health or economic risk.

All these objectives are based on the "General European Legislative Framework" which includes:

- the general principles and requirements of EU food and feed law based on the "*precautionary principle*";
- procedures for assessing the risks associated with food and / or feed;
- general provisions on the traceability and authenticity of food and feed.

Food quality control systems are represented by:

- GAPS - Good Agriculture Practices;
- GVPS - Good Veterinary Practices;
- GMPS - Good Manufactures Practices;
- H.A.C.C.P. - Hazard Analysis. Critical Control Point - risk assessment, critical control points as the main tool of risk management, based on GMPS and GPFH - General Principles of Food Hygiene (Reg. EEC 178/2002; Reg. 2001/471 EEC);
- ISO 9001/2000 - quality management systems.

The main purposes of these documents are:

- protection of consumer health;
- ensuring fair practices in international food trade;
- promoting coordination between the work of governmental (GO) and non-governmental (NGO) bodies;
- elaboration of some drafts of modern standards and codes of good practice in the agri-food sector.

The agri-food industry is taking measures to avoid COVID19 virus contamination of food during the production and distribution stage.

Strict hygiene rules already regulate food production in the European Union, and



their implementation is subject to official controls. All food business operators must apply them.

Hygiene controls, to be implemented by food business operators, are designed to prevent food contamination by any pathogens, and therefore also to prevent food contamination with the virus responsible for COVID-19.

Regular food training, in relation to all these requirements, is mandatory, so that the staff working in this field work hygienically.

Among the good hygiene practices required at all stages of food production, cleaning and, where appropriate, disinfection of facilities and equipment between production batches, avoiding cross-contamination between food and food categories at different stages of the manufacturing process are particularly relevant. (e.g., raw materials compared to cooked / processed foods), personal hygiene, such as frequent hand washing and disinfection, wearing gloves and masks when needed, wearing clothes and shoes dedicated to maintaining hygiene, or staying at home for employees, away from work, whenever they feel sick

### ***Results and discussions:***

The levels of food safety control in the European Community are:

- Self-control (example: H.A.C.C.P., GMA, GMP, etc.) performed by the processor;
- Official control of U.E;
- Oversee the implementation of European legislation. in each member state of the union by the U.E.

The following institutions in Romania monitor the application of European legislation and constantly bring proposals for improvement, new measures, projects in the field of food safety and quality:

- ANSVSA (National Sanitary Veterinary and Food Safety Authority),
- Laboratories - LNSVSA,

- INSP - National Institute of Public Health,
- Ministry of Health,
- Ministry of Agriculture and Rural Development,
- IDSA - National Institute of Diagnosis and Animal Health,
- Central Phytosanitary Laboratory,
- ANPC - Authority for Consumer Protection.

Their objectives are:

- Protecting and improving public health
- Food safety
- Protection of the health and welfare of farm animals
- Protection of crop and forest health.

Romania has control programs to ensure food safety and therefore the quality of food products whose priority objectives are to protect consumer health, ensure good practices in international food trade, implement modern standards and codes of good practice in the agri-food sector.

In Romania, the implementation of the strategic food safety plan is done by competent institutions or organizations, which carry out their activities of permanent monitoring of the evolution of essential or total characteristics - total quality - of food in relation to the given references (standard, norm, code, guide), activities carried out in the specific fields of production, processing and marketing of agri-food products.

The concept of "Risk assessment of food and drinking water related to human health" - "Assessment of food and drinking water risk related to human health" has become operational.

The application of the HACCP system at national level involves food obtained safely and consumed safely, by performing control in all processes: "from the farm, to the consumer's table". Among the many advantages resulting from the operation in productive practice of the HACCP system are: the "preventive nature" of the method and the



transformation of that unit into the category of "preferred supplier".

The implementation of the HACCP system in the Romanian food industry is now more than ever a necessity, only if we think about the many situations known lately, presented in the media, when the production and marketing of food inadequately endangered, sometimes very serious, the health of consumers, to which is added the recommendation made by the EU, for those economic agents who want to export food products in the respective economic space.

Regarding food labeling, the national legislation in force provides the consumer with essential information on: general labeling and nutrition labeling.

### **Conclusions:**

European consumers have the right to a safe and healthy diet.

An important objective of the European Union is to guarantee a high level of protection of human health by ensuring and monitoring food safety, in parallel with ensuring the efficient functioning of European markets and stimulating innovation and competitiveness in the field. To achieve this, the EU brings together the scientific and technical expertise needed to estimate the potential risks associated with food.

Food safety means the involvement of all factors and the application of all the rules required to support and ensure the realization of food products whose nutritional value and consumption are the basis of a healthy diet.

The main purpose of food safety is to ensure the protection of human health at the highest level and the objective is to represent the interests of consumers in relation to food.

Food safety as a concept occupies an important place in the directives of the European Union. EU food safety policy is based on the concept of "farm to consumer table", a holistic approach that integrates each phase of the product supply process

on a vertical axis from feed production to plant health and animal welfare, production and primary processing, secondary processing, packaging, storage and delivery to retail for import or export. Food safety and consumer protection are components that build and strengthen the confidence of the consumer market in the company's products.

