SUMMARY

The doctorate thesis " The researches regarding the productivity of some wheat cultivars and the quality of bread manufacture in the ecological conditions from Dobrogea" is based on the researches made during the years 2004-2007 at SC-DA Valu lui Traian in Constanta, in this period being made the researches in the experience field and in the laboratory too.

The thesis has 7 chapters, with 259 pages, 117 tables and 52 graphics plus the introduction and the bibliography.

The doctorate thesis had two parts:

- the first one includes:
  - the introduction about the wheat importance and diffusion
  - the synthesis of the researched made all over the world as well as in Romania regarding the theme researched
  - the natural frame and the ecological conditions of the researches
  - the aim
  - the objectives
  - the material
  - the research method
- the second part includes:
  - the results of the own research and their interpretation regarding some biological characteristics of the wheat
  - the production and the quality of the wheat
  - the economical efficiency of the final results

The actual position of the researches regarding this theme is:

- researches on the cultivars regarding the genera zonation and the productions obtained in different areas of the country;
- researches regarding the cultivars on global level;
- the evidence of the influence of the fertilization by nitrogen, phosphor and potassium on the production of cariopse and their quality;
- the establishing of the optimum doses of nitrogen and phosphor for the autumn wheat.

All these aspects were presented in detail for the purpose of pointing out the position occupied in Romania comparing to other developed countries.

By analyzing the natural conditions from the researched area the purpose was to point out the degree of favorableness for the cultivation of the main genera of autumn wheat, in order to ensure the consumption request of the local population for the wheat and to create some surpluses to be capitalized on the internal market.

There are analyzed in detail the geographical and geo-morphological placement, the air temperature, the frost, the wind climate, the cloudiness, the time of the sun shining, the atmosphere precipitations, the hydrographic and hydrological network, the soils.

The conclusion is that the researched agricultural area is formed from an agricultural warm dry area, with a knead bas-relief. The high temperatures extend the autumn till December, being a main characteristic that positively influence the growth and the development of the wheat till the winter comes.

The climatic conditions have been different for each of the 3 agricultural years. The agricultural years 2004-2005 and 2005-2006 were favorable for the autumn wheat and the agricultural year 2006-2007 was less favorable.

The purpose of the experimentations was to improve the technology of cultivating the autumn wheat in conditions of non-irrigation from SC-DA Valu lui Traian, by accumulating new knowledge that contribute to the scientific and practice fundamentation, by rational using the fertilizers for their economic optimization.

The research's objectives were:

- establishing the productive potential of the autumn wheat genera by the fertilization formula
- capititalizing the productive potential of the autumn wheat genera by the fertilization formula
- correlating the productive characteristics of the autumn wheat genera with brad manufacture quality by the fertilization criteria.

In the second part are presented the results of the own research, regarding the subject of the doctorate thesis. This part has 137 pages, 85 tables and 26 graphics.

In order to establish the optimum fertilization doses that must be applied for the autumn wheat, there took place a bi-factorial experience, type 4A x 9B x 4R.

The method of the experience is the one in sub-divisible parcels.

A Factor – *Fertilization with four grades:*

a_1 – N_0P_0 (witness)

a_2 – $N_{80}P_{70}$

a_3 – $N_{120}P_{70}$

a_4 – $N_{160}P_{70}$

B Factor – The genus, with 9 grades:

b_1 – Flamura 85 (witness)

b_2 – Fundulea 4

b_3 – Lovrin 34

b_4 – Rapid

b_5 – Alex

b_6 – Dor

b_7 – Delabrad

b_8 - Boema

b_9 – Romulus

In order to interpret statistically the results, all the variations of the experience were put in 4 repetitions, being planted in tapes of 8 rows, with a distance of 14cm, 4 cm depth. The experimental plot was margined by two similar bands, planted with the witness Flamura 85.

During the vegetation period were made observations and determinations: phonological observations during the vegetation period (the length of the vegetation period, the resistance on diseases of the studied soils, the resistance on wintering, the density of the plants), were determined by direct counting in the field; biometrical measures (the high of the plants, the number of grains in the ear, the number of ears/m2, the cariopse production) were determined by measures directly in the field, counting and weighting in the laboratory.

The soils from the study during these 3 years of experimentation had a medium resistance to diseases and a very good resistance to wintering.

The statistic interpretation of the obtained results was made by the method of analyzing the variation. The results were centralized in tables and after that we obtained graphics.

The researches made between 2004-2007, into the Station of Agricultural Research and Development Valu lui Traian, regarding the influence of the fertilization, the soil and the interaction of the fertilization x genus on the number of grains in the ear, the number of ears /m2 and the production relieved the next aspects:

The plants' high – between 82 cm for Dor genus in the agricultural year 2006-2007 and 93 cm for Boema genus in the agricultural year 2004-2005.

The number of ears per m2 – was influenced by the fertilization, the soil and the climacteric conditions.

The influence of the fertilization on the number of grains/m^2 determined some very significant growths between 2004-2007, on the agro-fund $N_{160}P_{70}$, very significant increases

between 172,2 ears/m^2, during the agricultural year 2005-2006 and 66,6 ears/m^2 in the agricultural year 2004-2005.

The biggest number of 816,6 ears/m^2 was obtained for the Alex genus in the agricultural year 2004-2005, genus that obtained the biggest number of ears every year. The smallest number of 521,8 ears/m^2 was obtained for the Delabrad genus, in the agricultural year 2006-2007.

