ASPECTS OF WINTER RAPE PESTS POPULATION CONTROL THE FERTILITY MANAGEMENT IN THE CONDITIONS AGRICULTURAL AREA NORTH-EAST BARAGAN

Luxiţa RÎŞNOVEANU[1]
E-mail: dnastase78@gmail.com

Abstract

Evolution of pest population is significantly influenced by mineral fertilization. Mineral nutrition disorder the incomplete and unbalanced application of chemical fertilizers with nitrogen and phosphorus fertilization on productivity reduces the efficiency of this plant, while significant growth taking place this crop-specific pests.
Balanced fertilization of this plant turn up not only on production of seeds and their oil content, but also on increasing its resistance to diseases and pests. Achieving balanced fertilization formulas, nitrogen - phosphor, has major repercussions on the development of pest populations in the North - East Baragan.
Research conducted in 2004-2010 showed that N140 P80 fertilizer formula, gives the least frequent pest attack alongside their lowest variation (9.1 -9.4%), which shows that its stability over time in control winter rapeseed insect population

Key words: winter rape, integrated pest control, fertilization

Great diversity of pest rape autumn staging it in their pest activity during the growing difficulty of maintaining these pest populations below require the use of large number of methods and means of combat (Popov, 2004; Trotus 2007, 2009; Rîşnoveanu, 2004).

Protection of this culture must be made specifically for each group of pests by integrated use of chemical and non-chemical measures. The emphasis should be integrated combat especially indirect measures and methods that are more iefitine and easier, and clean. (Rîşnoveanu, 2010, Popov, 2006).

Agro-technical measures and hygiene cultural classic is less spectacular, but give reliable results over time (Perju, 2004, Popov, 2006)

In this context the application of an optimal ferilizare technology is one of the rings of prime importance in population control pests of winter rape area northeast Baragan.

MATERIAL AND METHOD

Research has been carried out during 2004-2010 in the agricultural area northeast Baragan, rapeseed growing large area

Variants studied:

-Phosphorus Fertilizer: P0, P40, P80, P120

-Nitrogen fertilization:N0,N70,N140,N210 N280

There have been a number of times the population trends of winter rape pests specify which consisted of:

- Surveys on the ground, with 25/25 cm frame metric in the period between sowing and rosette formation

-Threading with entomological net in the stem elongation parioada from and to the formation

-Collection type bowl with yellow traps, installed from crop emergence to maturity and plant

Biological material was collected and analyzed to determine the species binocular magnifier. Specific pests of winter rape frequency did Abott's calculated using the formula.

The results were interpret using analysis of variance, multiple comparisons (Newman Keuls), regression and correlation (statistical programs MSTAT-C, SAS / SAT, PASW.)

RESULTS AND DISCUSSIONS

Mineral nutrition disorder through the application incomplete and unbalanced chemical fertilizers with nitrogen and phosphorus in soils that rape culture requires the presence of these two elements, reduces the productive efficiency of fertilization, while significant growth occurs and the specific pest attack.

