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PESTICIDE RESIDUE ANALYSIS BASED ON QUALITY AND VEGETABLES IN SECURITY VILLAGE DISTRICT PATTAPANG TINGGIMONCONG GOWA DISTRICT Zaenab and Darwis Durahim The Department of Environmental Health Ministry of Health Polytechnic Makassar ABSTRACT Pesticides have been used intensively to support government programs meet the needs of growing food. Farmers use pesticides "blanket Cover System" that led to the residue. The existence and effect of pesticides can pose a hazard to human health.

This study aims to determine pesticide residues for the quality and safety of the vegetables in the Village District of Tinggimoncong Pattapang Gowa. This type of research is an observational research laboratory with a descriptive approach . The sample in this study is that the vegetables are grown in the vegetable tomatoes, cabbage, and lettuce, which are taken purposively.

They examined by the method of Gas Chromatography and Liquid Chromatography in the laboratory BPMPT Pasar Minggu, South Jakarta. The results showed no detectable residues of insecticides tomatoes, cabbage contained residue, 0.251 mg/kg prior to washing, and after washing is not detected, white mustard residue contained 0.233 mg/kg after washing 0.118 mg/kg, still under pesticide MRL is 5 mg/kg according to ISO 7313 2008 residue limit In Agricultural Products.

Quality and safety of vegetables in the Village Pattapang still eligible health and safe for consumption by thepublic. To be produced vegetables safe to eat healthier and farmers should pay attention to the use of pesticides, control and monitoring efforts petisida residues in vegetables as well as increased intensive counseling to farmers and consumers of vegetables. KEYWORD : Pesticide, quality and security vegetable.

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KEYWORD : Pesticide, quality and security vegetable. 1 INTRODUCTION 1.1 Background The use of pesticides in agriculture today plays an important role . Most are still using pesticides because of its ability to eradicate pests very effective. In Indonesia, the pesticide has been used intensively to support the government's program to meet the growing food needs.

Pesticides are sprayed on plants will certainly leave a residue. Pesticide residues found in all parts of the plant such as stems, leaves, fruits and roots. Special to the fruit, the residue found on the surface of the skin and flesh of the fruit. Although it has been washed or cooked pesticide residues are still present in foodstuffs .

Class of organophosphate pesticide residues in various types of vegetables such as onions from 0.565 to 1.167 ppm, 0.125 to 4.333 ppm potatoes, red peppers 0.024 to 1.713 ppm (Sumirat, 2003). In Lembang and Canning, pesticide residues on tomatoes, cabbage and carrots contain; prefenofos 6.11 mg/kg, detalmetrin 7.73 mg/kg, 2.18 mg chlorpyrifos/kg, telubenzuron 2.89 mg/kg, permethrin 1.80 mg/kg. Tomatoes are not washed containing prefenofos average 0.096 mg/kg, while tomatoes are washed still contains 0,059 mg/kg (Sumirat, 2003).

Indirectly entry of pesticide residues in foodstuffs as a result of human carelessness causing food chain effect, which is known as the two kinds of processes, namely bioaccumulation of chemicals is taking the environment by living organisms or accumulation of pesticide residues in the bodies of living in a small amount and a long time, and biomagnification is the inclusion of environmental chemicals through the food chain and ultimately the level of chemical concentration in organisms is very high or pesticide residue buildup caused by the consumption of lower living bodies to bodies of living higher in the chain food (Pandit, 2006).

Various studies prove the experts, in the use of pesticide spraying vegetables found various types of residues such as aldrin, diazinon, dieldrin, finitrothion, fentoat and khlorpyrifos. Insecticides are used by vegetable farmers in Pattapang is carbamate insecticide class is its trademark, the active ingredient Permethrin Pounce, Fastac and BESTOX with Alfa sipermetrin active ingredient, the active ingredient sipermetrin Cyrux,

Bajai and maneuver with an active ingredient that is effective to control Dimehipo crop pests such as caterpillars, fruit flies, and ticks-fleas. Intensive use of pesticides in the field led to pesticide residues in vegetables.

