SOME ASPECTS OF POPULATION CONTROL OF HARMFUL SPECIES IN WINTER RAPE CROPS IN CÂMPIA BRĂILEI

RÎŞNOVEANU Luxita[1], AXINTI Nicoleta[1], CIOROMELE Alina[1]

University Dunarea de Jos, Galaţi, Faculty of Engineering Brăila

Email: dnastase78@gmail.com

Abstract

Winter rape has many pests in the spring, can cause great harm, causing to compromised harvest insecticide treatments are essential in controlling pests of the crop population. In the 2004-2011 were executed research on the efficacy of systemic and non-systemic insecticides in the conditions Câmpia Brăilei. There are significant differences between the mode of action of various substances fall protection on rape frequency, intensity and degree of pests that attack crops of great economic importance

Key words : winter rape, harmful species, systemic and non-sistemic insecticides.

Winter rape is an intensive crop that can be profitable if it provides high yields, reliable, consistent and quality. **[Buzdugan, 2011; Rîşnoveanu, 2011]**. Pests of this crop produced production losses amounting to 15-35% and sometimes lead to compromised **[Popov et al. 2006, 2007; Rîşnoveanu, 2010; Trotus, 2009; Raranciuc et al., 2007]**

Area Câmpia Brăilei, rape crops are attacked frequently throughout the growing season, a complex of pests, capable of inflicting heavy losses **[Rîşnoveanu, 2010; Buzdugan, 2011]**

Protection winter rape was focused in recent years, a series of researches aimed at establishing harmful fauna, biology and ecology of the most dangerous species, and develop effective control methods in the context of the broader concept of integrated control of dăuătorilor , which do not affect pollinating fauna **[Barbulescu, 2001].**

MATERIAL AND METHOD

The investigations were performed during 2004-2011 in agricultural area. Câmpia Brăilei In this period, observations and determinations were made on pest identification and collection of rape crops.

Determinations were:

- Threading with entomological net during the elongation strain to form pods

- Preparations with yellow bowl trap type, installed from crop emergence until plant maturity. For specific pest of winter rape has experienced a range of insecticides with minimal impact on the environment: Untreated, Cipermethrin 200 g / l; bensultap 25%, fipronil 200 g / l, tiametoxam 25%, tiacloprid 480 g / l

The experiments were randomized blocks placed by the method in five repetitions.

Observations and measurements were made on common pest attack intensity and degree of their attack, both untreated and version at the variants mentioned above were applied insecticides. Insecicidelor efficacy was determined using Abott's formula. Scientific data obtained were calculated and statistically analyzed using analysis of variance, mutiplã comparison (Newman Keuls), regesiile and correlations (statistical package SAS / SAT, PASW).

RESULTS AND DISCUSSION

In Câmpia Braila, the population of pests of winter rape in adulthood planted, was built between research, on average, 5096 individuals / m^2 (fig. 1), classified in class I n s e c t a six systematic order. Of these the order *Coleoptera* is the most abundant 45.8%, including the most damaging this crop species.

In terms of the phase distribution of vegetation (*fig. 2*) is found in autumn-winter period from sowing to the rosette stage, the pest abundance is at 44.5% of all pests affecting this crop. Spring get its share from 55.5% during bud-bloom-forming pods, the most affected by wildlife from harmful (39.9%).

From Figure 3 it can be seen that out of 3456 individuals / m^2 most common species: *Meligethes aeneus* 28.4%, *Ceuthorrynchus quadridens* 19.3% followed by *Ceuthorrynchus assimilis*, *Athalia rosae* by 8.2% and respectively 7.5%.

In monitoring the population of winter rape pests, determine the frequency, intensity of attack and attack degree, have an important role in combating the use of different insecticides with minimal environmental impact.