[1] Research Station for Agricultural Development Brãila

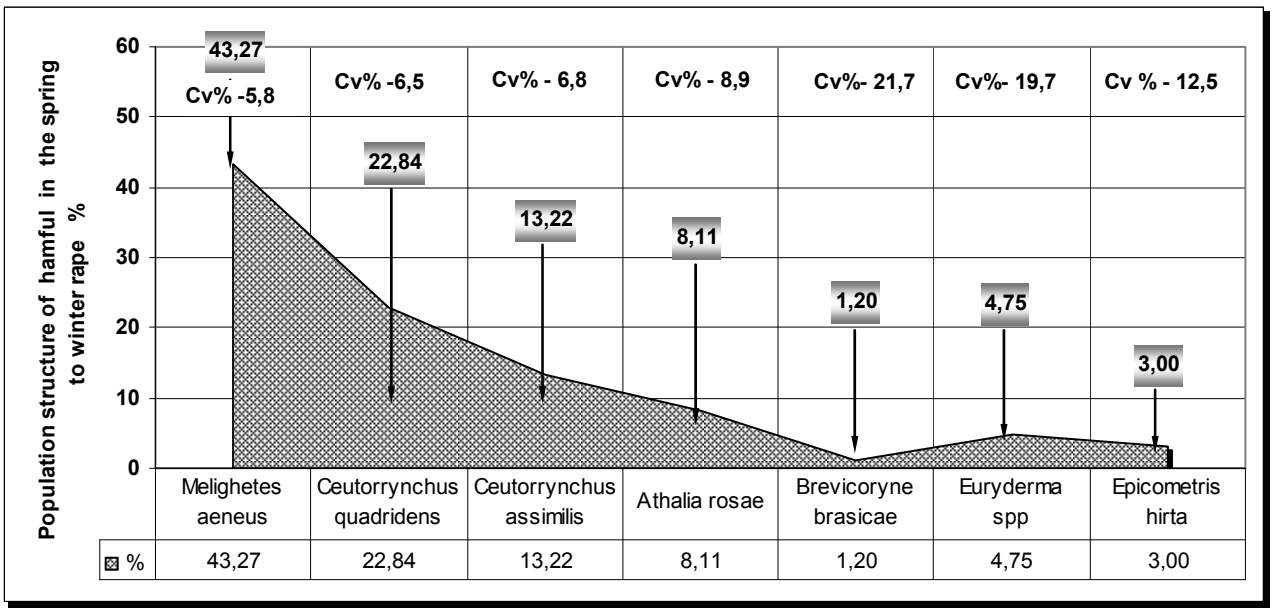

Figure 1 **Pest population structure of winter rape area north-east Baragan**

It can be seen fig. 2 that the application of phosphorus fertilizers at recommended doses established for this culture causes a significant decrease in the population of this pest plants with 0.52% for each kg of applied phosphorus. By applying P80 kg / ha provides a significant decrease in the frequency of pest 27.5%. Also observe a significant increase in stability of this level of fertilization (13.5%) than other types of fertilizer phosphorus in relation to frequency of pests present in these determinations.

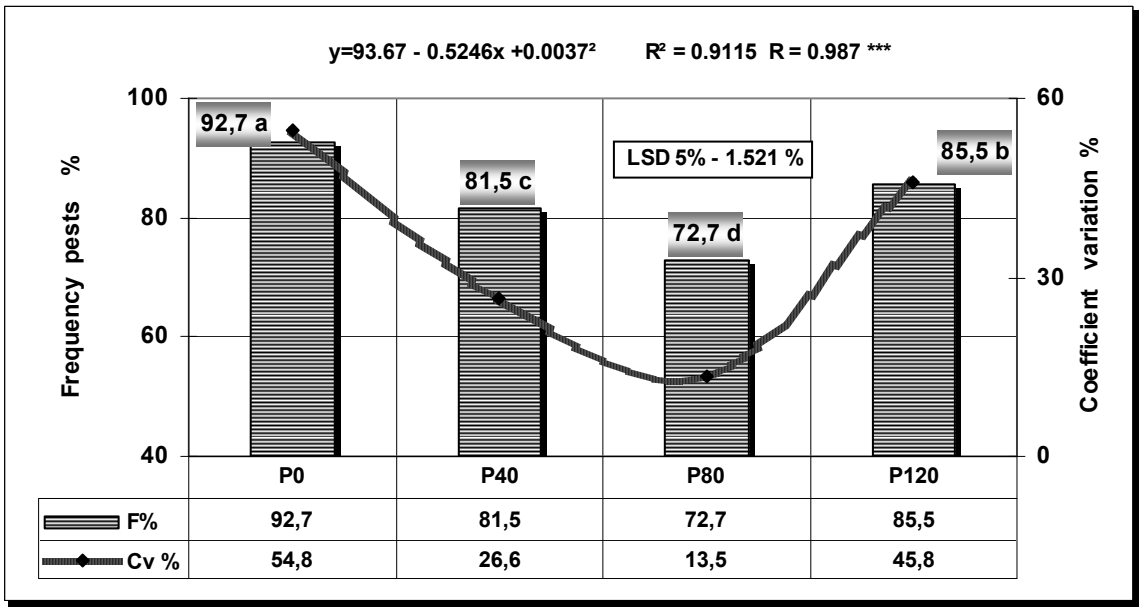

Figure 2 **Influence of phosphorus fertilization on the pests population of winter rape (Braila 2004 - 2010)**

Exceeding this level of fertilization with phosphorus nutritional imbalances cause negative repercussions on the evolution of rape population pests, causing their frequency increases by 17.7%.

Application of nitrogen fertilizer (*fig. 3*) due to lack of application of phosphorus will result in increases in the incidence of pest 0.046% per kg of nitrogen applied. At the same time there was a significant increase up to 80.6 - 84.4% of the variation in frequency of pest and high doses of nitrogen N210 N280 kg / ha. The correlation coefficient between the two components being achieved significantly (R= 0.962***). This highlights the need for nitrogen fertilizer formulas, phosphorus, complete and balanced.