COVID 19 pandemic is a new global phenomenon with important implications in people's lives from a medical, social, ethical, political, economic, food-nutritional and educational point of view. Food safety can only become a real fact if it is the responsibility of all those involved in the field (legislators, economists, researchers, processors, controllers, consumers). COVID-19 pandemic presents major challenges for the European Union, for the food industry, for the whole agri-food chain, for consumers. Ensuring the world's food supply must be guaranteed, even when there is a risk of infection and during quarantine.

At the same time, the requirements for hygiene, food safety and health and safety at work must be constantly optimized.

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- site ANSVSA - Ghidul Comisiei Europene - *“COVID-19 și Siguranța Alimentelor: Intrebari si raspunsuri”*, publicat in 8 aprilie 2020);

- site MADR – *“Strategia națională de dezvoltare a sectorului agroalimentar pe termen mediu și lung”*, 2020-2030, PNDR 2014-2020/;

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- <https://www.efsa.europa.eu/en/news/coronavirus-no-evidence-food-source-or-transmission-route> /2020, 03 09;

- <https://www.sciencedirect.com/science/article/pii/S0195670120300463> /2020.





## MANAGEMENT OF CULTURAL AND LINGUISTIC DIVERSITY IN THE ROMANIAN EDUCATIONAL PUBLIC SYSTEM

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### **Abstract:**

Diversity is in human nature. It is our way to face the challenges from a continuously changing world, originated from work and study mobility, international migration and globalization. Biodiversity and societal diversity have created a suitable environment for education, leading to the concept of multicultural education, so necessary in the development of the current generations of students. This metamorphosis faced by European societies refined the education providers and policy-makers, coming to a paradigm shift, from "Teaching about diversity" to "Managing diversity, teaching for diversity, learning on diversity!". The lack of knowledge base on the preparation of teacher educators, of coherence concerning teachers' training to approach classroom diversity in secondary education, lack of systemic policy approaches towards inclusion and diversity and diverse student teachers, established the framework of this study. Raising awareness on the importance of well-prepared teacher trainers for diversity in Europe and harmonizing teacher intercultural competences within a European framework integrated into the curricula will point to societal diversity as an asset that applies to school-related diversity. Furthermore, insights on how the Romanian educational system not only should monitor how diversity is viewed through internationalization and non-formal educational activities, as these are specified in the methodologies, but also a real image of how it is perceived by teachers through the documents, are shown.

**Keywords:** *multicultural education, paradigm shift, educational system, secondary education, internationalization*

### **Introduction**

This paper is addressed to the actors involved in the public secondary education, with the purpose to show the documents that enhance diversity and its cohesion between students and teachers. Romanian educational system not only should monitor how diversity is viewed through internationalization and non-formal educational activities, as they are specified in the methodologies, but also give a real image of how it is perceived by teachers through the documents.

How do methodologies and legislation regarding diversity approach this topic and how do students and teachers see this? A strong diversity and inclusion strategy can help organizations to integrate diverse groups of students and teachers, and can

generate innovative results. Most of the educational institutions try to change the way they deliver the educational activities, through another type of approach, so they try to enhance diversity and inclusion initiatives.

This poses challenges for many educational institutions, where the gap between educational legislation or methodologies and practical approach increases and intercultural diversity management is poorly understood at an organizational level, despite the presence of numerous international projects of good practice throughout European teaching or exchange programmes.

In the last years, work and study mobility and international migration and globalization led to the reshaping of European directives, rules and legislative



measures. Societal diversity creates a suitable environment for education, be it a formal, non-formal or informal one.

The lack of a knowledge base for the preparation of teacher trainers, coherence in relation to teachers training to approach classroom diversity in secondary education (i.e. paradigm of inclusive education predominantly), lack of systemic policy approaches towards inclusion and diversity and diverse student teachers, established the framework of these observations.

How do Romanian Educational methodologies and legislation regarding diversity approach this topic and how do the students and teachers see it? A strong diversity and inclusion strategy can help organizations to integrate diverse groups of students and teachers, and have innovative results. Most of the educational institutions try to change the way they deliver the educational activities using a different approach, so they try to enhance diversity and inclusion initiatives.

### ***Literature Review***

Diversity is our way to face the challenges from a continuously changing world, originated from work and study mobility, international migration and globalization. It can be seen at the individual level, moving to the population one and then to global level, thus from a microsystem to a macrosystem, with a different impact-range. Europe can be described as diverse in multiple ways: diversity in geography, culture, language, national identity, political views, values, and demographics, in social and economic areas. Societal diversity creates the premises of education, leading to the concept of multicultural education, so much required in the development of the current generations of students. The ability to work with people from different cultures and countries has become a key factor for educational developments to succeed. This is driving both the internationalization and multicultural strands in curriculum developments (Johnstone, 2010).

Regarding cultural diversity, types and the concept of a multicultural society are used to designate a society in which one or more types of cultural diversity are present. Multiculturalism identifies with “the promotion of minority cultures (ethnic, religious), especially at an institutional level, like schools, local communities, nations” (Parekh, 1998).