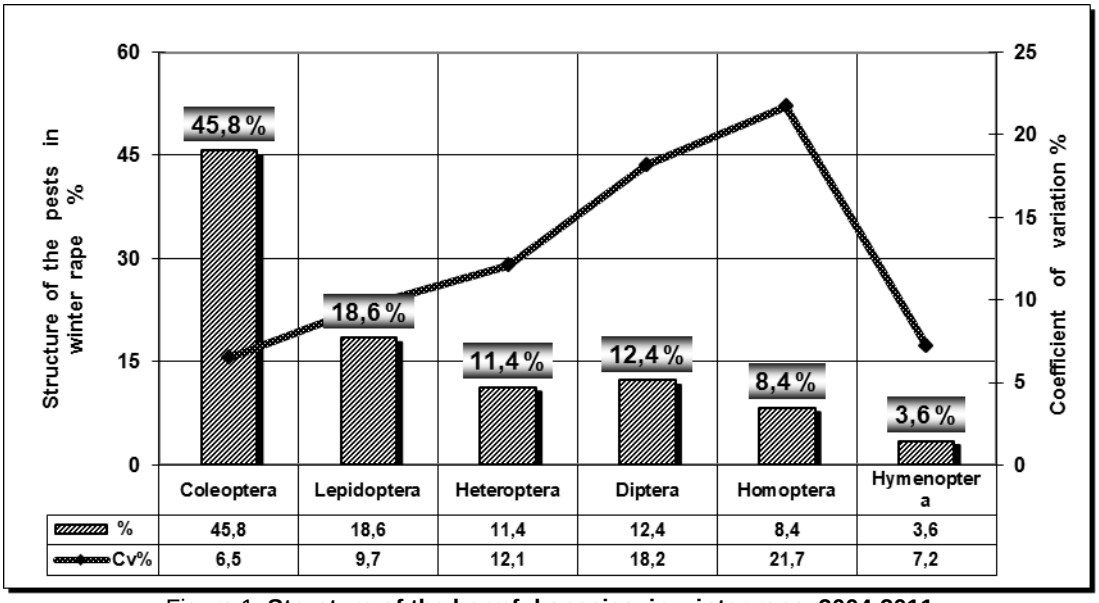

Figure 1. **Structure of the harmful species in winter rape 2004-2011**

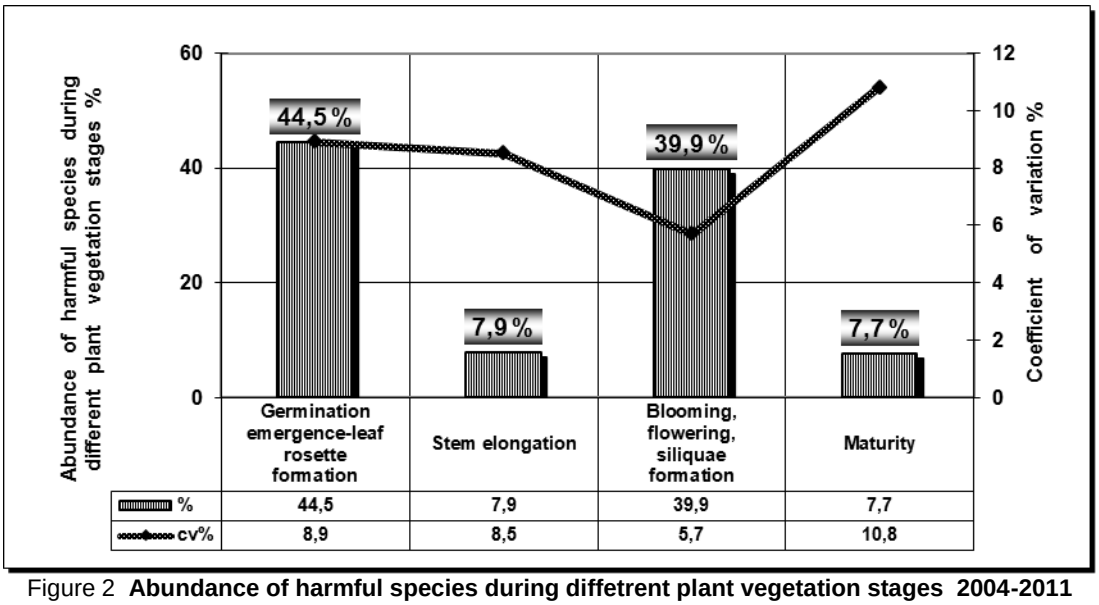

Figure 2 **Abundance of harmful species during diffetrent plant vegetation stages 2004-2011**