Although the levels of residues in fruits and vegetables is not high, but not necessarily need to be aware. For though that goes into our body in low quantities, but if it continues in turn can cause unwanted effects. Therefore, the authors are interested in research on insecticide residues for the quality and safety of the vegetables in the Village District of Tinggimoncong Pattapang Gowa. 1.2 Benefits Research 2. Application of Environmental Health Sciences field 3.

Inputs governments to adopt policies to address the problem of waste / waste as an alternative fuel in the energy saving efforts. 4. For information and reference for further research. 2 METHODS A. Type and Design Research This study is a type of research that is deskriprif laboraratorik observation, which is intended to determine pesticide residues in vegetables in the Village District of Tinggimoncong Pattapang Gowa. B.

Time and Location Research Research carried out for 4 months, sampling in this study in the Village District of Tinggimoncong Pattapang Gowa. Examination of the quality of vegetables (residues pestidida) was conducted in the laboratory Product Quality Testing Center for Food Crops (BPMPT) Pasar Minggu, South Jakarta. C. Research Variables 1. The independent variable is a variable that can affect the dependent variable, ie the levels of insecticides in vegetables.

2. The dependent variable is the variable that is thought to be influenced by the research variables, namely the quality and safety of vegetables. D. Operational definitions 1. The use of pesticides is spraying chemicals that aims to eradicate, kill, poison and control insects. 2. Pesticide residues are the remains of pesticides found in vegetables. 3. Quality and safety of vegetables are good quality and safe vegetables for consumption. E.

Objective criteria 3 1. Qualify: If the pesticide residue is not greater than ISO 7313 in 2008. a. Tomato dimehipo content determination limit = 0.010 mg/kg. b. Cabbage contains sipermetrin determination limit = 0,031 mg/kg. c. Chicory contains Permethrin = 5 mg/kg. d. Indonesi accordance with National Standards (SNI) 7313 2008 Limit Pesticide Residues In Farming Products. 2. Not eligible: If not in accordance with the above. F.

Data analysis Laboratory test results were analyzed with descriptive and analytical approach to be processed and presented in tabular form later than the applicable

standard (SNI No. 7313 of 2008). RESULTS AND DISCUSSION 1. Results Based on the results of research conducted in the Village District of Tinggimoncong Pattapang Gowa is as follows : a.

Pesticides are used Types of pesticides used vegetable growers in the Village District of Tinggimoncong Pattapang for a variety of different types of vegetables, but the types of pesticides used in the research can be seen in Table 4.1. Table 4.1 Pesticides Used Vegetable Growers In the Village Pattapang Subdistrict Tinggimoncong Gowa No Kind of Vegetables pesticide Active Ingredients Explanation 1 2 3 Tomato Cabbage Chicory Bajai Pounce Cyrux 50 EC Cyrux Pounce 20 EC Dimehipo Permetrin Sipermetrin Sipermetrin Permetrin Carbamate insecticide classes Source: Primary Data 1. Results Based on the results of research conducted in the Village District of Tinggimoncong Pattapang Gowa is as follows : a.

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Pesticide Residue Examination Results In Vegetables before washing in the Village District of Tingimoncong Pattapang Gowa No Kind of Vegetables Pesticide Residue Examination Results (mg/Kg) Explanation 1 2 3 Tomato Cabbage Chicory Not Detected 0,251 0,3183 For cabbage, the determination limit= 0.031 mg/kg. For Permethrin Chicory BMR = 5 mg/kg in accordance with ISO 7317 in 2008 Sources: Primary data were processed The results of the examination of pesticide residues on vegetables before washing process is as follows: dimehipo residue levels detected in tomato, cabbage residue levels sipermetrin at 0.251 mg/kg and sipermetrin residue levels detected in chicory at 0,233 mg/kg. c. Pesticide Residue Levels After Washing Table 4.3

Examination Results In Vegetables Pesticide residues after leaching in the Village District of Tingimoncong Pattapang Gowa No Kind of Vegetables Pesticide Residue Examination Results (mg/Kg) Explanation 1 Tomato Not Detected For cabbage, the determination limit = 2 Cabbage Not Detected 0.031mg/kg. For Permethrin Chicory 3 Chicory 0,118

BMR= 5 mg/kg in accordance with ISO 7317 in 2008 Sources: Primary data were processed.

