

CEEX 43/03.10.2005 PROJECT SUMMARY

regarding the novelty degree and the economical development elements of the project

“Integrated management of production, conditioning, and marketing of vegetable seeds, according to European norms and standards” – TEPACS

General objective: The speeding up of the lining and technological integration process of economical agents, in accordance with European Union requests and settlements.

Specific objective: The rising activities quality of the units and CD institutions from Romania, which provide the attraction, development and concentration of human and material resources.

The specific objectives of the project:

- the making up some reference collections, according to the European standards for the next species: tomatoes, mild pepper, peas, lettuce, onion, autumn cabbage and celery;
- the creation of new genotypes, with increased genetic potential for accumulation of main component parts of quality, competitive on the European market for the species: tomatoes, mild pepper, peas, lettuce, onion, autumn cabbage and celery;
- to use vertically developed production spaces – greenhouse, for vegetable and flower seedling production and the drying of vegetable and flower seeds;
- the optimization of the seedling producing system by the introduction of biodegradable supports and palettes;
- to develop and modernize the machine systems meant to set up the vegetable seed trees and to keeping them up by designing, executing and experimenting an experimental model of a complex machine for preparation of the germinative layer, shaped, herbicidated, fertilized and seeded;
- The design, execution and experimentation of an experimental model of a machine meant to keep up the vegetable crops, within the context of maintaining the physical state of the soil;
- The improvement of the machine systems meant to extract and condition the vegetable seeds – by designing, executing and testing an experimental model of a machine for seeds extraction from pepper receptacles. Nowadays in Romania there isn't a machine for peppers seeds extraction, this operation being made by each seeds producer through different methods: manually or with different devices built locally.
- The design, execution and experimentation of an experimental model of a machine for seeds extraction from pumpkin like plants. For the extraction of cucumbers, melons, pumpkins and vegetable marrow seeds, in our country there isn't a machine that can do this operation, each farm having its own extracting methods, manual or with different kind of devices. On international level it hadn't found a documentation referring to the seeds extraction from pumpkin like plants.
- to elaborate some integrated technologies to prevent and control pathogens and pests attack, which reduce to minimum the accumulation of toxic or potential harmful compounds;
- to elaborate a marketing strategy for vegetable and flower seeds.

The activities carried out within the project framework:

1. Study concerning the international norms and standards for production, conditioning and packing of vegetable seeds
2. Constitution, assessment and preservation of the referential collections of the species: pepper, pea, lettuce, tomatoes, onion, cabbage, celery in order to register in the Communitarian Catalogue
3. Elaboration of the Projecting Documentation of a vertically developed greenhouse meant to produce vegetable and flower seedlings and to dry seeds.
4. Studies concerning the preparation of the germinative layer and the crops setting up for the vegetable bulbous, root crops, solanaceae, cucurbitaceae and cruciferae species
5. Studies concerning the integrated control of the pathogen agents and pests of vegetable bulbous and cruciferae species
6. Realization of the experimental model of the vertically developed greenhouse meant to produce vegetable and flower seedlings and to dry seeds
7. Optimization of vegetable and flower seedlings production by using of bio-degradable supports and alveolate palettes
8. Creation of qualitative and quantitative competitive genotypes with the varieties registered in the Communitarian Catalogue, to the species pepper, pea, lettuce, tomatoes, onion, cabbage and celery
9. Conservative selection and production of the basic seeds of new created varieties
10. Design of a complex engine unit meant to superficially mobilize the soil, to model, fertilize and saw, for the species onion, carrot, parsley, parsnip
11. Experimentation of a integrated control scheme for the pathogen agents and pests complex of biennial seed trees
12. Utilization of the vertically developed greenhouse in order to condition the vegetable and flower seeds, to reaching the parameters imposed by the European Union standards
13. Realization of the experimental model of complex machine meant to superficially mobilize the soil, fertilize and saw, for the species onion, carrot, parsley, parsnip
14. Designing a model of a machine for seeds extraction from peppers' receptacle
15. Study concerning the reduction of the incidence of diseases and pests by treating the vegetable and flower seeds
16. Market study concerning the packing and presenting conditions for vegetable and flower seeds, according to the European Union standards
17. Experimentation of the model of the complex engine unit meant to superficially mobilize the soil, model, fertilize, herbicidize and saw, for the species onion, carrot, parsley and parsnip
18. Realization of the experimental model of the machine for seeds extraction from peppers' receptacle