Of these tiametoxam 25% and tiacloprid 480 g / l determines the lowest frequency values of specific pests rape of 6.22% and 6.45% respectively, compared with untreated control (70.1%). Located on the first level of significance.

On the second level of meaning lies fipronil 200 g / l and acetomiprid 20% with a frequency of attak of 9.11% and 9.45%. Bensultap 25% and cipemetrin 200 g / l is located on the third level of significance with a frequency of pests of 14.03% and 20.32%.

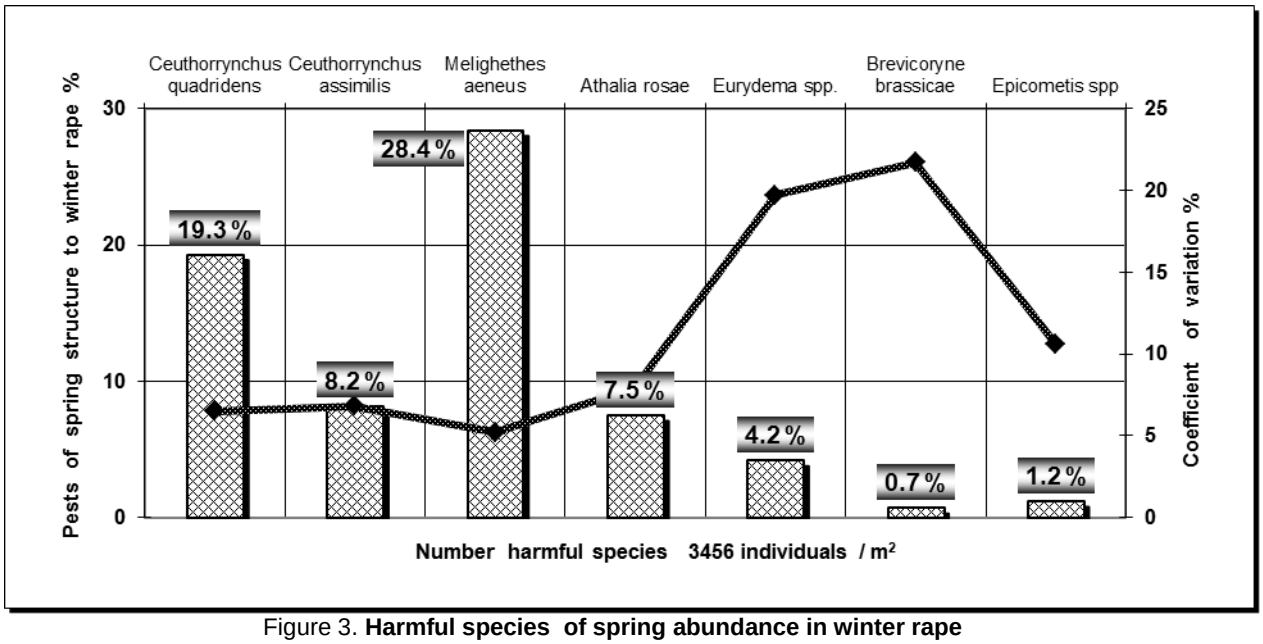

Figure 3. **Harmful species of spring abundance in winter rape**

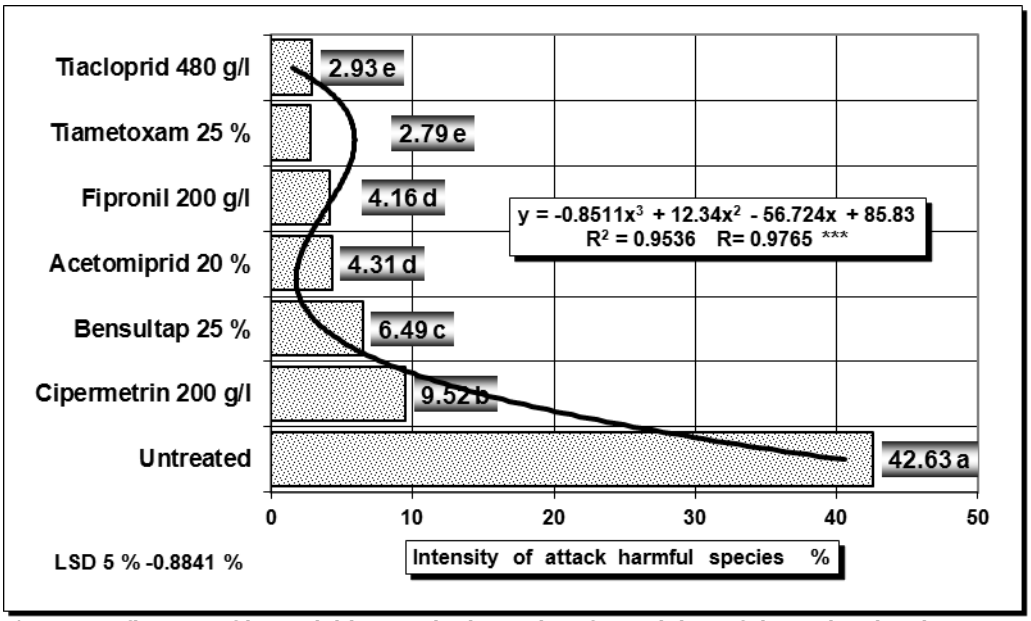

Figure 5. **Influence of insecticides on the intensity of attack harmful species in winter rape**

Pests intensity is another significant indicator to assess population damaging any special winter rape is strongly influenced by various insecticides, a component of integrated control them. *(fig 5).*

Thus it appears that by applying various protection substances to achieve a significant reduction (R = 0.9765 ***) of this indicator damage of 56.7%.

In this context-based insecticides tiamethoxam 25% and tiacloprid 480 g / l determines the intensity of low values of 2.79 to 2.93% pests, being on the first level of significance. On the second level of meaning lies fipronil 200 g / l and acetomiprid 20% pests intensity of 4.16% and 4.31%.

Bensultap 25% results in a reduction of this indicator to 6.49% damage in placing these options on the third stage of meaning.

Level of pest attack is also a very significant indicator of damage in the evolution of their population, which is influenced by application of insecticides.

