The Intensity of Pest (*Callosobruchusspp*) Attack on Ten Seed Breeding Results of Soybeans Varieties (Case Study BPP Majalengka)

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ABSTRACT

This study aims to determine the intensity of pests (*Callosobruchuschinensis*) on 10 varieties of soybeans. One of the parameter of this study is to analyze symptoms of damage on soybean seed. Soybean varieties were tested consisting of ten varieties of soybean breeding results inBPP Majalengka. The experiment was conducted at the Laboratory of Biology, Faculty of Agriculture, University of Islam Nusantara, Bandung West Java. The method used in this study was the experimental method completely randomized design (CRD) with ten treatments and three replications. Such treatment are A (Argomulyo variety), B (Rajabasa variety), C(Wilis variety), D (Sinabung variety), E (Detam variety), F (Anjasmoro variety), G (Grobogan variety), H (Bromo variety) , I (M3 variety), J (Mitani variety). The results showed that Argomulyo has highest seed damage due to pests *Callosobruchuschinensis*

Keywords: *Callosobruchuschinensis*, soybean varieties, the intensity of pest attacks

INTRODUCTION

Soybean is a source of food that contains 40% protein ,low cholesterol. It has highly nutrition facts.The increase in soybean cultivation, farmers face many problems and one of them is a pest that can degrade the quality and quantity of crops. Postharvest pest is one of the limiting factors that play an important role in increasing production. Crops, especially grains stored at any time can be attacked by various pests that can harm the warehouse.

Soybean has shorter dormancy period so that after the process is complete, soybean can be planted directly. Nevertheless, the seed must have a moisture content ranging from 12-13% (Guriqbal Singh, 2010). Provision of soybean seed quality for farmers is still a problem that needs to be solved .If we have 1 ha land we need about 45-50 kg soybeans seed with 90 % viability .Succeed in cultivation of soybeans it depends on how good the seed is . Soybean seed can planted directly, so then we can see if the seed has low ability growth , or number of population per unit area will be reduce. Therefore, in order to give a satisfactory result, soybean varieties should be selected, able to adapt to field conditions, and meet the standards of good quality of seed. Things that need to be considered in the selection of crop varieties, namely: age, size and color of seeds, as well as the degree of adaptation to a high growth environment.

Post-harvest pests *Callosobruchusspp* which is *Bruchidae* Class often cause damage to soybean either be consumed or to be seed.The pest is a major pest and are always attacked in warehouse storage (Talekar, 1990). This warehouse pests can lower the quantity and quality of the soybean seed.

Using soybean varieties that are resistant to beetle*Callosobruchusspp* is relatively cheap, stable, does not cause environmental pollution, besides controlling pests by using resistant varieties can be combined with various other control components such as pesticides, and natural enemies. Therefore produce soybean varieties that have resistance to pests is very important (Sharma HC, Ortiz R, 2002).

MATERIALS AND METHODS

Research using experimental methods with completely randomized design. Treatment consisted of 10 varieties of soybean seeds and repeated 3 times. Treatment are:

- Treatment A: Soybean varieties Argomulyo.
- Treatment B: Soybean varieties Rajabasa.
- Treatment C: Soybean varieties Wilis.
- Treatment D: Soybean varieties Sinabung.
- Treatment E: Soybean varieties Detam.
- Treatment F: Soybean varieties Anjasmoro.
- Treatment G: Soybean varieties Grobogan.
- Treatment H: Soybean varieties Bromo.
- Treatment I: Soybean varieties M3.
- Treatment A: Soybean varieties Mitani.

The 10 varieties of soybean seeds are stored in a container by using the method of choice and non-choice, then 10 tails imago pest infested warehouse *Callosobruchus spp*. which has been ready to mate and lay their eggs ready. Observation parameters are done by calculating the soybean seed damaged by seed beetle attack within seven days of observation for 12 weeks. This is done to determine soybean varieties which are experiencing high levels of seed damage.

The calculation of the intensity of pest attacks carried out by using the formula:

$$I = \frac{n}{N} \times 100\%$$

Specification:
I = Intensity of Attacks
n = Number of seed pests
N = number of seeds in each treatment

RESULTS AND DISCUSSION

The observation and statistical analysis of the average number of seeds that produced damage by seed beetles can be seen in Table 1.