19. Elaboration of the technology “Integrated control of diseases and pests for vegetable seed trees schemes”
20. Experimentation of the machine for seeds extraction from peppers’ receptacle
21. Design and realization of a machine model for extraction of pumpkin like seeds
22. Realization and experimentation of the machine for vegetables crops maintenance with different schemes of foundation
23. The identification and use of the most efficient vegetable and flower seeds package types, on the conditions imposed by the European Union standards
24. Elaboration of the technology “Schemes for vegetable and flower seeds treating in order to reduce the incidence of diseases and pests”
25. Experimentation of the machine model for extraction of the pumpkin like plants seeds
26. Final documentation “Performance technologies for producing, conditioning and packing of vegetable seeds in order to align to the European Union norms and standards

The results we got:

- There were homologated by ISTIS and introduced in the official list 6 new sorts of vegetables, with the following characteristics:
 - “GETICA” peas – extra early sort, with medium smooth beans, good to be consumed either fresh or industrialized, which is resistant to dryness, good for autumn culture too, with production capacity of over 13 t/ha pods. *Homologation Certificate no. – 1361/22.03.2006 - ISTIS;*
 - “GRATIA” lettuce – extra early sort, with production capacity, 25-30 t/ha, good for being cultivated in the associated and successive crops, with heads, over 250 g, very smooth leaves and sweet-sour taste, all over its technical maturity period. *Homologation Certificate no. – 1360/22.03.2006 - ISTIS;*
 - “DACIA” celery – semi late sort, with good production capacity, 20-30 t/ha, with a root weight up to 450 g, having an oval form, smooth, with a white-yellow skin, good for consumption either fresh and industrialization, with a good capacity to be kept in winter. *Homologation Certificate no. – 1363/22.03.2006 - ISTIS;*
 - “BUZOIANA” white autumn cabbage– late sort, with a great capacity of production. Medium height plant, with heads of 2-4 kg, round form, easily flat, with smooth leaves, well arranged, with great features to be preserved. *Homologation Certificate no. –3365/05.05.2008 - ISTIS;*
 - “CAPRICIU” cherry sort tomatoes – early sort (01), with non determined grow (SP⁺); the fruit form round-easily round tall, the colour of immature fruit: light green with green cover in the pedunculate zone, the colour of the fruit at the technological maturity: strong red, all over, with luster; boxes with seeds: two in transversal section; medium weight of the fruit (g): 21.5-26.5 g; strong fruits, sweet, with flavour; dry soluble substance (% s.p.) 7,0; it is tolerant to diseases specific for early tomatoes, planted in protected spaces and field; medium production capacity: 2,4-2,6 kg/plant. *Homologation Certificate no. – 2251/24.03.2008 - ISTIS;*
 - “BUZAU 10” green pepper – early sort – 110 days from springing till the first harvest, good for protected cultures and cultures in open field. Medium strength plants, with 3 ramifications, lax bush, of cca 60 cm height, medium green, with 9-10 fruits on the plant. Production capacity: 35-50t/ha, medium weight of the fruit – 100 g, pulp 5 mm, juicy. Tronconic fruits, with 3 lobes easily marked, rarely 4, golden yellow, with a strong gloss when technological maturity and purple red with luster when physiological maturity. Tolerant to *Verticillium dahliae*. *Homologation Certificate no. – 3360/05.05.2008 – ISTIS.*
- There were constituted important reference collections for the species: lettuce – 20 sorts, peas – 9 sorts, green peppers – 20 sorts and hybrids, cabbage – 17 sorts/hybrids.
- The conservative selection is to be made for the homologated sorts and the lines of: tomatoes “BUZAU 50”, “MARATONUS”, cherry sort “CAPRICIU”, green pepper “ARUM” and “BUZAU 10”, autumn cabbage “BUZOIANA”, being registered for test in order to be homologated, an onion line.
- There was made the experimental vertically developed greenhouse - *invention CERTIFICATE, named “Greenhouse”, no. 121756, issued 30.04.2008, Decision 7/3208 of 28.12.2007, OSIM Bucharest, international classification: Int. CL8 A01G9/14 (2006.01)*. There was made the running in of the installation, the endurance tests, there were produced transplants of vegetables and flowers, and there were dried vegetable seeds here. By using the vertical greenhouse as a production space and the alveolate palette, the surface on the soil is reduced, good for production transplants up to 80%, the germination period is reduced (between sowing and springing) with 17.93%, and the growing period for the biological material for the crops (the period between springing and planting) with 21.63%, while the quality is improved. The vertical greenhouse was included in “the vegetables’ transplants production technology” at the chapter “spaces for producing the transplants for vegetables and flowers for extra early and protected crops”, as a results of the above mentioned advantages. The daily medium growing rate for the vegetative apparatus for the tomatoes, if a vertical greenhouse is used, is that of 0.74 cm/day. The vertical greenhouse also offers very good conditions for drying the vegetable seeds. Thus, when drying the vegetable seeds of pumpkin family (pumpkin), the exposure time is reduced with 71.45%. This means a handwork savings of 40 hs/100kg dry seeds, in a value 1.75 lei/kg, percentage 5.47%. All over the drying period, a savings of energy is made of 35%.
- There was made an experimental model of complex unit good for mobilization of soil, for its shaping, fertilizing and sowing for species onion, carrot, parsley, parsnip. The complex unit executes, in one run, the germinative preparation bed, the soil shaping, the fertilizing and sowing for the vegetable crops, assuring a good spring of the plants, in economic efficiency and environmental protection. *Invention A/00440/2006 named “COMPLEX UNIT” dated with national storage no. a 2006 00440 of 13.06.2006.*
- There were identified and homologated an integrated scheme which assures an efficient protection against a complex of diseases and pests for the biennial seeds of cabbage and onion.