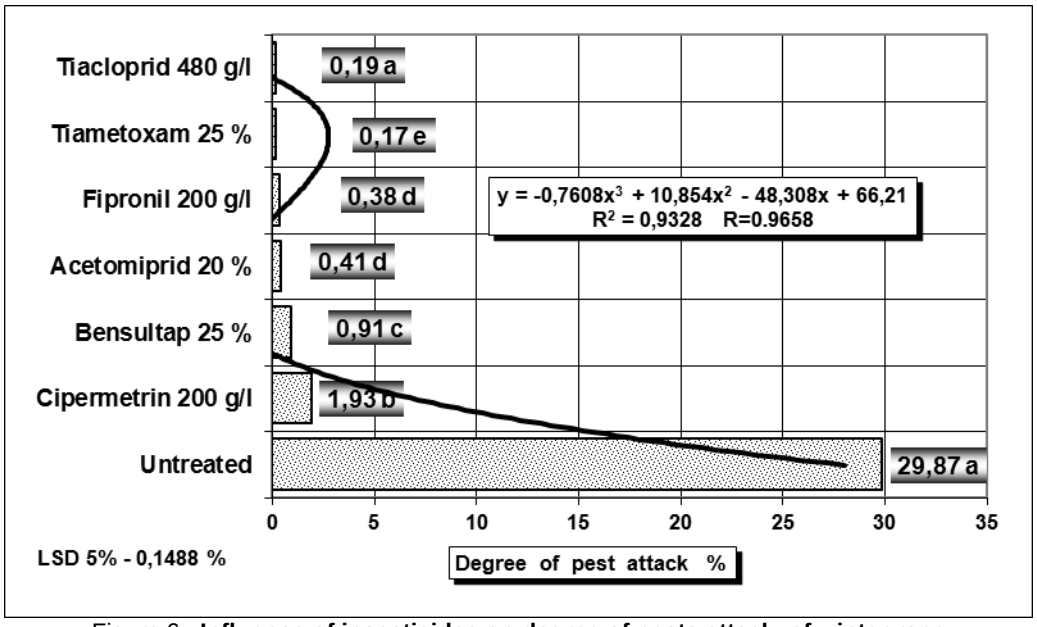

Figure 6. **Influence of insecticides on degree of pests attack of winter rape**

In *figure 6* shows that by applying the different protection substances is achieved a significant decrease (R = 0.9658 ***) of this indicator by 55.5%.

Tiametoxam 25% and tiacloprid 480 g / l has the top level of significance with the lowest values of the degree of attack from 0.17 to 0.19% compared with untreated variant degree of attack reaches 29.89%.

Follow fipronil 200 g / l and acetomiprid 20% values of this indicator of damage in at 0.38% and 0.41%. Bensultap 25% is located on the third level of significance with a specific degree rape pests also attacked by aircraft of 0.91%.

Efficacy insecticides applied to specific pest winter rape *(fig.7)* reveals that this leads to in the proportion of 88.9% against.

Under these conditions Thiametoxam 25%, thiacloprid 480 g /, made the best pest population control 94.1% and 83.9% being on the first level of significance. Follow Fipronil 200 g / l Acetomiprid 20% efficiency of 91.0% and 90.5% which places the protection substances on the second stage of significance.