Education plays a major role in multicultural and intercultural European societies. Multicultural education aims to improve interpersonal relations between students coming from different countries, which will help them to acquire knowledge, attitudes and skills needed to participate in cross-cultural interactions, personal, social and civic actions. Some of the authors who dealt with multicultural education or cross-cultural learning in their studies were: Banks (2001) and Irvine (2003), Harris, Moran et al. (2004). When defining the concept of multicultural education, in Banks's vision, there are more dimensions: content integration, the knowledge of construction process, an equity in pedagogy, an empowering school culture and social structure (Banks and Banks, 2001).

To designate the appropriate cultural diversity management activities, it is used the concept of *intercultural education*, explored from the descriptive and methodological perspective by: Nieto (1992), Cucus (2000), Banks and Banks (2001), Ciolan (2010). Research has shown (Phillips et colab., 2004) that institutions with more diverse teams outperform those with a more homogeneous workforce.

According to Bennett (2014), the intercultural learning can be defined as “*acquiring increased awareness of subjective cultural context (worldview), including one's own, and developing greater transferable ability to interact sensitively and competently across cultural contexts as both an immediate and long-term effect of exchange*” and the concept of intercultural education is “*The intentional and systematic effort to foster intercultural*



*learning through curriculum design, including pre-departure, on-site, and re-entry activities, and/or course content emphasizing subjective culture and intercultural interaction.”*

There are several available studies that show the effectiveness of learner-centred teaching, or good practices building in teaching, but, according to 2017 European Commission Report<sup>1</sup> and the Annexes 3-6 to the Final Report<sup>2</sup> there were conducted only a limited empirical research in Europe that studied the various interconnections between competences that teachers should have to address the needs of all students and the challenges raised by an increasingly diverse Europe. Their observations were made based on different studies of Bennett (2012), Deardorff (2009), Lindsey et al. (2005), UNESCO (2013)<sup>3</sup>, Council of Europe (2016)<sup>4</sup>.

This paper is intended for the members of academic institutions and administration within the Romanian educational institutions, but not limited to them, in order to give a different view on the methods of diversity management, in terms of methodologies regarding internationalization and non-formal activities. Methodologies on

internationalization and non-formal activities are the means to sustain diversity, to develop and produce secondary tools for future public educational diversity policies.

Knight (2004) gives a definition of “internationalization”, referring to it as a “a process of integrating an international, intercultural or global dimension into the purpose, functions and delivery of post-secondary education”.

### Methodology

This case study is an introduction on how to use a document checklist as part of a qualitative research method. Details are provided on the types of documents that can be utilized in the document review. The methodology is based on European and Romanian document review as a research data collection method.

For the discussion of internationalization and the analysis of the evolution of multicultural integration at institutional level, the supporting documents where one can observe the encouragement of diversity and internationalization in public high schools in Romania are shown in Table 1.

Therefore, an attempt is made to ensure internationalization at the curricular level, which can be seen from the investigation of the evolution of these institutional documents, which include all references to intra-curricular and extra-curricular activities, as well as teacher training in multicultural and intercultural environments.

<sup>1</sup> *Preparing Teachers for Diversity: the Role of Initial Teacher Education*. Final Report to DG Education, Youth, Sport and Culture of the European Commission Written by Public Policy and Management Institute (PPMI), Directorate-General for Education, Youth, Sport and Culture Education and Training, 2017, available online at: <https://op.europa.eu/en/publication-detail/-/publication/b347bf7d-1db1-11e7-aeb3-01aa75ed71a1>

<sup>2</sup> *Preparing Teachers for Diversity: the Role of Initial Teacher Education*. Annexes 3-6 to the Final Report to DG Education, Youth, Sport and Culture of the European Commission.

<sup>3</sup> UNESCO, *Intercultural Competences*. Conceptual and Operational Framework. Paris: UNESCO, 2013.

<sup>4</sup> Council of Europe, *Competences for democratic culture. Living together as equals in culturally diverse democratic societies*. Strasbourg: Council of Europe Publishing, 2016.



**Table 1.** Official Educational and Curricular Documents

No	Official Documents	Institution	Year	Where they can be found
1	The Courses within the Psycho-pedagogical module for the Initial Training of Teachers in early childhood and pre-university education	Ministry of Education, Department for Teacher Training (D.P.P.D.) within each university	Starting 2008	OMECT no. 4316/2008, University courses
2	Tenure Program - the movement of teaching staff in pre-university education	Romanian Ministry of Education, Institute for Educational Sciences	Starting 2016	OMECTS 3590/05.04.2016, available online at: <a href="http://programe.ise.ro/Portals/1/Curriculum/Pl_cadruactuale/Gimnaziu/OMENCS%203590_5%20apr%202016_Plan-cadru%20de%20%C3%AEnvatamant%20pentru%20gimnaziu.pdf">http://programe.ise.ro/Portals/1/Curriculum/Pl_cadruactuale/Gimnaziu/OMENCS%203590_5%20apr%202016_Plan-cadru%20de%20%C3%AEnvatamant%20pentru%20gimnaziu.pdf</a>
3	National Education Law 1/2011	Romanian Ministry of Education	2011 (updated on 15.10.2020)	Available online at: <a href="https://www.edu.ro/sites/default/files/_fi%C8%99iere/Legislatie/2020/LEN_actualizata_octombrie_2020.pdf">https://www.edu.ro/sites/default/files/_fi%C8%99iere/Legislatie/2020/LEN_actualizata_octombrie_2020.pdf</a>
4	School Curricula for Secondary and Highschool Education (Common Curriculum and School Based Curriculum)	Romanian Ministry of Education	Starting 2004	OMEdC. 5287/15.11.2004
5.	Course syllabus	Romanian Ministry of Education,	Starting 2009	<a href="http://programe.ise.ro">http://programe.ise.ro</a> .
6.	Institutional Development Plan	Each institution with the local school inspectorate supervision	2017-2020	Internal institutional document
7	Annual Internal Evaluation Report	Each institution with the local school inspectorate supervision	2017-2020	Internal institutional document, each school