The results of the examination of pesticide residues in vegetables after washing process is as follows: dimehipo residue levels in tomato and cabbage sipermetrin on undetected, and sipermetrin residue levels detected in chicory at 0,018 mg/kg. 2. Discussion a. Pesticides used in the Village District of Tinggimoncong Patappang From the results of field observations conducted on vegetables grown in vegetable gardens Pattapang Tinggimoncong District of Gowa in the eradication of the pest using carbamate pesticide groups such as cyrux, Bajai, munver, victory mix, ambus, pastac, prevaton, Pounce, which is the active ingredient permethrin, sipermetrin, and alpha sipermetrin, and dimehipo, which is used to control leaf caterpillar, caterpillar soil, ticks and mites, birds are very dangerous for the quality of the vegetables.

Tomato, Cabbage, white mustard, which is a seasonal crop cropping period ranged from 2 to 5 months. These vegetables are very popular with a wide range of plant pests include cabbage plants are always threatened by leaf borer caterpillars Plutella xylstella and Crocidolomia, tomato plants by leaf fruit borer Heliothis armigera.

Application of pesticides in vegetables is done by vegetable growers in Pattapang started in plants and then performed once a week until the vegetables are harvested 1-2 weeks before the spraying was discontinued. Vegetable growers in Pattapang plants generally preventive spraying is the application of insecticides before pests in order to protect plants from pests possibilities how this is done on a fixed schedule, for example once a week, as well as a curative is done after the pest attack with the intent to stop attacks pest or decrease the pest population . b.

Pesticide residues on vegetables before washing From the results of the laboratory examinations Product Quality Testing Center for Food Crops (BPMPT) Pasar Minggu, South Jakarta Kromatrografi using Liquid and Gas Chromatography short analysis time, showed that pesticide residues in tomatoes with active ingredients dimehipo before washing is not detected, although the results of observations field proved that tomatoes are the most widely use pesticides, it is due to the slippery surface so that the tomato residue is not stored. In general, farmers have tomatoes reliance on pesticides in pest control.

Application of pesticides by farmers improve pesticide residues on tomato plants that could harm consumers. Pesticide residues can enter into plant tissue and attached or left behind on the surface of the fruit and leaves of tomato plants. Results of research conducted at Lembang by Wibowo showed pesticide residues with the active ingredient

profenofos on IPM system 0.1586 mg/kg, being non-IPM 0.3338 mg/kg, while for mankozeb on IPM 0.0305 mg/kg, being non-IPM 0.0643 mg/kg. Results of the same study conducted by A.M.

Farid in the village Cakke Enrekang petroban pesticide residue obtained with the active ingredient in tomato khlorpirifos 0.0153 mg/kg. The maximum limit permitted khlorpirifos in tomatoes is 0.5 mg/kg, mean proficiency level tomatoes safe for public consumption because the active ingredient in tomato khlorpirifos not exceed the maximum residue limits for pesticides of agricultural products based on the Decree of the Minister of Health and Minister of Agriculture in 1996.

The presence of pesticide residues remaining in the agricultural output depends on the dose and duration of application intervals. Where the application is first performed at the age of 20 days after the tomatoes are planted and then intervals of 1 month of the second application and subsequent spraying is done when no visible pests and diseases that are characterized by physical changes tomatoes, so the tomatoes are not contaminated pesticide residues.

Another case in vegetable cabbage before washing residue levels of pesticides with active ingredients sipermetrin 0.251 mg/kg, and for chicory levels of pesticide residues in the active ingredient sipermetrin 0,233 mg/kg. Pesticide residues in vegetable products is mainly caused by excessive use of pesticides during the production process.

Perception of farmers about pest attacks as a major cause of crop failure, has encouraged excessive use of pesticides. Contained in crop residues can be derived directly from pesticides applied to crops or applied through the soil and water. Apart from that residue can come from contamination through wind gusts, rain-borne dust from spraying other areas and also cultivation on soil containing persistent pesticides. The level of pesticide residues in plants is determined by the type of pesticide, dosage and frequency of application, as well as the time of application.