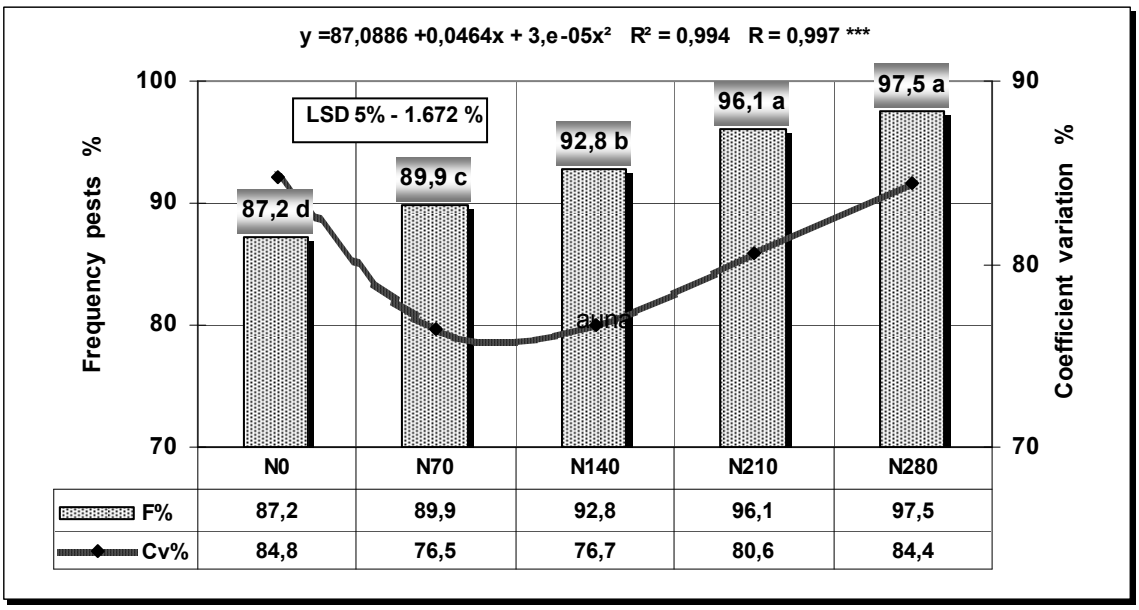

Figura 3 **Influence of nitrogen fertilization on the pests population of winter rape (Braila 2004 - 2010)**

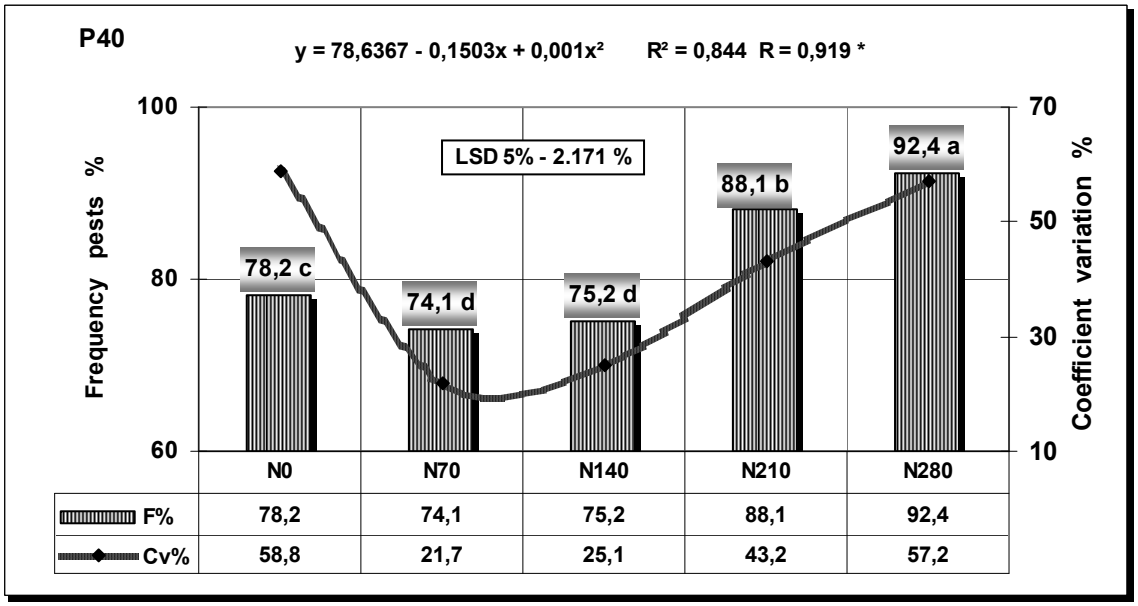

Figure 4 **Influence of phosphorus and nitrogen fertilization on the pests population of winter rape (Braila 2004 - 2010)**

Application of phosphorus at a dose of P40 (*fig. 4*) cause significant changes on the evolution of this crop pest populations in relation to the application of nitrogen doses. Phosphorus causes throughout the entire experiment decreased the frequency of rape pests 0.15% per kg of nitrogen applied. There is a plant mineral nutrition to improve and increase their resistance to pest attac.