8.	Job description (e.g. job description for a documentary teacher)	Romanian Ministry of Education	2017-2020	Internal institutional document
9.	Annual Teacher Self Evaluation Form.	Each institution with the local school inspectorate supervision	2017-2020	Internal institutional document

### Results and Discussions

The metamorphose faced by the European societies refined the education providers, such as public institutions or private organizations, and shaped the landscape that can generate opportunities and challenges in the system.

Lack of knowledge base on the preparation of teacher educators, of coherence concerning teachers' training to approach classroom diversity in secondary education, lack of systemic policy approaches towards inclusion and diversity and diverse student teachers, established the framework of this study. Can we answer these questions: Do educators understand the learners' need for integration in a multicultural environment, within a school context? Are teachers prepared for diversity in the classroom? What does it mean to teach for diversity and in diversity? Are there functional methodologies for teacher trainers? How do we address these challenges? The answers to these questions should provide an overview of a classroom diversity management in the Romanian public secondary education, regarding formal and nonformal activities, and like an added value it would be of much help for other European Union state members. From the Romanian curriculum documents released by the Romanian Ministry of Education in the last years we intend to see how educational institutions approach to ascertain and increase the level of internationalization in the curriculum.

Educational policies are the strategic directions for the development of the educational system and include legislative norms applied in practice through

methodologies, controlled and monitored, and ultimately evaluated through impact studies. Looking at some European Educational Policies and programmes for Diversity and Integration it can be seen that somehow there is a less coherent framework for educational diversity. These are some referrals: “*The EU needs new methods and tools to produce teachers for diversity, and to lay the foundations for more inclusive societies through education*”<sup>5</sup> (Council of the European Union and European Commission, 2015) and “*Research analysing how teacher educators are prepared is scarce*”<sup>6</sup> (European Commission, 2013).

The EU programmes dedicated to secondary education, to address diversity and integration intra-European and international cooperation, implemented by the Commission during 2007-2013 were: *The Lifelong Learning Programme* (LLP), *The Youth in Action Programme*, The Erasmus Mundus, Tempus, Alfa, Edulink, Programmes of cooperation with industrialized countries in the field of higher education.

<sup>5</sup> Joint Report of the Council and the Commission on the implementation of the strategic framework for European cooperation in education and training (ET 2020) *New priorities for European cooperation in education and training* (2015/C 417/04), 2015. Available online at: [https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52015XG1215\(02\)](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52015XG1215(02)).

<sup>6</sup> European Commission, *Supporting Teacher Educators for better learning outcomes*. DG Education and Culture, Thematic Working Group ‘Teacher Professional Development’, 2013. Available online at: [http://ec.europa.eu/dgs/education\\_culture/repository/education/policy/school/doc/support-teacher-educators\\_en.pdf](http://ec.europa.eu/dgs/education_culture/repository/education/policy/school/doc/support-teacher-educators_en.pdf). Accessed 10.10.2016.





Within *Erasmus+* 2007-2013, there were several targeted actions, and those regarding teacher training and secondary educations were: *Erasmus+: Comenius*, in relation to the activities of the Programme exclusively related to the field of school education; *Erasmus+: Leonardo da Vinci*, in relation to the activities of the Programme exclusively related to the field of vocational education and training; *Erasmus+: Grundtvig*, in relation to the activities of the Programme exclusively related to the field of adult learning; *Erasmus+: Youth in Action*, in relation to the activities of the Programme exclusively related to the field of youth non-formal and informal learning. Since 2020, *Erasmus+* started in January 2014 as the single EU programme for education, training, youth and, for the first time, sport<sup>7</sup>. Over the seven years, *Erasmus+* 2014-2020 integrates the seven previous programmes into three Key Actions - Key Action 1 - Learning Mobility of individuals, Key Action 2 - Cooperation for innovation and the exchange of good practices, Key Action 3 - Support for policy reform. *eTwinning* is co-funded by the *Erasmus+* and is the community for schools in Europe. All these subsequent versions of the European educational cooperation should continue efficiently to support EU collaborative activities, initiated by providers and educational institutions.

From the Romanian curriculum documents released by the Romanian Ministry of Education in the last years we intend to see how educational institutions approach to ascertain and increase the level of internationalization in the curriculum, respecting the European Educational Framework.