- There were made studies regarding the international standards and norms in producing, conditioning and packing the vegetable seeds the preparation of the germination bed and setting up the crops for the vegetables with bulbs, roots, cucumbers and crucifers, the integrated pest control for the species with bulbs and crucifers.
- There was made and experienced THE MACHINE TO EXTRACT SEEDS FROM THE GREEN PEPPERS' RECEPTACLE. *Invention A/00441/2006 named THE MACHINE TO EXTRACT SEEDS FROM THE GREEN PEPPERS' RECEPTACLE, with the national regular storage date a 2006 00441 of 13.06.2006.*
- There was made and experienced THE MACHINE TO EXTRACT SEEDS FROM PUMPKINS LIKE PLANTS which is also used to extract seeds from eggplants in a technological chain which consist of the machine to extract seeds from pumpkins which minces the fruits, the machine to extract seeds from the green peppers' receptacle which separates the fermented pulp from seeds and the pulper to extract the tomatoes seeds which separates the seeds from the small pulp particles. *Invention A/00442/2006 named THE MACHINE TO EXTRACT SEEDS FROM PUMPKINS LIKE PLANTS with the national regular storage date no. a 2006 00442 of 13.06.2006.*
- There was made and experienced the CULTIVATOR used for maintenance the vegetables' crops (onion, carrot, parsley, parsnip). *Invention A/00053/2008 named CULTIVATOR with the national regular storage date no. a 2008 00053 of 23.01.2008.*
- There were made technological papers for the species and sorts which were homologated or are to be homologated in which there were introduced new technological sequences, specific to vegetable crops, designed to produce seeds like: THE VERTICAL GREENHOUSE TO PRODUCE TOMATOES AND GREEN PEPPERS TRANSPLANTS, THE MULTIFUNCTIONAL UNIT DESIGNED TO PREPARE THE GERMINATION BED, TO SHAPE AND SOW, THE MACHINE TO EXTRACT SEEDS FROM THE GREEN PEPPERS' RECEPTACLE.
- There were identified and homologated an integrated scheme which assures an efficient protection against a complex of diseases and pests for the biennial seeds of cabbage and onion. There were made studies regarding the international standards and norms in producing, conditioning and packing the vegetable seeds, the preparation of the germination bed and settings up the cultures for the vegetables with bulbs, roots, cucumbers and crucifers, the integrated pest control for the species with bulbs and crucifers.
- There was experienced the model for the machine that extract the seeds from pumpkin like plants.
- It was elaborated, homologated and published as a volume the final documentation "Performant technologies to produce and conditioning the vegetable seeds, according to the EU norms and standards" TEOCORA publishing house, ISBN 978-973-1934-07-5, 2008, 96 pages, which contains the greatest part of accomplishments, presenting what is new and the elements of the economic development in the project.