Non-application of nitrogen and the variations in the ratio N / P is 1: 0.19 or 1: 0.14 is found elevated frequency of pest attack fertilization variants toward the ratio is 1: 0.54 or 1: 29 (over 20.2%).

At the same time it appears that fertilization formulas P40 P40 N70 and N140 have the lowest values of the coefficient of variation, significant compared to other variants of fertilization in which value is doubled

By application of P80 (*fig. 5*) has room for improvement in phosphorus nutrition and also a much better utilization of nitrogen fertilizer, reflected by a decrease of about significant population frequency of these variants dăuători fertilization because of more vigorous plant development.

This level of phosphate fertilization causes a decrease in the frequency of pest 1.21% for each kg of nitrogen applied. The failure of nitrogen and application of large doses cause high pest population frequencies of 76.8% and 86.7%

respectively. The optimum level of fertilizer nitrogen - phosphorus of rape in this complex technology is P80 N 140 - N210 when making the lowest frequency of 55.6-59.8% pest, the ratio between the two elements feritilizante was 1: 0.57 and 1 : 0.42. It brings about the best formula fertilization rape both in terms of production and especially the population of pest control. Stability in time of fertilization of this formula is validated and the existence of a coefficient of variation in the five years of experimentation, little, insignificant 6.6% and 9.9%.

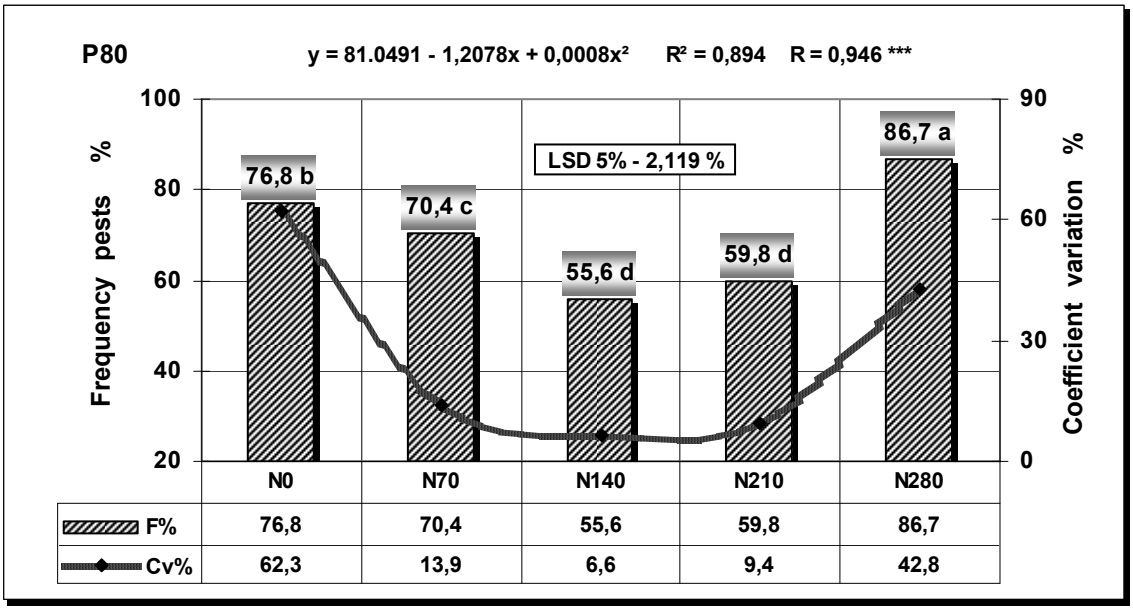

Figure 5 **Influence of phosphorus and nitrogen fertilization on the pests population of winter rape (Braila 2004 2010)**

Meligethes aeneus specific pests and Ceuthorrynchus quadridens rape react differently to the application of different formulations of fertilizer nitrogen - phosphorus in different ratios of acetate, in which each population privşte evolution harmful side.

The pest Meligethes aeneus (fig. 6) without a phosphorus-based fertilizer doses of nitrogen increased markedly increase the frequency of this harmful ajuncând to 96.5%. Result in increases in nitrogen application rate of 0.31% this pest per kg of nitrogen applied. At the same time there is a change in frequency of attack this pest very significant, up to 88.9% at a maximum of N210 fertilization occurs in this situation by increasing the frequency of attacks on plants Meligethes aeneus debility and poor nutritional system . In this context we can say that only nitrogen fertilizer application at any dose higher spreads determines the frequency of attack this pest.