In Romania, the Government Ordinance (GO) 75 / 12.07.2005 and Law 87/2006 establish the principles of the national policy for Quality Assurance in Education for the entire national system. The quality assurance policy wants to provide a National Quality Assurance Framework (CNAC) for organizations providing education in Romania, a framework that meets European requirements and respects the best practices at European level.

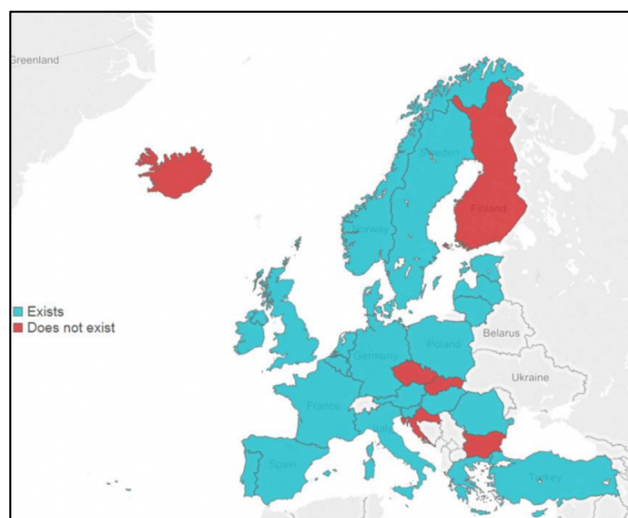
#### *Intercultural Education within Initial Teacher Training and Training Institutions*

The Romanian Initial Teacher Training (ITE) national framework respects the European Teacher Competences Framework (see Figure 1).

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<sup>7</sup> *Erasmus+ Programme Annual Report 2014*, available online at: [file:///Users/macbook/Downloads/erasmus-plus-annual-report-2014\\_en\\_0.pdf](file:///Users/macbook/Downloads/erasmus-plus-annual-report-2014_en_0.pdf)

**Figure 1.** *Teacher Competence Frameworks in Europe (2011/12)*

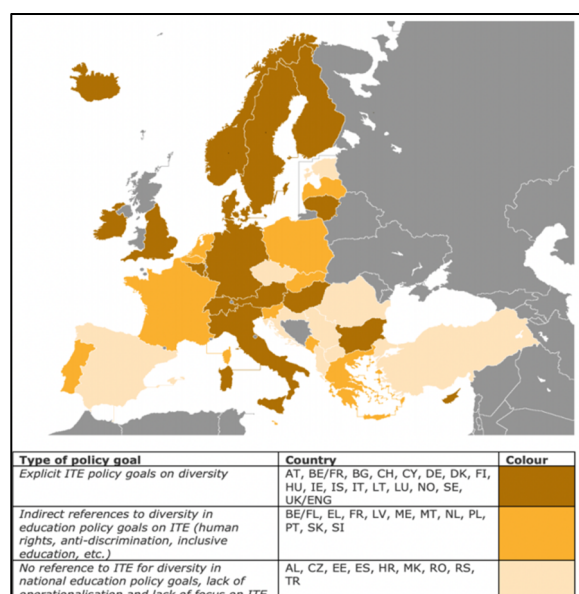


Source: European Commission/EACEA/Eurydice, 2013.

However, the Romanian Initial Teacher Training (ITE) national framework focuses on mastering of professional skills and reaching the most important objectives of the teaching profession (see Figure 2). In the ITE there are two and modules offered within teacher training and on the second one, besides the mandatory subjects, there are optional

subjects where the cultural approach can be noticed: *Intercultural Education* (Lucian Blaga University, Sibiu), *Multicultural Education* (University of Bucharest). Romanian national curriculum for initial teacher training within different universities, but under specific department for teacher training, functions according to OMECT no. 4316/2008.

**Figure 2.** *Policy goals on ITE for diversity in Europe*



Source: Preparing Teachers for Diversity: the Role of Initial Teacher Education. Final Report to DG Education, Youth, Sport and Culture of the European Commission Written by Public Policy and Management Institute (PPMI), 2017, based on policy mapping data (2016).



Also regarding teacher training and teacher national exams programs in Romania, they address little to inclusion and diversity, in a continuous changing community, which includes concerns as study migration, labour migration or educating immigrant children, similar with those of Greece (Zervas, 2016). Unlike Greece, many European countries are already preparing teachers for a more technologically driven global community (Steiner, 1996). Countries like France, Germany, Great Britain and Italy have tied their teacher training programs to the labour market in order to assure that teachers find work after graduation (Zervas, 2016).

One of the skills reached by young teachers after the initial teacher training is cultural awareness, as it is written in the curricula for national teacher's exams, regardless of their background<sup>8</sup> (e.g. English Language and Literature, Social Education).

#### *School Curricula for Secondary Education*

According to Pickering (2004), who refers to Durkheim theory, national and local educational public systems have two main goals: 1. to ensure that children are prepared to fill a wide array of social roles needed for a complex modern society; 2. to ensure that children acquire the skills needed to function and contribute to their society. Romanian School Curricula for Secondary and Highschool Education have two components – Common Curriculum (from Romanian: T.C.) and School Based Curriculum (from Romanian - CDS). The national education system is most of the times associated with the initial preparation of teachers for teaching and evaluating at the primary or secondary school levels. The focus on diversity and intercultural education can be noticed at the methodological level, such as courses linked also to the school curriculum.

