

Agriculture pollution in VietNam

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Introduction

Agricultural production plays an important role in Viet Nam's economic, with 70% population in rural and dominates 24% Gross Domestic Product (GSO, 2015). Before the innovation period, Government focused on food security, the pressure to increasing quantity requires using more inputs leads to agricultural pollution. With the trend of agricultural development, waste arising from cultivation, husbandry, aquaculture include residue of pesticide; packaging pesticides and animal feed and excrement, ... all tend to increase, threatening to the living environment. These factors are the main cause the agricultural pollution in the land, water, air environment. Consequences of pollution damaged natural resources, biological diversification and negative effects on human health. Besides, the effecting in the resource not only affect the present generation but also future generations.

Pollution caused by cultivation activities

In cultivation section, rice production and vegetables are the important components. There are many factors causes pollution, but pesticide and fertilizer are two important reasons because it is the method for quantity and yield increased significantly with the low cost. In the intensive area, overuse chemical leads to residual in the land which causes water and land pollution. Besides, using chemicals are not follow technique, safe quarantine time, the wrong type are the reasons make the pollution more seriously. With greater market liberalization, pesticides cannot clarify the sources, application of cheaper, more hazardous pesticides and less conformity to the guidelines without careening about environmental harmful. Serious hazard toxics residual in the environment will damage land, surface and ground water. In particular, according to many experts, the use of fertilizer and pesticide improperly in agricultural cultivation cannot achieve the effective production but creating the seriously affecting on the natural resources. Because of the chemical pesticides have toxic characteristics to all living animals; remains in a long time in the water and soil, it kills all the harmful and beneficial organisms in the soil environment.

Viet Nam used 15,000 - 25,000 tons pesticide per year, average pesticide used per hectare 0.4 - 0.5 kg (DARD, 2015). As a result, cultivation activities released 9,000 tons waste with

the highly toxic level to the environment. A number of Nitrogen compounds absorbed by the roots of plants are relatively small, the remaining amount will remain in the soil and osmotic into underground water and rivers. Moreover, the soil becomes highly compacted, not porous and in poorly ventilated properties, micro-organisms areas also lessened because the chemical destructs creatures.

The other pollutant sources besides unbalance using chemical- fertilizer and pesticides using are that without collecting packaging created the significant pressure for environment absorption. The consequences of burning straw from rice crop, plant body after harvesting season will emit CO₂, CO, NO_x, to the environment and bring the externality effect for health is a cause. Irrigation system for vegetable use the ground water is one of the main causes of reducing the ground-water level. The free access to this resource is a big problem leads to overuse and water source pollution.



Figure 1: Pollution sources in cultivation activities

Pollution caused by husbandry activities

Viet Nam is the top ten husbandry countries in the world following China, American, and Brazil, the main products are pig, duck, beef. With total 8.5 million livestock households, 18,000 farms (TCED, 2014), it dominated the highest proportion in agricultural pollution. Pollution caused by livestock increasing significantly is based on several problems such as growth faster create large waste, the treatment can not completely, management from open process very difficult, it hard to measure pollution quantity.

According to Ministry of Agricultural and Rural Development, more than 90 million tons livestock excrement was released every year, but there are only 40 % was treated, remaining waste will emit directly to rivers and canals which create the bad

smell, effect their health and neighborhood environment (An Nhien, 2017). Livestock waste affects the environment and human health in many aspects including the pollution of surface water, underground water, gas and soil conditions. This is the cause of many disease and digestion because in the waste contains many pathogenic microorganisms.

According to the final report of the Ministry of Agriculture and Rural Development, H₂S and NH₃ in animal waste are higher than allowed about 30-40 times (An Nhien, 2017).. The total number of microorganisms and fungal spores, animal wastewater contains Coliform, E. coli, COD ... are many times higher than permitted standards.

Status of livestock grazing on sloping land, upstream of water sources are quite popular, which has increased the soil erosion and depletion and great impact on efficiency breed. However, to ensure the environmental sanitation, Government pay attention to farm, while small producers - accounts for a large proportion are not interested. Small-scale production by households practice by habits to discharge waste into the canal leading to the condition to increased risk of disease for pets, people and greatly affect the sustainable development of the livestock industry. By estimation in 2020, the waste continues to keep increasing more than 1.212.000 tons/year (TCED, 2014)

The main causes of these problems are due to the farmers are low education, farmer's working by experiences which prevent them to access new information, mordern technology. Only about 8% of people joined vocational training, technical skills occupied 6.27% and not qualified is 87.16% ((TCED, 2014). Importantly, waste disposal, livestock and poultry destruction are treated incorrectly technique also affect the water, land and air quality in the environment.



Figure 2: Pollution sources in livestock activities

Pollution caused by aquaculture activities

Total aquaculture area covers 72% surface water with 1,046.4 million hectares in Viet Nam. Aquaculture is also an important factor of environmental pollution. Presurement of aquaculture from the discharge of organic substances, eutrophication and waste indiscriminately causes the environment to degrade, disease outbreaks and cause significant economic losses as well ecological environment.

According to the plan, the area of aquaculture targeted 790.000 hectares in 2020, an increase of 99.700 hectares compared to 2010, average growth rate about 9.900 ha per year (MARD, 2012). Increased area of aquaculture land leads to the increase of coastal and estuarine encroachment areas and land saline intrusion which affect the quality of land and habitat, salinity, coastal erosion. In addition, the amount of feed required for aquaculture per year would be about 4.4 million tons that would be discharged into the environment by at least 30% (1.32 million tons per year) without treatment. The considerable issues are that there are no condition standards of feed products. Overuse of fertilizer for pool and disease treatment are also the serious pollutant. Besides that, pollution water directly emits from the shrimp pool without treatment is the original for diseases, river pollution. The converting forest area into agricultural production and over aquaculture extraction damage biological and diversification species.



Figure 3: Agricultural pollution sources in aquaculture activities

Follow the same pattern in cultivation sector, ground water for aquaculture purposes lead to the low level this resource. Overuse ground water is the big problem for shrimp system which is not followed the resources law. By estimation, if there are two crops per year, 32,460 - 45,600 m³ will be extracted from the underground, appropriate

10% available water resources in Viet Nam. It creates the opportunities for salinity water and soil conditions. In the long term, exhausting water sources, salinity ground water.

Conclusion

Viet Nam faces the serious problem between the economics development target and also environment sustainable development. The Vietnamese government has made great strides in improving the policy and strengthening the promotion of sustainable environmental protection. The system of environmental management agencies from the central to local levels are enhanced, the environmental police force has been established and gone into operation. However, Vietnamese environment continues to be degraded in some areas which an alarming rate. The land is polluted and degraded; water quality sharply declines; the air is heavily polluted; volumes and levels of toxic waste increasingly arise; biodiversity is seriously threatened; environmental sanitation and clean water supply in many places are not guaranteed, etc. Facing these situations, it should be mobilized all resources of society to protect environmentally. Besides the solutions in improvement law systems, enhancing knowledge, in order to develop production, productivity growth should also encourage the use of high yielding genetics varieties, pest and disease tolerance to maintaining soil fertility, development of production programs towards the improvement of quality and environmental sustainability such as VietGAP and organic production. This will ensure the balance between economic benefits and sustainable development of the environment.

Reference

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