By involving phosphorus fertilization of rape in the system can be controlled much better rate this pest attack, knowing that the general fertility of soil phosphate in the north-east of Baragan is every year more than

Application of P40 (fig.7) improves plant nutrition rape, there is a better use of nitrogen fertilizer while significantly decreasing the frequency of attack this pest in this context nutrition.

There is still a decrease in attack frequency Meligethes aeneus to 0.091% per kg of nitrogen fertilizer applied at the level of phosphorus. The application of fertilizer nitrogen doses and markedly increase the frequency of attack this pest from 77.1 - 91.1%. Reports of the two nutrients, leading to the lowest values of its presence, are 1:0.30 - 1:0.57. Decreased frequency of damage due to these reports between nutrients is between 19.5-22.8%. At the same time it is found that the levels of N70 and P40 P40 N140 fertilization coefficient of variation has the lowest values in the formula of fertilizer with phosphorus.

Meligethes aeneus attack frequency is closely related to the level of phosphate fertilization with P80 (fig. 8), which proves to be most effective in the application of nitrogen fertilizers. Decrease its presence is 0.22% per kg of nitrogen applied.

N210 P80 fertilization formula determines the lowest coefficient of variation, insignificant 9.9%, but economically speaking dose should not be overlooked P80 N140.

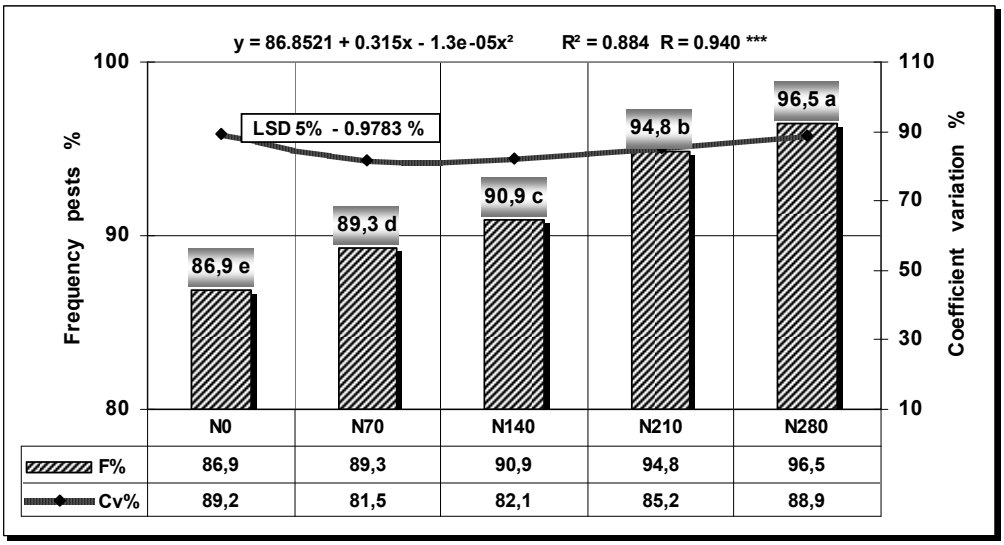

Figure 6 **Influence of nitrogen fertilization on the population of Meligethes aeneus on winter rape (Braila 2004 - 2010)**