In addition, on the secondary school, there are several optional courses linked to

different cultures and civilizations, such as: *Modern Greek Language and Antic Greek Civilization, Latin Roots in Culture and Romanian Civilization, Greek-Roman Myths and Legends, Macedo-Romanian Culture and Traditions, Spanish Culture and Civilization, Latin Dictions*<sup>9</sup>.

In the *National Education Law* (1/2011)<sup>10</sup>, article 10 refers to national teaching languages and minorities or foreign languages: *in Romania, education is a service of public interest and takes place in Romanian language, as well as in the languages of national minorities and in languages of international circulation.*

In 2014, at EU level, 59.7% of all students enrolled in secondary education were learning two or more languages, a higher number compared to 46.7% in 2005. This reflects a change in educational policies in many European countries, which have aimed to increase the number of students learning a second language, as well as to reduce the age at which they start studying it. In 11 countries, over 90% of high school students learn two or more foreign languages (Estonia, Greece, Italy, Luxembourg, Malta, Poland, Romania, Finland, Iceland, Liechtenstein and the Former Yugoslav Republic of Macedonia). In contrast, in five countries, the rate is below 20% (Hungary, Belgium - French side, Austria).

<sup>9</sup> OMECTS 3590/ 05.04.2016 - Ordin privind aprobarea planurilor cadru de învățământ pentru învățământul preuniversitar, available online at: [http://programe.ise.ro/Portals/1/Curriculum/PI\\_cadr\\_uactuale/Gimnaziu/OMENCS%203590\\_5%20apr%202016\\_Plan-cadru%20de%20%C3%AEnvatamant%20pentru%20gimnaziu.pdf](http://programe.ise.ro/Portals/1/Curriculum/PI_cadr_uactuale/Gimnaziu/OMENCS%203590_5%20apr%202016_Plan-cadru%20de%20%C3%AEnvatamant%20pentru%20gimnaziu.pdf)

<sup>10</sup> Romanian original article - Art .10. (1) *În România, învățământul este serviciu de interes public și se desfășoară, în condițiile prezentei legi, în limba română, precum și în limbile minorităților naționale și în limbi de circulație internațională.* Available online at: [https://www.edu.ro/sites/default/files/\\_fi%C8%99ie re/Legislatie/2020/LEN\\_actualizata\\_octombrie\\_2020.pdf](https://www.edu.ro/sites/default/files/_fi%C8%99ie re/Legislatie/2020/LEN_actualizata_octombrie_2020.pdf)

<sup>8</sup> Approved by O.M.Ed.C. 5287/15.11.2004.



At present, in the Romanian public schools there are studied two mandatory foreign international languages studied, and the most frequent are: English, French, Italian, Spanish, German, Russian.

Regarding diversity and inclusion, interculturality and intercultural education, among the principles of Article 3 of the National Education Law (1/2011) that govern pre-university education, as well as lifelong learning in Romania are: a) the principle of equality-under which access to learning is accomplished without discrimination; b) principle of quality-based education activities which relate to the reference standards and the national and international best practices; g) the principle of guaranteeing the cultural identity of all Romanian citizens and intercultural dialogue.

Therefore, there are the same courses from initial teacher training programs that can also serve as subjects studied in the secondary public schools, namely *Intercultural Education* or *Multicultural Education*. These courses were included in the curricula from 2009 as optional courses<sup>11</sup> within the secondary national curricula.

*Intercultural education through non-formal education, international projects and extracurricular activities*

By analysing the Institutional development plan, the teacher's job description and the Teacher's Self-assessment Form, it can be seen that participation in international projects in intercultural exchanges is a criterion of school performance.

In the institutional development plan, in the chapter "Community and partnership relations - Educational projects and community programs - Specific objective V.2. refers to the development of educational projects by promoting formal

and non-formal educational activities aimed at developing intercultural, entrepreneurial, civic, health education and promoting desegregation and equal opportunities. This objective is correlated with the objective of the Annual Internal Evaluation of Quality Reports (from Romanian – *Raport Anual de Evaluare Internă* - RAEI).

According to these specific objectives, there should be different departments and institutional commissions in a school, for the non-formal activities, cultural projects and international cooperation, but most of the times they overlap. Until 2020, there were different departments in each public secondary school, but since September 2020, the Romanian Ministry of Education changed the Framework Regulation for the organization and functioning of pre-university education units - ROFUIP and comprised all the intercultural events, regardless their level (local, national and international) into one official commission / department, namely School Committee for intercultural promotion and violence, corruption and discrimination prevention and obliteration in the school environment.

In the teacher's job description (e.g. documentary teacher), the teacher initiates and participates in cultural activities in order to promote Romanian and international culture, to recognize European values, to identify models and to accept and value cultural plurality<sup>12</sup>.

