
천적을 활용한 축사내 파리류의 종합적 방제에 관한 연구
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축사에서 발생하는 파리류에 대한 종합적 방제 방법을 확립하고자 축종별(우사, 돼사, 계사)로 분포하는 파리류 및 파리기생천적의 밀도를 조사하였고 주요 파리기생천적의 생물적 특징 및 저독성 살충제 선발과 저항성 모니터링 그리고 천적을 활용한 생물적 및 종합적 방제에 대한 효과를 조사하였다.

Non-Point Source Pollution Discharge Characteristics by Agricultural Activity from Sand Loam Alpine Fields
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Abstract

Typhoons and torrential rainfalls damage alpine fields, and deliver a large volume of soil and non-point pollutants to rivers and lakes. The inflow soil and non-point pollutants destroy aquatic ecosystems and deteriorate water quality. In order to reduce rainfall runoff and the efflux of soil and pollutants happening in alpine fields, we need to improve farming methods and establish a farmland management system. In addition, it is very crucial to understand the characteristics of runoff occurring in alpine fields in order to control non-point pollution.

This study monitored alpine fields at Daegwanryeongmyeon, Pyeongchanggun, Gangwondo for rainfall events with runoff during the period from March 2008 to October 2009. For the studied points, we performed hydrologic analysis and calculated pollution load and event mean concentration (EMC), and evaluated the effect of farming activities on the runoff of non-point pollutants through comparison by point and by year.

According to the results of this study, the optimal frequency of surveys according to rainfall intensity suggested by the National Institute of Environmental Research needs to consider the
land use characteristic of the research area or to subdivide the higher range of intensity. It was because runoff in land uses with high porosity does not happen at low-intensity rainfalls.

The runoff rate of Area A was found to be in a statistically significant correlation with rainfall and rainfall intensity. The correlation coefficient between the runoff rate and the maximum rainfall intensity was highest as 0.6993, but the number of antecedent dry days did not have any statistical significance. In Area B, the correlation coefficient between the runoff rate and rainfall was 0.9633, which showed high statistical significance at p<0.01. However, rainfall intensity and the number of antecedent dry days did not have any statistical significance.

In Area A, the volume of fertilization was twice larger in 2008 than in 2009. However, the pollution load of COD$_{Cr}$, COD$_{Mn}$, BOD and TP, and EMC were higher in 2009 than in 2008. The crop in 2008 was potato and that in 2009 was radish. Accordingly, farming activities such as the date of start and the date of fertilization were quite different between the two years. Potato is seeded in April, and its land cover effect is high in the rainy season July and August due to the survival of potato. Radish is seeded at the end of June, and its leaf grows thick in July and August, but because its land cover effect is lower than that of potato stem and leaf, the runoff of pollutants caused by rainfall is considered larger. Accordingly, the runoff of pollutants may be influenced more by crops and their land cover effect than by the volume of fertilization.

The results of this study show that the runoff characteristic of non-point pollutants in alpine fields is very complicated and determined by various factors. For a certain land use regardless of what it is, therefore, it is very important to understand the characteristics of rainfall runoff and pollutant runoff. Without accurate information on the flowing route, volume and influential factors of rainfall runoff and pollutants, abatement facilities or treatment methods are highly likely to be ineffective and fail to produce expected results. Accordingly, research is required to examine the runoff characteristic of agricultural lands or alpine fields, to develop BMPs according to the characteristic and test their effects, and to apply them in the field.

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**Evaluation of Permanent Deformation Characteristics and Moisture Sensitivity of Recycled Asphalt Concretes using Warm-Mix Technology**

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**Summary**

This study evaluated the permanent deformation characteristics and the moisture sensitivity of recycled asphalt concretes using warm-mix technology.

Granite with maximum size of 13mm and penetration grade of 60-80 virgin binder used for mixing in recycled mixtures. Mix design was performed using 20% and 30% RAP (coarse:fine=6:4) content. GPC, penetration,