The number of grains in the ear was influences by the fertilization, the soil and the climacteric conditions. The biggest number of 34,7 grains per ear was obtained for the Rapid genus, in the agricultural year 2004-2005, and the smallest number 21,4 grains per ear was obtained for the Romulus genus in the agricultural year 2005-2006.

Regarding the influence of the agro-fund on the number of grains per ear, the biggest number of 34 grains per ear was obtained on the $N_{120}P_{70}$ agro-fund, and the smallest number of 19,4 grains per ear was obtained on the unfertilized agro-fund in the agricultural year 2005-2006.

The wheat efficiently capitalizes the chemical fertilizers, the nitrogen being the nutrient element that helps to obtain the biggest production increases.

The biggest **cariopse production** of 6313,8 kg/ha, was obtained by the Alex genus, in the agricultural year 2004-2005, and the smallest production of 4118,1 kg/ha was obtained by the Dor genus, in the agricultural year 2006-2007. regarding the influence of the fertilization on the cariopse production, the average on those three years, the biggest production of 5861,5 kg/ha was obtained on the $N_{160}P_{70}$ agro-fund, followed by the $N_{120}P_{70}$ agro-fund with 5502,2 kg/ha. All the fertilized variants obtained production increases statistically ensured.

As average on these 3 years, the soils used into the experience obtained productions that surpassed 5000 kg/ha, excepting the Lovrin 34 genus, that obtained 4920,9 kg/ha.

The biggest production was obtained by the Alex genus, with 5429,2 kg/ha, rapid genus with 5277,5 kg/ha and Boema genus with 5260 kg/ha.

The interaction between the fertilization and the soil pointed out the variant $N_{160}P_{70}$ x Alex, the average on those 3 years of 6183,3 kg/ha, with a very significant difference of 1800 kg/ha.

The second place was for the variant $N_{160}P_{70}$ x Rapid, with 6133,3 kg/ha, the difference against the witness variant being significant.

Other variant fertilized by $N_{160}P_{70}$, with Boema, Delabrad, Flamura 85, Fundulea 4 and Romulus genera registered significant difference against the witness variant N_0P_0 x Flamura 85.

The hectoliter mass is quoted as appreciation element of the quality, a high hectoliter meaning a quality seed. The biggest of 80,8 kg/ha was obtained for the Lovrin 34 genus, in the agricultural year 2006-2007, and the smallest hectoliter mass of 70,8 kg/ha was obtained by the Romululs genus, in the agricultural year 2004-2005.

The influence of the fertilization on the hectoliter mass shows us that on the $N_{160}P_{70}$ agro-funds are obtained on the experimental years the biggest mass, with value between 79,4 kg/ha in the agricultural year 2006-2007 and 75,6 kg/ha in the agricultural year 2004-2005.

The mass of 1000 grains depends on the production, the genera with the mass by 1000 grains bigger having a bigger production capacity too.

The biggest mass per 1000 grains of 52,7 g was obtained for the Lovrin 34 genus, in the agricultural year 2006-2007, and the smallest mass of 1000 grains of 35,7 g was obtained for the same Lovrin 34 genus, in the agricultural year 2005-2006.

The mass per 1000 grains was influenced by the fertilization, the $N_{160}P_{70}$ variant having MMB of 47,7 g; and the N_0P_0 variant having 46,5 g in the agricultural year 2004-2005. In the agricultural year 2006-2007 the mass per 1000 grains was bigger and had values between 54,5 g in $N_{160}P_{70}$ variant and 44,7 g in N_0P_0 variant.

The content and the production of protein from the wheat cariopse were influenced by the fertilization and the soil. The biggest percent of protein of 15,5% was obtained for the Boema genus, in the agricultural year 2005-2006, and the smallest percent of protein of 12,2% was obtained for the Alex genus, in the agricultural year 2006-2007.

The biggest protein production of 957,7 kg/ha was obtained for the Boema genus, in the agricultural year 2005-2006, and the smallest protein production of 473,8 kg/ha was obtained for the Alex genus, in the agricultural year 2006-2007. We can say that, the smaller protein content and protection in the agricultural year 2006-2007 against the previous years was due to the climatic conditions and especially because of the fault of precipitations.

The nitrogen and phosphor fertilizer influenced the content in protein, wet gluten and the deformation index.

The protein content, as average for the three years grew directly with the increase of the nitrogen doses, from 12,3 % N_0P_0 variant to 14,6 % $N_{160}P_{70}$ variant. For the wet Gluten it increased from 27,4 % in N_0P_0 variant to 32,4% in $N_{160}P_{70}$ variant, and the deformation index was of 8,33 mm in N_0P_0 variant and of 6,33 mm in $N_{120}P_{70}$ and $N_{160}P_{70}$ variant.

According to the quality level, the content of gross protein and the protein production per ha, the wheat genera experienced are into the frame of “very good” quality.

By analyzing the economical efficiency of the autumn wheat culture were taken into consideration the following indicators:

- total costs (RON/ha)
- the production cost (RON/kg)
- the total income (RON/ha)
- the gross turnover (RON/ha)
- the turnover rate (%)

The fertilization with chemical fertilizers went to a decrease of the turnover rate, caused by the expenses with the technological process.

The researches proves that, in these three years of experimentation, although on the unfertilized agro-funds are obtained smaller productions, the turnover rate is bigger (109,7% for the Delabrad genus, on the N_0P_0 agro-fund), against the fertilized agro-funds(24,20%, the same genus, on the $N_{160}P_{70}$ agro-fund). The results obtained confirm the reports from the specialty literature but there are specific experimentation conditions and they contribute with elements for better understand the phenomena.

This doctorate thesis ends with the conclusions, the proposition for production and the bibliography.