While the literature and documents reviewed describe how individual educational institutions are approaching the issue of enhancing internationalization, it provided little information on how they deal with the process. Although the student acquires intercultural competences of social and cultural awareness, basically, deal with the process. Although the student acquires intercultural competences of social and cultural awareness, basically, the difficulty falls on the teachers' should,

<sup>11</sup> Programă școlară pentru disciplina școlară *Educatie interculturală*. Bucuresti, 2009. Anexa nr.1 la ordinul ministrului educației, cercetării și inovării nr. 5098/09.09.2009

<sup>12</sup> Job description for Documentarist teacher, available online at: <https://www.edu.ro>.



who have the duty to choose the approach of the respective subject or to sensitize the students regarding the respect of diversity, tolerance and solidarity, regardless of the type of culture, language, nationality and gender. Most of the time, this transposition of interculturality and multiculturalism is

seen from the participation in international programs and projects, so a transversal approach of culture is tried, by promoting it through the existing cooperation frameworks, such as the Erasmus + program.

Looking at the numbers from the European Commission, in 2017<sup>13</sup>, 27877 participants in 568 Romanian projects benefited from mobility in higher education, vocational education and training, school education, adult learning and youth for a total grant amount of 51.89 million Euro (see diagram in Figure 3).

In the year 2018<sup>14</sup>, 29735 participants in 575 Romanian projects benefited from mobility in higher education, vocational education and training, school education, adult learning and youth for a total grant amount of 58.88 million Euro (see diagram in Figure 4).

In the year 2019<sup>15</sup>, 33313 participants in 634 Romanian projects benefited from mobility in higher education, vocational education and training, school education, adult learning and youth for a total grant amount of 68.57 million Euro (see diagram in Figure 5), meaning 5436 more participants in 2019 than in 2017, and it is visible that the numbers are growing every year.

It is noted that teachers organize and participate together with students in intercultural activities, international projects, involving cultural diversity, exchanging good practices, that will enhance cultural awareness and shift the paradigm from "Teaching about diversity" to "Managing diversity, teaching for diversity, learning on diversity!"

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<sup>13</sup> Erasmus+ Factsheet, 2017 – available online at: [https://ec.europa.eu/programmes/erasmus-plus/sites/default/files/erasmus-plus-factsheet-2017-romania\\_en.pdf](https://ec.europa.eu/programmes/erasmus-plus/sites/default/files/erasmus-plus-factsheet-2017-romania_en.pdf)

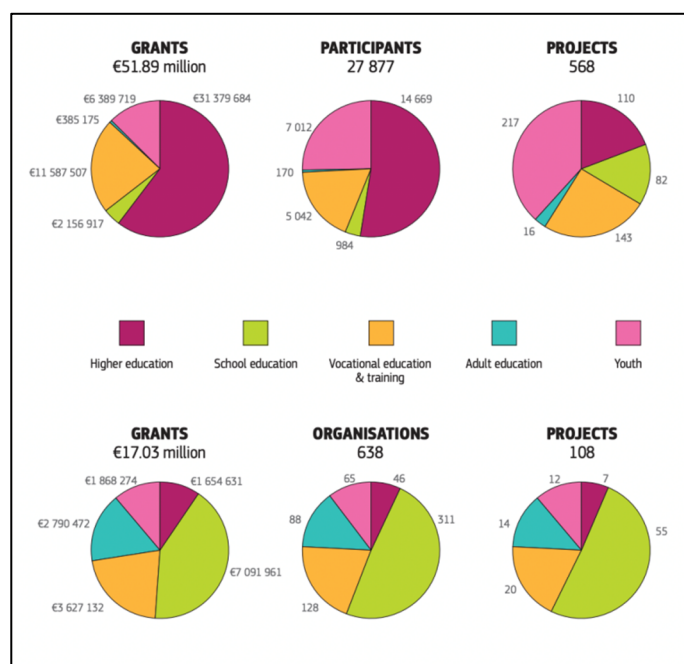
<sup>14</sup> Erasmus+ Factsheet, 2018 - available online at: [https://ec.europa.eu/programmes/erasmus-plus/sites/default/files/erasmusplus-factsheet-ro\\_en.pdf](https://ec.europa.eu/programmes/erasmus-plus/sites/default/files/erasmusplus-factsheet-ro_en.pdf)

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<sup>15</sup> Erasmus+ Factsheet, 2019 - available online at: <https://ec.europa.eu/assets/eac/factsheets/pdf/ro-erasmus-plus-2019-in-numbers.pdf>