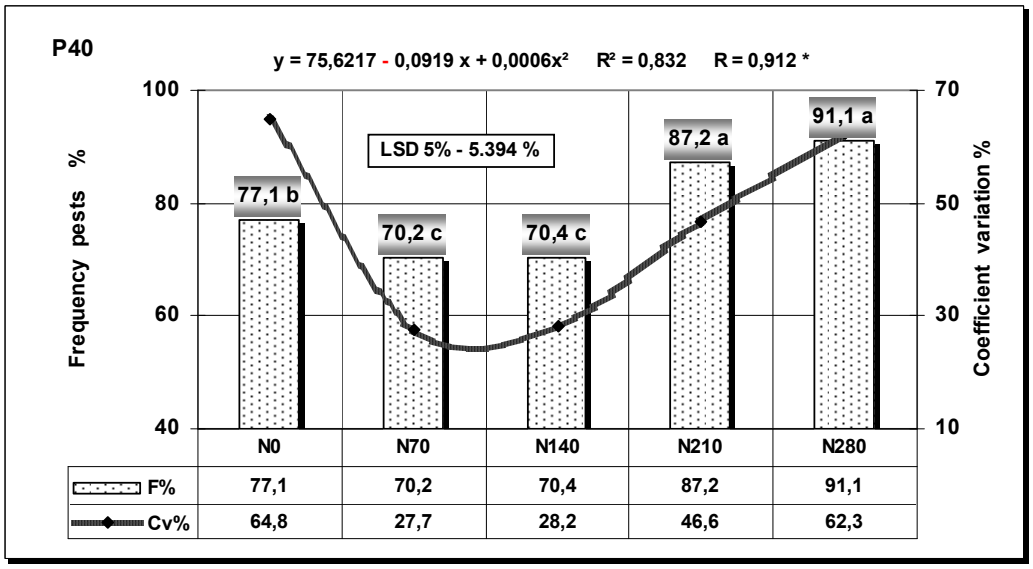

Figure 7 **Influence of nitrogen fertilization on the population of Meligethes aeneus on winter rape (Braila 2004 - 2010)**

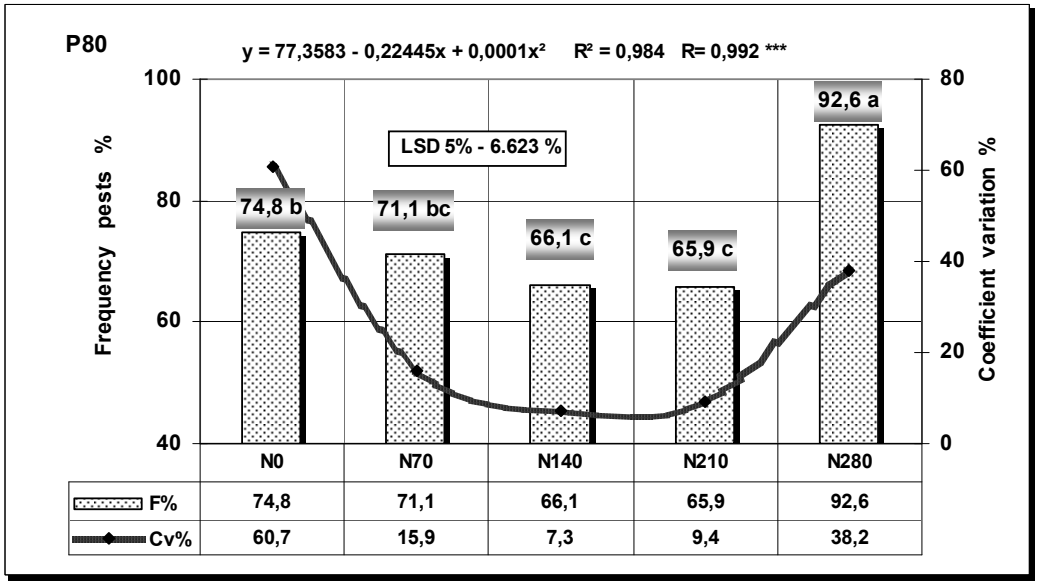

Figure 8 **Influence of nitrogen fertilization on the population of Meligethes aeneus on winter rape (Braila 2004 - 2010)**

Ceuthorrynchus quadridens frequency of attack is somewhat different in terms of ensuring optimal nutritional environment of rape plants in the experimental area of the Baragan north - east.

Non-application of phosphorus fertilizer in the formula of rape (fig. 9) causes large plant nutritional deficiencies, increasing the frequency of attack this pest. This is an increase of 0.61% of its presence for each kilogram of nitrogen applied at the maximum frequency of fertilization with nitrogen N280 Ceuthorrynchus quadridens up to 98.8%. In aceslaşi time shows that in the absence of phosphorus, the coefficient of variation this pest is very high frequency up to 79.9%. Frequency coefficients of variation of this pest presence give the unilateral application of nitrogen were very high valorem significant, which indicates the importance of using the phosphorus fertilizer formulas must be present.

