



## The Prevention of Pesticide Risk Toxicity among Farmers on Food Estate Humbang Hasundutan

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**Abstract.** This PPM activity is one of the community empowerment activities to increase the capacity of farmers, especially increasing safety and health behavior while using pesticides. The prevention program carried out in the form of a community movement to reduce the risk of pesticide toxicity is called GEMPAR (Gerakan Masyarakat Petani Atasi Racun). GEMPAR consists of eight action activities as a farmer movement in reducing the risk of toxicity due to the use of pesticides. GEMPAR in the PPM activity was carried out as a prevention effort which was promoted through FGD activities, demonstrations, and brainstorming. Farmers in the Food Estate are classified as farmers who work with the company so that the pattern of pesticide use is included in the regular category in determining the dose and type of pesticide used. However, the application of pesticides is still classified as very dangerous where direct contact with pesticides is very high. GEMPAR as a health solution responded very well and increased awareness of Food Estate farmers to improve pesticide use patterns. Each farmer acts as an agent of change who can comprehensively expand GEMPAR information through the promotion of the message of the eight GEMPAR actions which are divided into primary, secondary, and tertiary prevention actions.

**Keyword:** Farmer, GEMPAR, Pesticide, Safety, Health

**Abstrak.** Kegiatan PPM ini merupakan salah satu kegiatan pemberdayaan masyarakat untuk meningkatkan kapasitas petani khususnya meningkatkan perilaku keselamatan dan kesehatan kerja saat menggunakan pestisida. Program pencegahan yang dilakukan dalam bentuk gerakan masyarakat untuk mengurangi resiko keracunan pestisida disebut GEMPAR (Gerakan Masyarakat Petani Atasi Racun). GEMPAR terdiri dari delapan kegiatan aksi sebagai gerakan petani dalam mengurangi resiko keracunan akibat penggunaan pestisida. GEMPAR dalam kegiatan PPM dilaksanakan sebagai upaya pencegahan yang disosialisasikan melalui kegiatan FGD, demonstrasi, dan brainstorming. Petani di Food Estate tergolong petani yang bekerja sama dengan perusahaan sehingga pola penggunaan pestisida termasuk dalam kategori reguler dalam penentuan dosis dan jenis pestisida yang digunakan. Namun, aplikasi pestisida masih tergolong sangat berbahaya dimana kontak langsung dengan pestisida sangat tinggi. GEMPAR sebagai solusi kesehatan merespon dengan sangat baik dan meningkatkan kesadaran petani Food Estate untuk memperbaiki pola penggunaan pestisida. Setiap petani berperan sebagai agen perubahan yang dapat

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*memperluas informasi GEMPAR secara komprehensif melalui sosialisasi pesan delapan aksi GEMPAR yang terbagi menjadi aksi pencegahan primer, sekunder, dan tersier.*

**Kata Kunci:** *Petani, GEMPAR, Pestisida, Keselamatan, Kesehatan*

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## 1 Introduction

Food Estate Humbang Hasundutan is a government food barn area as the model for agricultural corporations specializing in horticulture to develop food security and farmer capacity [1]. The location of the Food Estate as a food barn is precisely located in Ria Ria Village, one of the thirteen villages in Pollung District, Humbang Hasundutan Regency [2].

This location has never been planted with horticultural crops before and it is to be a new job for farmers around this urban. Assistance or community empowerment in responding to changes towards horticultural farming must pay attention to occupational safety and health that are in line with the behavior of farmers in managing agriculture.

The pesticides use is generally has the highest frequency, especially in horticultural crops, because these plants are very susceptible to pests [3-4]. The phenomenon of pesticides that not according to procedures wouldn't be separated from the effects given, namely toxicity. Pesticide toxicity intentional or not is a serious problem in agricultural communities in poor and developing countries which increasing every year [5].

The farmers in Ria Ria Village, Pollung subdistrict, Humbang Hasundutan Regency are generally new to managing agriculture in the horticulture sector. The use of chemicals such as fertilizers and pesticides giving risk to the farmer's safety and health. It should be noted that horticultural crops are spoiled and susceptible to pests. Therefore, it is possible that the risk of pesticides using cannot be avoided as a work hazard with affects health due to exposure to physical and chemical hazards. Farmers have the potential to experience chronic poisoning due to continuous exposure to the chemicals used.

GEMPAR (Gerakan Masyarakat Petani Atasi Racun) is the solution that increases the role of farmers in supporting safe and healthy agricultural development that meets occupational safety and health standards. Through GEMPAR, farmers will always apply the principles of proper and correct pesticide use to trigger awareness to use safe pesticides. Increasing farmers' understanding directly through education can change farmers' behavior to be safer and healthier in pesticide use [6-9].

## 2 Material and Method

PPM activities for farmers in Food Estate were carried out by direct observation, brainstorming, and Focus Group Discussion (FGD) methods to farmers in one of the fields at Humbang Hasundutan Food Estate. In its activities, the PPM team will coordinate with the local Agricultural Field Extension Officer. The farming community in Food Estate is divided into several farmer groups and as representatives of the PPM team, they choose one farmer group according to the results of coordination with the PPL team before.

Observations of pesticides used by farmers in Food Estate including the patterns and daily habits of farmers while using pesticides. Farmers will also be educated using brainstorming to discuss patterns of pesticide use and the risk of danger if exposed or poisoning occurs. Activities will be focused on FGDs as well as on the diffusion of the GEMPAR program as a solution to prevent the risk of pesticide toxicity. The delivery of GEMPAR has been carried out through the concept of a field school with the Focus Group Discussion (FGD) method so that farmers could focus on understanding mistakes and correcting deficiencies that existed while using pesticides that had an impact on the incidence of pesticide toxicity.