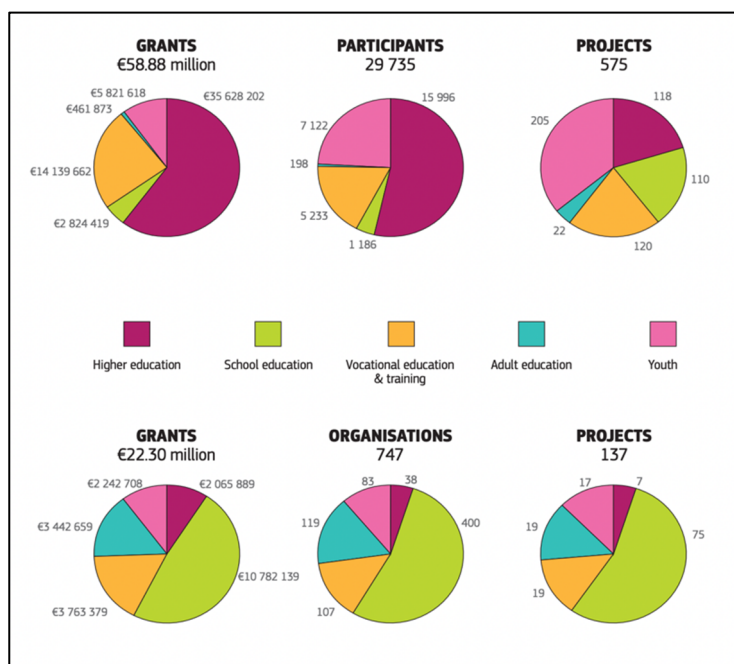


**Figure 3. Erasmus+ 2017 in numbers – Romania**

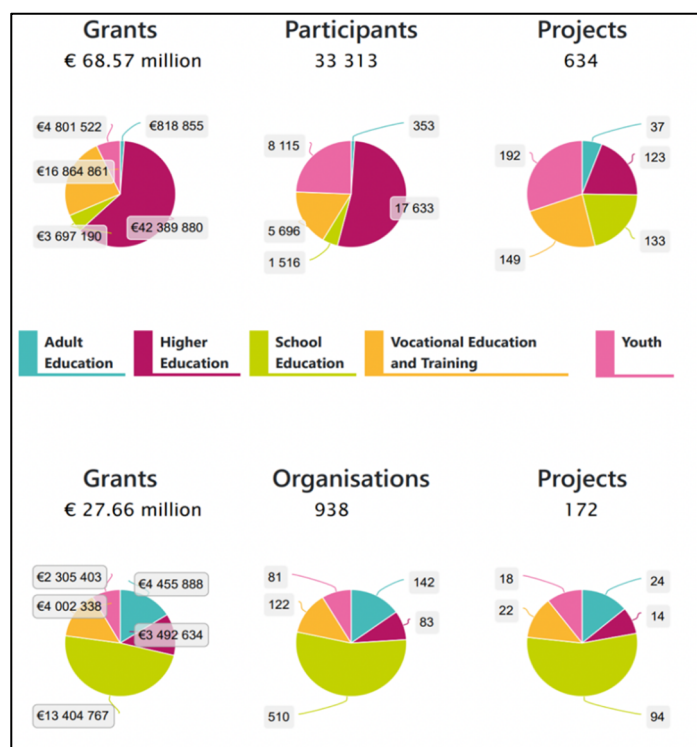


Source: [https://ec.europa.eu/programmes/erasmus-plus/sites/default/files/erasmus-plus-factsheet-2017-romania\\_en.pdf](https://ec.europa.eu/programmes/erasmus-plus/sites/default/files/erasmus-plus-factsheet-2017-romania_en.pdf)

**Figure 4. Erasmus+ 2018 in numbers – Romania**



Source: Erasmus+ 2018 in numbers, [https://ec.europa.eu/programmes/erasmus-plus/sites/default/files/erasmusplus-factsheet-ro\\_en.pdf](https://ec.europa.eu/programmes/erasmus-plus/sites/default/files/erasmusplus-factsheet-ro_en.pdf)

**Figure 5.** Erasmus+ 2019 in numbers – Romania

Source: <https://ec.europa.eu/assets/eac/factsheets/pdf/ro-erasmus-plus-2019-in-numbers.pdf>

In the Romanian school system, intercultural education is found mainly at the ideological level, as a philosophy of cultural pluralism (Plugaru and Pavalache, 2007), but also as a result of political visions for integration into the European community.

Often, it turns into a discourse of acceptance of diversity, an aspect that transpires from school methodologies and documents, but also from the principles of educational reform. However, they lack adequate and sustained methodological support. Why is this happening? The hardship of the approach and the marginalization of intercultural education is also reflected in the fact that it is transposed into optional or voluntary subjects, in pre-university and university education.

### Conclusions

By examining the EU diversity management on education, for formal,

non-formal or informal education, viewed by different actors in the field, some recommendations about the harmonization of educational policies and measures could be given.

Based on the documents that were analysed, it can be seen that the emphasis was on assimilating international students into the Romanian public educational system, rather than developing intercultural approaches.

We can see internationalization from different points of view, such as: conducted surveys, workshops, cultural site visits, intercultural activities, conferences, multicultural collaborations, Erasmus+ projects, institutional collaboration.

The school socializes children to adopt cultural norms and to adapt to a multicultural environment, in order to enhance inclusion and diversity awareness.

Beyond normative issues (legislation, rules, regulations and internal procedures),



it is imperative to have a high level of awareness of the importance and benefits of adopting a culture of diversity.

All these small changes reflect a shift of the educational curricular policies, towards an open society to European citizenship and multiculturalism. There is more a vertical approach of diversity and multiculturalism and less one transversal, which is required in order to ascertain and increase the level of internationalization in the curriculum.

Raising awareness on the importance of well-prepared teacher trainers for diversity in Europe and harmonizing Romanian teachers intercultural competences within the European framework and integrating competences into the curricula will point to a societal diversity as an asset that applies to school-related diversity.

All EU states should prepare teachers for diversity and in diversity, not regarding diversity, by promoting multicultural education as a normal teaching-learning environment.

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