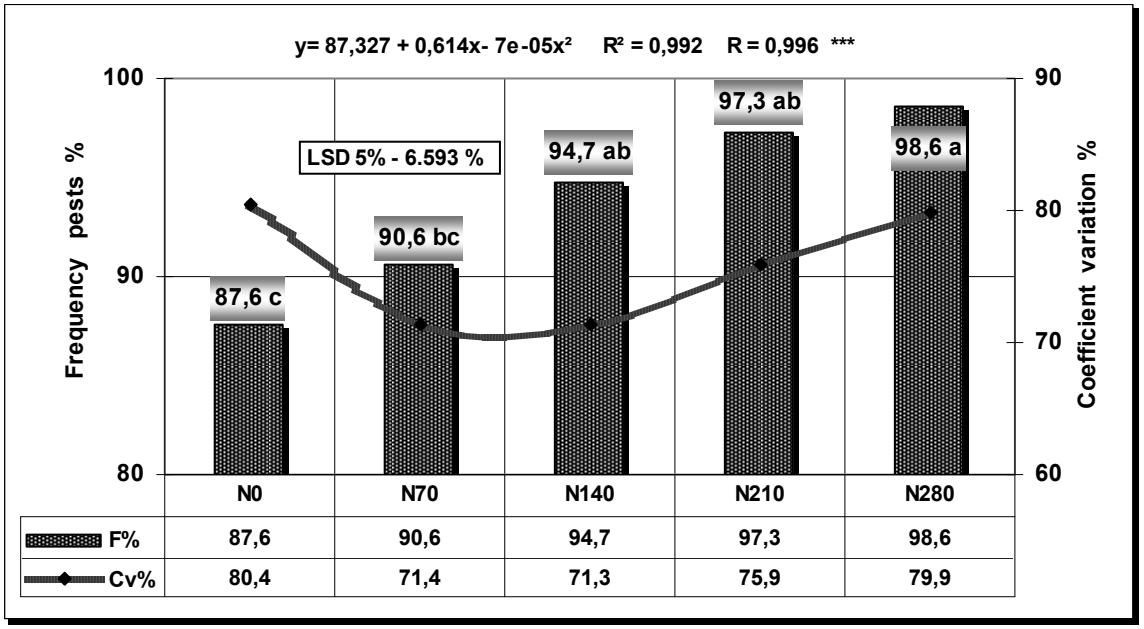

Figure 9 **Influence of nitrogen fertilization on the population Ceuthorrynchus quadridens on winter rape (Braila 2004 - 2010)**

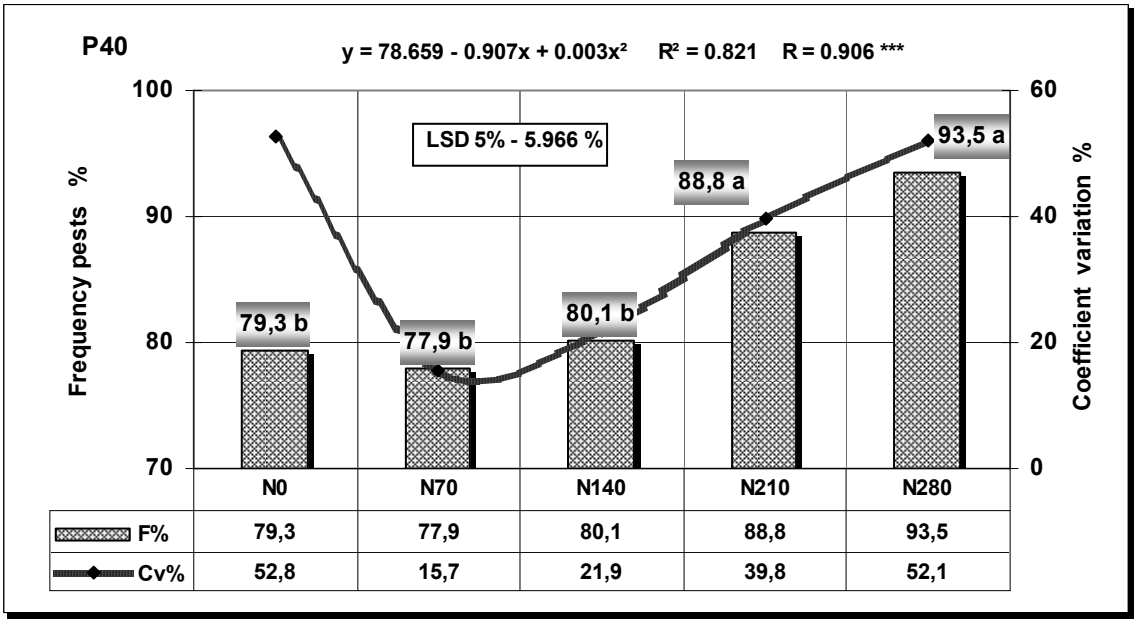

Figure 10 **Influence of nitrogen fertilization on the population Ceuthorrynchus quadridens on winter rape (Braila 2004- 2010)**

By introducing phosphorus in fertilizer formula P40 essential changes occur on the evolution of this pest population, particularly damaging rape culture (fig.10).