Effect of pesticide residue levels depending on the physical properties and chemical. c. Pesticide residues on vegetables after washing. To reduce pesticide residues in vegetable way to do is to do the washing process using running water, in order to reduce 20% -70% of pesticide residue that sticks to the vegetables and wash by using a special food-grade soap, such as Liquid cleanser pigeon, mama Lemon, morning Fresh and sleek, this method can reduce the residue that sticks, especially if the skin is still there wax (paraffin) oil absorbing particles or pesticides.

After being washed with soap, vegetables and fruits should be rinsed well so there is no

residual soap left behind. The same treatment is carried out on samples of vegetables were examined in the laboratory BPMPT Pasar Minggu, South Jakarta, types of vegetables cabbage and chicory washing process is done by using flowing water, and use a special soap, but the results still indicate the presence of pesticide residues in materials sipermetrin active on vegetable chicory 0.118 mg/kg, while the vegetable cabbage had no detectable pesticide residues.

More detail can be seen in the picture below: Figure 1 Sources: Primary data were processed Several studies on pesticide residues in vegetables found organophosphorus insecticide residues group containing profenofos and chlorpyrifos at 0.565 to 1.167 ppm red onions, red peppers and the potatoes from 0.024 to 1.713 ppm 0.125 to 4.333 ppm.

Profenofos and chlorpyrifos have moderate criteria, profenofos have bromine and chlorine groups while chlorpyrifos have 3 groups who feared chlorine would have the same danger with organochlorines. Other studies on pesticide residues in commodities red chili and red chili curly coming from the market in the city of Cianjur, Semarang and Surabaya.

Tests carried out using a HPLC (High Performance Liquid Chromatography). From the results of the organophosphate class of pesticides detected are detected paration, chlorpyrifos, dimethoat, profenofos, protiofos. Indonesian Crop Protection Industry Association (AIPTI) suggested than 1,000 farmers, no more than 10 farmers who have applied pesticide use patterns correctly.

The disadvantage of this bad behavior is not only an impact on environmental damage, health, and the incidence of pest resistant crops. The use of pesticides on crops most frequently peppers found to contain residue. The content of the residue is propenofos more than 5 milligrams which is the limit of crop residues on chilli.

This is because the farmers often take practical steps, they immediately spraying with pesticides without regard to economic pest threshold value, the recommended dose and type of pesticide. Organokhlor pesticides are generally non-volatile, insoluble in water except for lindane, and readily soluble in organic solvents. In this pesticide group besifat ecosystem persisiten because it is lipophilic.

This is not a systemic pesticide, nevertheless it can be absorbed into plant tissue in low numbers. While the distribution of pesticides in crop organokhlor greatly influenced by the type of plant and tissue structure organokhlor from the ground, but on certain varieties organokhlor residues present in the outer layer of the tuber, while the other varieties are also residues in other plant tissues .

In organokhlor insecticides in plant tissues undergo biotransformation into metabolites that are more soluble in water. The results of these metabolites may be more toxic as aldrin dieldrin which undergoes oxidation becomes more persisiten and toxic. Insecticide organokhlor group has been banned.

Class of organophosphate pesticides more soluble in water when compared with insecticide organokhlor, more easily hydrolyzed to compounds that are not toxic and soluble in water. In organophosphate insecticides in plant tissues metabolized, and the metabolites are likely in store. Activation of organophosphates in the persistence of the plant does not pose a problem, but as a result, to obtain effective levels, frequency of spraying should be increased. There are several types of systemic organophosphorus compound and become more active and toxic to insects.

Carbamate class of insecticides from a neurotoxin that works by inhibiting choline esterase. In these obstacles carbamates is reversible (can be restored). Carbamate insecticide of relatively easily parsed classes of environment (not persistent), not accumulated by the fatty tissues of animals, in plants carbamate is not so stable and fast termetabilisasi by way of oxidized and conjugated into non-toxic compounds.

The active ingredients of carbamate groups in addition to having lower persistence, effective for the control of soil pests, and pest leaves. Time for pesticide applications with low persistency is a very decisive factor. The persistence of a low mean effective time of insecticide residues to be toxic to pests narrower, so it should be sprayed as close as possible to the most current pest activity. In this case the use of insecticides should pay attention to the pest's life cycle, namely insects.