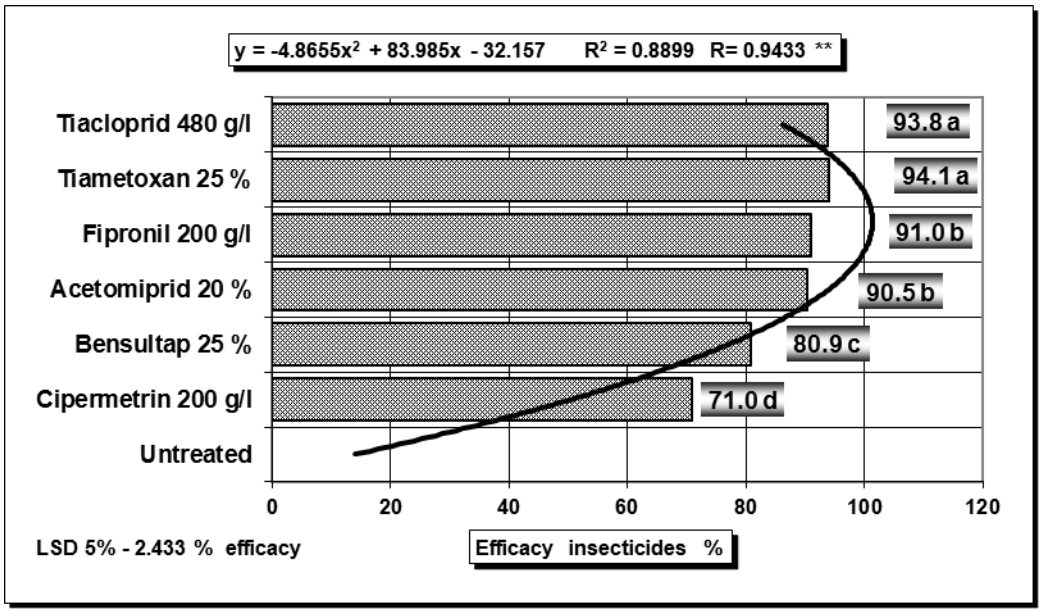

Figure 7. **Efficacy insecticides on the pests of winter rape**

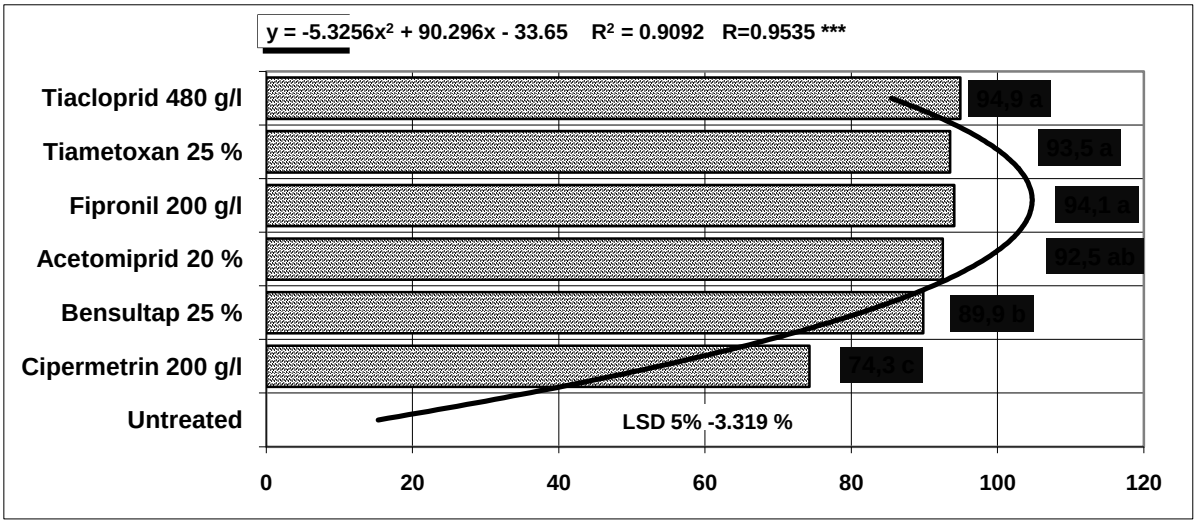

Figure 8. **Efficacy insecticides on *Athalia rosae***

There is a specific harmful species of winter rape applying various protection substances based on biology, their mode of attack, the vegetation period in which they appear damaging, the virulence of the attack and not least by their sensitivity to substances combating, their mode of action. Thus the application of substances to combat *Athalia rosae* cause significant efficacy (R = 0.9535 ***) of them 90.2%. *(fig. 8)*

Insecticides that caused the greatest efficacy of 92.5 % to 94.9% in control *Athalia rosae* are thiacloprid 480 g / l, tiametoxam 25%, fipronil 200 g / l and acetomiprid 20% which places these protection substances first level of significance. Follow bensultap 25% with an efficiency of 89.9%, instead applying cipermetrin 200 g / l results effective in combating this pest of only 74.3%.