Based on the educational process provided, the next stage is farmers will directly act as agents of change who can deliver the message of GEMPAR action comprehensively and reach all the farmers in the Food Estate. In this case, the PPM team also provided media equipment as a medium for promotion and publication of farmers to other fellow farmers in Food Estate Humbang Hasundutan.

## 3 Result and Discussion

The farmers at Food Estate Humbang Hasundutan are quite coordinated in applying pesticides. Based on observations, in practice, farmers have good communication with agricultural assistants. Farmer assistants are not only agricultural officers from the Agriculture Service, but farmers also have companions from colleagues, relatives, or community leaders and field owners who are considered experienced in plant management. In general, farmers are the daily workers on company contract fields. The pattern of cooperation requires farmers in Food Estate to have a good level of compliance with the rules and work agreements. Farmers will not spray if they do not follow the directions and recommendations of the companion. The Farmer's awareness of the dose of pesticide use is carried out by the direction of the companion. However, the application of pesticides itself can be categorized as very dangerous. In general, farmers do not use personal protection and are used to contact with pesticides. Farmers think that exposure to pesticides is not a dangerous thing because there is no significant effect when used it.



**Figure 1.** The dangerous of direct contact when mixing the pesticides

To increase the capacity of farmers, especially to protect farmers from hazards and risks while applying fertilizers and pesticides, it needs to obtain Information and Education Communication (IEC) with one of the health intervention programs, namely GEMPAR (Gerakan Masyarakat Petani Atasi Racun). GEMPAR is one of the innovations that is disseminated to the farming community as a partnership program with the community. This service activity was carried out in one of the farmer's fields, namely the field of Mr. Manombang Siregar, the leader of Maju Food Estate Farmers Group Maju. The PPM activity was attended by local farmers and accompanied by a Food Estate agriculture officer. The activity pattern is packaged by brainstorming and demonstrating important points from GEMPAR such as recognizing the dangers of pesticides by ignoring the message in pesticide packaging which was shown as an educational medium by the PPM team leader, including PPE in the form of a hat with a mask and fill in the GEMPAR logo that given the information to community for reducing the pesticide exposure.

The brainstorming and FGD carried out went quite well where the education from the eight of GEMPAR actions that were delivered was received with enthusiasm and responded well. This is indicated by the creation of constructive discussions between the PPM team and the food estate farming community. Based on the results of introductions to farmers regarding farming patterns carried out by farmers, farmers admitted that they were still very new to switching to horticultural crops so that in using pesticides, farmers generally waited for orders before mixing and spraying. From the results of the PPM team's observations, farmers comply with the type of pesticide use and dosage, but in its application in the field, farmers do not understand and have direct contact with pesticides where farmers leave their hands and clothes exposed to pesticides just like that and continue to finish spraying activities without knowing that farmers have been exposed to pesticides for a while. Farmers convey some of the weaknesses they have and it is a bad habit that is quite often found among farmers. However, the PPM team responded by opening up an ethnic mindset because GEMPAR is a solution that makes it easier for farmers to move into healthy

farmers while using pesticides. This education can be accepted by the community and opens up new ideas from farmers to think about how to follow up this action to surrounding farmers.



**Figure 2.** Socialization and education of pesticide risk prevention

The pattern of pesticide use on food estate farmers is neat and good in the application of doses and types of pesticides used. However, it is still necessary to improve the behavior of farmers when applying pesticides. There is still a habit of farmers who throw away the rest of the pesticide packaging carelessly around the field, not closing the pesticide packaging that has been opened which can trigger chemical evaporation, thereby increasing exposure to pesticide poisoning. Farmers' understanding of the safety and effects of the pesticides used is still quite weak as well as the personal hygiene of farmers. Farmers also usually burn grass waste and plastic or paper leftover from food in the fields.

Farmers admit that following the GEMPAR rules is actually easy but economically the availability of farmer facilities is very minimal in the fields. The habit of littering, the rest of the pesticide packaging in the fields is a really bad thing. However, if it is managed and collected, it will cause new problems which will become garbage that accumulates because there is no access to transport pesticide waste and even scavengers. This is because the access to the food estate field is quite steep, far from residential areas, so it is rarely visited by related parties. It shows the seriousness and concern of farmers in maintaining the cleanliness of the fields and improving and developing farmers and the agricultural system at the Food Estate Humbang Hasundutan.

GEMPAR is a form of community empowerment that forms the diffusion of innovations to increase and expand farmers' awareness of the importance of preventing toxicity due to pesticides use, creating healthy farming communities, using pesticides according to procedures, creating



independence, and strengthening farmer networks. Through GEMPAR, the community becomes healthy, marked by a decrease in the symptoms of toxicity and the creation of a harmonious ecology. Farmers also experience behavioral changes that are marked by the use of safe and healthy pesticides, established guidelines, and increasing understanding of the hazard of pesticides used by farmers. Through GEMPAR, farmers will always apply the principles of proper and correct use of pesticides to trigger awareness to use safe pesticides. GEMPAR will also show a willingness and habit of the farming community, increase partnership cooperation and not depend on capitalists in agriculture, support the health of farmers and improve the welfare of farming families in the Food Estate of Ria Ria Village, Pollung District, Humbang Hasundutan Regency.

#### 4 Conclusion

The pesticides use among farmers at Food Estate Humbang Hasundutan is still classified as dangerous. Farmers don't care and assume they are exposed to pesticides directly. The perceived effect is considered not too dangerous because it is temporary and disappears. GEMPAR as an intervention solution to prevent the risk of pesticide toxicity consists of eight actions that can lead farmers in the Food Estate to pay attention to their safety and health while applying pesticides. The eight GEMPAR actions are easy actions that can be applied to all farmers besides covering primary, secondary, and tertiary health prevention actions.

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