The way the project accomplishes:

- The final documentation published in the volume: "Performant technologies to produce and conditioning the vegetable seeds, according to the EU norms and standards";
- 6 homologation certificates for new sorts of vegetables and a sort which is to be homologated;
- An invention certificate – the vertical greenhouse and 4 inventions to be certified – multifunctional unit, the machine to extract seeds from the green peppers' receptacle, the machine to extract seeds from pumpkin like plants, the cultivator;
- 7 new crop technologies for the species homologated within the project;
- The developing of the research infrastructure by completing the material base;
- 18 scientific works presented on the basis of the research within the project;
- There were made technological papers for producing the transplants for 5 vegetable species (tomatoes, green peppers, eggplants, early cabbage, lettuce) and 4 flower species (Tagetes, Petunia, Salvia, Dalia), some of them for the sorts which were homologated, in which there introduced new technological sequences, specific for the vegetable crops designed to produce seeds, as: THE VERTICAL GREENHOUSE TO PRODUCE TRANSPLANTS FOR TOMATOES AND GREEN PEPPERS, THE MACHINE TO EXTRACT SEEDS FROM THE GREEN PEPPERS' RECEPTACLE, the machine to maintain the vegetable crops with different schemes of setting up.
- By making the machine to extract the seeds from the green peppers' receptacle and the machine to extract seeds from melons and cucumbers the machines scheme was completed, for the vegetable crops with two machines which are very good economically speaking, environmentally speaking and which create better working conditions for the personnel. The productivity of these machines is clearly superior to the methods used nowadays. The working conditions for the personnel are better, the periods when they touch cold water are almost zero. The extraction of the vegetables seeds is made in a short time comparing to the previous methods which reduces the loss and the possibility that the seeds quality could depreciate. Working organs of the machines are projected so that they couldn't hurt the seeds.
- Moreover, the creation of the machine to maintain the vegetable crops with different setting up schemes completes the machine scheme in vegetables, and the machine has the following advantages: the productivity is bigger than the other existing units; a superior quality to the existing machines, a smaller number of cut plants; by using arrow-like knives instead of the chisels and by distributing the corresponding active organs there can also be executed the preparation of the germination bed; by the proposed working quality indices the work corresponds to the technology requests for vegetables.
- The new sorts were presented at the fair named: "Autumn in Buzau" editions 2006-2008, at the anniversary session "50 years from the setting up the Research-Development Station for Vegetables in Buzau", 10.08.2007, Buzau, and at the first edition of the National Symposium "The promotion of innovative processes and products" ruled by M.E.C., Craiova, 11-12 September 2008, the vertical greenhouse was promoted, and it was certified within the project called CEEX 43/03.10.2005.