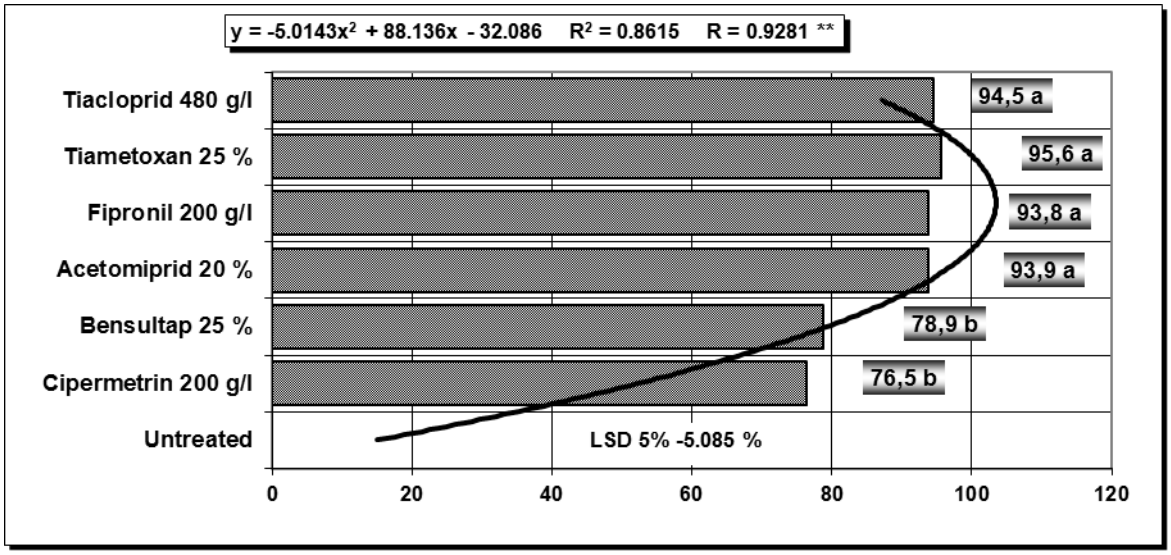

Figure 9. **Efficacy insecticides on *Meligethes aeneus***

Another pest, *Meligethes aeneus*, with widespread in this large area of winter rape growing (28.4%) is contained in different proportions by protection substances used for this purpose *(fig 9).*

The first level of efficacy of insecticides applied to control this pest lies thiacloprid 480 g / l tiametoxam 25%, fipronil 200 g /l and acetomiprid 20% with a combating between 93.9 to 94.5%.

Next on the second level cipermetrin 200 g / l, and bensultap 25% with an efficacy in combating *Meligethes aeneus* of 78.9% and 76,5%.

CONCLUSIONS

Winter rape is one of the crops most affected by populations of pests in major growing areas (5096 individuals / m^2).

The protection to substances protection in specific pests winter rape in fall tiametoxam 25% and tiacloprid 480 g / l with an efficiency of 94.1% and 93.1%.

Not neglecting any fipronil 200 g / l and acetomiprid 20%efficacy of 91.0% and 90.5%.

Assortment of protection substances selected pest rape is specific to each of them, *(Athalia rosae, , Meligethes aeneus)* depending on their biology, the mode of attack, its virulence, climatic conditions during their biological cycle.

REFERENCES

POPOV, C., 2006 b - *Secvente tehnologice recomandate pentru prevenirea si combaterea bolilor si daunatorilor, la infiintarea culturilor de porumb, floarea-soarelui, rapita, in, lucerna, soia, fasole si mazare de câmp, in primavara 2006*. Probl. prot. pl., XXXIV (1-2):

POPOV, C., BARBULESCU, A., 2007 – *50 de ani de activitate stiintifica în domeniul protectiei culturilor de câmp, împotriva bolilor si daunatorilor*. An. I.N.C.D.A. Fundulea, volum jubiliar, LXXV:

RISNOVEANU, LUXITA, si colab, 2004 - *Structura populatiei de insecte daunatoare în culturile de rapita* Rev. Probleme de Agrofitotohnie Teoretică şi Aplicată. Vol. XXVII

RISNOVEANU, LUXITA 2010 – *Influenta unor factori fitotehnici asupra populatiei de daunatori la rapita de toamna in zona Baraganului de Nord-Est* . Teză de doctorat USAMV Bucureşti.