Table 1. Varieties Average Damage Soybean seeds were tested in a week

Treatment (Variety)	Period (Week)											
	1	2	3	4	5	6	7	8	9	10	11	12
A (Argomulyo Variety)	17a	19a	16a	9b	6c	4d	9b	25a	29a	19a	14a	11a
B (Rajabasa Variety)	8b	6c	5d	6c	3d	5d	6c	8b	9b	4d	4c	2d
C (Wilis Variety)	7c	9b	9b	6c	6c	5d	6c	5c	6c	8b	3d	4c
D (Sinabung Variety)	4d	6c	8b	6c	7b	8b	5d	5c	6c	5d	2d	1d
E (Detam Variety)	8b	6c	6c	6c	4d	7b	5d	4d	3d	6c	4c	3c
F (Anjasmoro Variety)	13a	9b	11b	13a	15a	19a	8b	11a	11a	12a	11a	8a
G (Grobogan Variety)	14a	12b	14a	14a	14a	15a	14a	12a	14a	17a	10b	8a
H (Bromo Variety)	19a	18a	14a	12a	13a	9b	13a	12a	10a	6c	10b	8a
I (M3 Variety)	7c	7c	5d	5d	7b	7b	7b	5c	4d	3d	4c	6b
J (Mitani Variety)	4d	5d	4d	6c	3d	6c	6c	5c	3d	2d	3d	1d

Description:
Different letters indicate differences in treatment outcomes based Scott-Knott test at level α = 0.05 error

Table 1.indicatedintensity warehouse pests *Callosobruchus spp*. in the first week of observation, it can be interpreted that the highest intensity of the attacks occurred in Argomulyo varieties, Bromo, Grobogan and Anjasmoro. In observation of the second week and third week of observation, showed the highest intensity of the attacks occurred in Anjasmoro varieties and Bromo, while the observation week 4, week 5, week 6 and week 7 the highest intensity of attacks occurs in varieties Anjasmoro and Grobogan. In the observation week 8 to 12 weeks of observation, the intensity of warehouse pests *Callosobruchusspp*. occurs in Argomulyo varieties and not significantly different from the intensity of the attacks on varieties ofAnjasmoro, Grobogan and Bromo. It can be interpreted that, the intensity of the attacks on four varieties are the highest compared to other soybean varieties.

The intensity of the attacks can occur for several reasons, such as the length of time,temperature, and humidity. In principle, the damage of stored food commodities can occur due to three main factors, namely, the material stored, warehouse storage areas, and warehouse environment. Increased pest populations in warehouse without any control will lead to resistance pests in the test material are lowered. Insect infestations in some period can cause damage in the form of

physical damage that occurs as a result of contamination with dirt . Warehouse pests are eating and damaging physical structure of soybean seed. Average damage to soybean seed tested 10 varieties can be seen in Table 2.

Table 2. Average amount of damage to soybean seed

Treatment (Variety)	Averageof Soybean Seed Damage
A (Argomulyo Variety)	59,33 a
B (RajabasaVariety)	22,00 c
C (WilisVariety)	24,67 c
D (SinabungVariety)	21,00 c
E (DetamVariety)	20,67 c
F (AnjasmoroVariety)	47,00 b
G (GroboganVariety)	52,67 a
H (BromoVariety)	48,00 b
I (M3Variety)	22,33 c
J (MitaniVariety)	14,00 d

Description:
Different letters indicate differences in treatment outcomes based Scott-Knott test at level α = 0.05 error

As seen on Table 2, the intensity of warehouse pests *Callosobruchus spp.* highest in Argomulyo and Grobogan variety of soybean seed, and the lowest intensity of the attacks occurred in Mitani variety. The intensity of the attack can occur due to the morphological properties of soy beans, such as seed harder, can also be caused by biochemical characters contained in soybean seed varieties that can attract pests such warehouse to come and take the contents of the soybean seed.

CONCLUSIONS AND RECOMMENDATIONS

The highest intensity of pest attack due to warehouse *Callosobruchus spp.*, occurs in Argomulyo and Grobogan variety.

Research should be continued to test morphological characters and character biochemistry of plants, in order to know why soybean varieties and varieties GroboganArgomulyo highest intensity of their attacks compared to other soybean varieties tested.

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