By considering the life cycle of insects means determine the effectiveness of pest control. Progression through the stages of insects commonly called metamorphosis, which changes the shape of the egg, larva (caterpillar), pupa and adult insects. Noteworthy is the stage when the insect metamorphosis into the plant destroyer.

Greatest activity shaped larvae eat the caterpillar is to collect the energy that is required when pupate, so at this stage generally become pests on crops. It has been generally recognized that pesticides are harmful ingredients that can have negative effects on human health and environmental sustainability. However, pesticides can also provide benefits that pesticides are widely used in development in various sectors, including agriculture.

By considering the benefits and negative impacts, the pesticide must be managed as

well as possible so as to obtain great benefits with the negative impact that the smallest. Among the various negative impacts of pesticide use mentioned above, the problem of agricultural residues in more serious attention to the national and international interests. This is caused partly by the increasing consumer awareness of the negative effects of pesticide residues on agricultural products on human health.

Consumers will choose the safe consumption of agricultural products (pesticide-free) or that contain pesticide residues, the levels are still below the limit of tolerance; tighter requirements. Pesticide residue problems have become international requirements set by the Codex Alimentarrus Commission (CAC), which specifically address the issue of food safety.

CAC has set MRLs. of pesticides. The impact of overseas MRL setting is the number of agricultural exports are rejected because they contain pesticide residues exceed the specified limits. To minimize the negative impacts of pesticide use, in this case reduce pesticide residues in agricultural products, can be done in the field of control and post-harvest handling. Post-harvest handling can be done to reduce pesticide residues, among others : a. Washing This method can reduce some pesticide residue content.

The addition of detergent in the washing will increase the reduction in residue levels. b. Paring If pesticides are used is non sisitemik and network structure subjected to pesticides, residues inhibit translocation to other tissues, stripping very helpful in lowering the levels of pesticide residues business. c. Soaking in hot water The decrease in the content of the residue by means of blanching is quite large. d.

Concoction The content of pesticide residues in vegetables that have been cooked much lower than the raw material. The presence of residues contained in the vegetables consumed will lead to pesticide residues and pesticides enter the body will bind to the enzyme in the blood that the nerve that controls the enzyme acetylcholinesterase.

If the bound enzyme acetylcholinesterase, the enzyme is unable to perform its tasks in the body, especially to send commands to the muscles, so the muscles work continuously without orders or muscle movement can not be controlled and the nerve can be impaired and eventually seizures, paralysis, nausea, vomiting, poisoning, fainting and can cause death.

Low residue levels in vegetables, will not cause any obvious symptoms of chronic or acute poisoning, but it can cause subtle effects (Subtle effect) that further long-term effects that occur at low doses which many times. The effects can be subtle histological and pathological changes, carcinogenic, tumorigenic, mutagenic and teratogenic. 4

Conclusion and Suggestion 1.

Conclusion a. Types of pesticides used in Ex. Patappang district,. Tinggimoncong Kab. Gowa is cyrux, Bajai, munver, victory mix, ambus, pastac, prevaton, Pounce, which is the active ingredient permethrin, cypermethrin, and alpha sipermetrin, and dimehipo. b.

Levels of pesticide residues prior to the washing process in vegetables tomatoes with active ingredients dimehipo not detected, there is a residue cabbage sipermetrin 0.251 mg/kg and Chicory sipermetrhin residues contained 0,233 mg/kg. c. Levels of pesticide residues after leaching process in vegetables tomatoes and cabbage is not detected, chicory 0.118 mg/kg, still below the Maximum Residue Limits of Pesticides in accordance with ISO 7317 in 2008, so the quality of the vegetables still meet health and safety requirements for public consumption. 2. Suggestion a.

Further research needs to be done to determine the type of active ingredient remaining based on the type of pesticides used by farmers. b. Further research needs to be conducted to determine the remaining active ingredient based on the length of time of spraying before harvest. REFERENCE Atmawidjaja Sudana, et al. (2004).

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