SUMMARY

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Red pepper (*Capsicum annuum* L.) is one of the important vegetable that having a high economic value. Cropping area of pepper is most widely than other vegetables, but it is not followed by high productivity. According to the BCS (2012), in 2011 harvest area of pepper is 239.770 ha with a production of 1.483.079 tonnes and productivity of 6.19 tons.ha^{-1}. Whereas, according to Duriat *et al*., (1996), potention of productivity of red pepper can reach 12-20 ton.ha^{-1}. Low productivity is caused by many factors such as plant varieties that having low yield or suspectible to pests and disease attack, lack of good quality seeds of pepper and also decreasing of the fertility of soil. It is need to increasing productivity of pepper to fulfill the consumption need through plant breeding program. The variety assembly is began with collected germ plasm from local and introduction varieties. The existancy of variation in local and introduction varieties population is a basic to make an individual selection and purification. Each individual as a results of purification was characterized to know about morphology, agronomic and resistancy to pests and disease character information, especially the experiment was conducted on land that have planted with pepper repeatedly.

The purpose of this research is to know the performance of morphology, agronomic and resistance of ten red pepper genotypes to pests and diseases on invested pests and pathogens naturally land. The hypothesis of this research is there is diversity on the appearance of morphology, agronomic, and resistance of ten red pepper genotypes to pests and diseases on invested pests and pathogens naturally land.

This research conducted during March - August 2012 at Dadaprejo village, Junrejo district, Batu city. Equipments that used are tweezers, tray, hoes, ruler, sprayer, analytic scales, digital camera and stationary. Materials that used are ten genotypes of red pepper as a result of purification of local and introduction variety, black silver mulching plastic, dolomite, cow manure, Nitrogen Phosphor Potashium Mutiara fertilizer (16-16-16), Gandasil D fertilizer, bag harvest, and pesticides. Research method using randomize block design with genotype as a treatment with three replication so it obtained 30 plot. Total plants each genotype are 48 plants. The cultivation methods consist of land preparation, germinating, planting, fertilizing, plant maintenance and harvesting. The observation was conducted to know the morphology and agronomic characters. Morphology characters consist of plant growth habit, stem color, nodal anthocyanin, leaf color, leaf shape, calyx margin, fruit shape, fruit shape at peduncle attachment, fruit shape at blossom end, fruit color in immature stage, fruit color in mature stage, fruit surface, and seed color. Agronomic characters consist of flowering age, harvesting age, plant height, dikotomus height, stem diameter, wide canopy, leaf lenght, leaf widht, fruit lenght, fruit diameter, thick of fruit, number of good fruit

per plant, number of bad fruit per plant, number of total fruit per plant, weight of good fruit per plant, weight of bad fruit per plant, weight of total fruit per plant, and weight per fruit. Quantitative data analysis using ANOVA was not enable because many plants are dying so that the data were analyzed in each genotype descriptively.

The research result show that the variation of morphology characters is still found in genotype CB 051, CB 053, CB 113, CB 116 and CB 118. The variation was found in stem color, nodal anthocyanin, calyx margin, and fruit surface character. CB 053 have high phenotype variability coefficient value on thick of fruit, number of good fruit, weight of good fruit, number of bad fruit, weight of bad fruit, number of total fruit per plant, and weight of total fruit per plant character. CB 051 have high phenotype variability coefficient value on number of bad fruit and weight of bad fruit character. Individual CB 053.23, CB 053.24, CB 053.33 resistant to aphid, CMV, fusarium wilt; CB 055.32 resitant to mite and CMV; CB 056.21, CB 056.31 susceptible to CMV and fusarium wilt; CB 113.17, CB 113.18 resistant to mite and damping-off. The potential individual are having agronomic superiotity on number of total fruit per plant and weight of total fruit per plant higher than other individual on each genotype.