Thus there was a decrease in the frequency of attack this pest by 0.9% each kg of nitrogen on the phosphate level. Nutritional report N / P which determines the lowest frequency of pest attack

(77.9% and 80.1%) is 1: 0.57 and 1: 0.30. Too heavy nitrogen fertilization N210 and N280 pest causes strong increases frequency of 13.3 - 20.3% coefficient of variation also attack this pest is significant frequency between 52.8% and 15.7% at P40 N70 version

Increase ferlizare phosphorus from P80, considered the optimal dose of this plant, determine the best environment for growth and development in close connection with the development of this dangerous pest population. (*fig.11*). There is a decrease in its frequency of 1.83 % per kg of nitrogen fertilizer applied to these levels of phosphate. P80 and P80 doses N140 N210 determines the lowest values of this indicator of pest population development Ceuthorrynchus quadridens of 63.9% and 63.8%.

It also records at these types of fertilization, the stability of this plant growing factor related to changes in the population of pests.

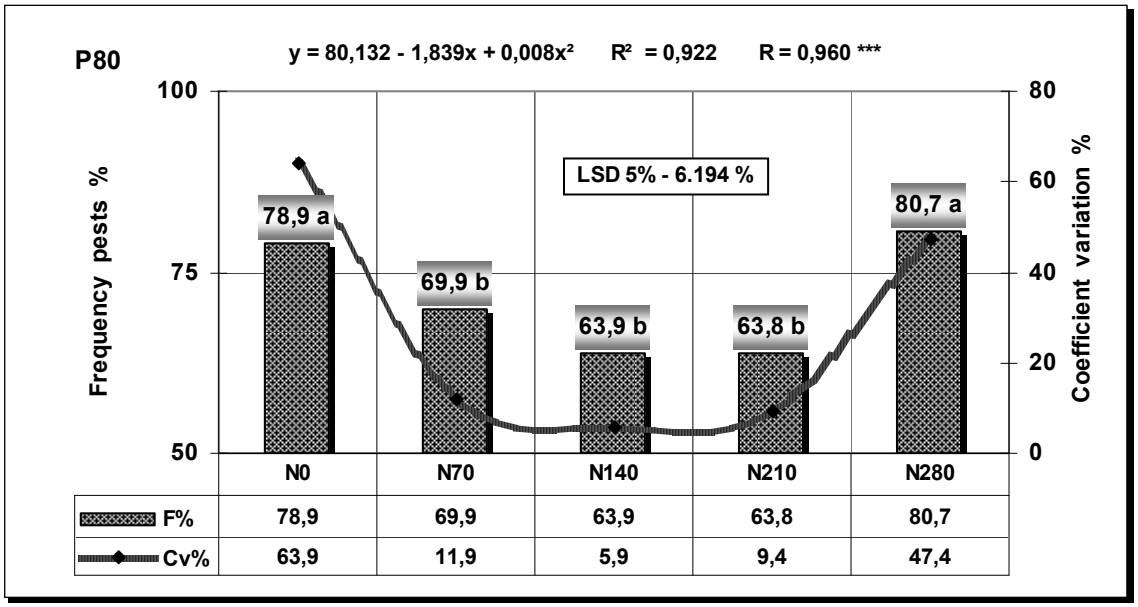

Figure 11 **Influence of nitrogen fertilization on the population Ceuthorrynchus quadridens on winter rape (Braila 2004- 2010)**

CONCLUSIONS

Unilateral application of nitrogen and phosphorus is totally unspecified causes increases in frequency as this crop specific pests.

Evolution of damage is significantly influenced by mineral fertilization

The winter rape, the optimal level of fertilization is P 80, N140, which determines the best level of population control pests of winter rape in the north-east Baragan.

Fertilization N140 P80 considered optimal result in the least frequent pest attack alongside their lowest variation (9.1 - 9.4%), while determining its stability.

BIBLIOGRAPHY

Perju, T., 2004 - *Pests of the main agro-systems and their integrated control*, Ed.Academic Press. Cluj Napoca.

Popov, C., 2004 - *Snapshot of insect pests in crops of rape in Romania*, Problems of Plant Protection 32.

Popov, C., et al., 2006 - *Sequences recommended technology for preventing and combating pests and disease, the establishment of maize, sunflower, rapeseed, flax, alfalfa, beans, peas field*, Problems of Plant Protection 34.

Rîşnoveanu, Luxita, Popov, C., Nastase, D., 2004 - *Population structure of insect pests in crops of rape,* Rev. Problems of Theoretical and Applied Agro-plant growing. vol XXVII.

Rîşnoveanu, Luxita, 2010 - *The influence of factors on the population of pests phyto winter oilseed rape in the Northeast Baragan*, PhD Thesis USAMV Bucharest.

Trotus, Elena, Naie, Margareta, Galan, G., 2007 - *Research on reducing the damaging culture of rape attacks on buds, flowering, pod formation and seed maturation,* ICDPP 2007 Bucharest.

Trotus, Elena, et al., 2009 - *Management of rape crop protection against insect attack*, INCDA Fundulea vol. LXXVII.