



CONTROL AGAINST ARMYWORM CATERPILLARS ON THE COASTAL OF THE RIO NUNEZ-BOKE, REPUBLIC OF GUINEA

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ABSTRACT

This study was conducted to test the effects of soap and branches of coconut trees on the caterpillars. Armyworms cause great economic losses to farmers of the Rio Nunez region in Guinea. They destroy culture and cause irritation to farmers. In fact, armyworms cause very serious allergic reactions on the skin of sensitive individuals. That is why efforts are often put in place to eliminate or at least reduce the adverse effects of these caterpillars. The larvae or caterpillars feed on green matter during the early stages of their development before moving on to the cultivated rice. Young larvae eat the lower epidermis of the leaves and thus protect themselves. Sometimes shoot tips are attacked thus leading to the total destruction of fields especially nurseries. These caterpillars live in colonies for 1 month before dispersing in the plains and surrounding fields. Therefore, this is the best period for fighting them. Finding effective methods to control their activities has become imperative to preserve the culture of farmers in these areas.

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Keywords: Armyworms, Larvae, Nurseries, Butterfly, Cocoon, Integrated Pest management.

Contribution/ Originality

This study contributes to the knowledge already available of controlling armyworms' detrimental effects by physical means on the coastal of Rio Nunez-Boke in Guinea. Physical way of control eliminates negative impacts to our environment and the ecosystem at large and prevent side effects caused by chemicals on human beings.

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1. INTRODUCTION

Rio Nunez is best known throughout Guinea and surrounding countries as the Kakandé. It is the capital of the administrative region of Boké. The lower Guinea is an area with large agricultural potential. Its contribution to national agricultural production of several products is very important such as: rice groundnuts, cassava, palm oil, etc. Throughout its surrounding villages situated along the coast, it is often the victim of attacks by armyworm caterpillars. This not only causes huge losses causing a serious shortage of food for local populations as rice is their staple food. The worms cause irritation and swelling of the hands and feet. For this research our investigations started back in 2005 and progressed till 2013. It involved farmers in different localities. The butterfly wings measure 10-12 mm; and are entirely white. The caterpillars are covered in black body raillures with a smooth dark black head and reach 15 to 18 mm. The caterpillars, which can reach 30 mm, are gray in color, with a shiny black head. They are very nimble. Butterflies have a life cycle with all four stages, namely egg, caterpillar, chrysalis and adult butterfly [1-3]. The embryo develops in the egg to give birth to the caterpillar. Eggs are laid on the stems and leaves of straws. In coastal areas of Boké including Katougouma Bel-Air, Kakissa, Kaboye, Karkouba, Kagnop, Yongoron and other surrounding villages; farmers are facing a threat to their source of income since most people in these regions heavily depend on Agriculture as a source of livelihood. Farm sizes here are less than 3 hectares and the common cropping system is the dominant slash and burn in 90% of the farms. The penetration rate is 1.6 to 1.8 units on average where people use small tools such as hoes or spade, cuff or machete, knife or sickle [4]. The butterflies begin to lay eggs after a month of being in the plains. Thus, the eggs are deposited on the remains of the straw that is burnt. Adult butterflies appear in April then hatching takes place in late May. This period corresponds to the germination of stem straws. The young caterpillars remain in a group on straw before changing locations as they grow. These caterpillars' sense of smell is powerful which allows them to move towards a group of crops including rice nurseries and mangroves. Armyworm caterpillars' bodies are covered with black hair and a head with chewing mouthparts. Caterpillar armies are real threats and danger to the health of farmers. They cause falls in crop yields and disease to farmers [5]. Caterpillars can cause very significant damages [6, 7]. Its area of prediction is solely on the regions of the Rio Nunez particularly: Katougouma Bel-Air, Kakissa, Kaboye, Karkouba, Kagnop, and Yongoron. Towards the end of December, the green vegetation is a bit rare in these areas due to the onset of the dry season, a period which they change their way of life by going into hibernation and get covered by a hard cocoon blackish which is housed under the ground. Unlike other insects they are not victims of natural predators at the larval stage. Insects and birds do not eat them. That is why their population is high and thus are able to cause massive damage to crops. They can sometimes lead to the complete destruction of nurseries if preventive measures are not taken on time. They do cause irritations in the hair and skin especially hands and feet. Whenever they are in the hairs, they can rapidly move into other parts of the body and cause irritation. After contact with skin, they cause itching than makes the skin to swell. Incubation period in the body lasts for a week to a year depending on the person. The objective of this present work is to enable farmers adopt and employ control measures against these armyworm caterpillars

without using chemicals which not only have a negative impact on the environment but also very expensive for most people.

2. MATERIALS AND CONTROL METHOD

The first detrimental effects of the caterpillars are the ones which is committed before hatching eggs. The first action done to prevent effects of the armyworms was after spawning, whereby all plants were cut and burnt so as to prevent later effects from the insects. This is to lessen the frequency of attacks during the armyworm-caterpillars' stage of development. The second action instituted was done after hatching of the larvae. It involved making use of traditional means such as the use of soap during the first few weeks of hatching of the caterpillars. A solution of soap about 1 liter in a calabash or a bowl was used for at least 5 to 10 minutes; this solution was poured on caterpillars. Apart from these, branches of coconut were also used and other items made from tree trunks filled sleeves which were used to kill them at the larval stage of development. In addition, the department in charge of agriculture often institutes mechanisms to prevent crop losses, which often comes in late. This denotes the inefficiency of their response to the actions of the armyworm-caterpillars. In addition to these two methods, we proceeded to remove all weeds that were around the nurseries within a radius of 1 meter.

3. RESULTS AND DISCUSSION

All of these methods have revealed good efficiency but their deployment is hampered by a scarcity of skilled human resources. It is also preferable to use the aforesaid methods as compared to the use of pesticides which have detrimental effects to the environment. Caterpillars live in colonies for 1 month before spreading into the plains and surrounding fields. In fact, the best way to fight them off is to apply control measures as soon as the young caterpillars emerge so as to eradicate their growth and spread. It is necessary and important to cut and burn their nests. If chemical treatments are available, they should be applied widely enough so as to effectively ward off the effects of the pest. At certain stages, caterpillars are equipped with stinging hair which is very rare [6]. These hairs are used to prick human skin and release a venomous substance into it. The venomous substance can cause serious allergic reactions on the skin of sensitive individuals with its incubation period ranging from one week to one year. That is why efforts are often put in place early enough to eliminate or at least reduce the adverse effects of these caterpillars. In recent years, environmental protection is becoming a major global concern. In agriculture, it is undeniable that agricultural productivity must now go through optimal management of insect pests and weeds while minimizing their impact on the environment [8]. Controls were performed which involved several producers with large scale plots for four to seven days [9]. Integrated Pest management (IPM) has been widely used as a method of managing and controlling pests for the past 40 years. The FAO and the international community have adopted it since it causes less damage to the environment and biodiversity in general [3-7, 10-13]. Significant reductions of caterpillar populations were observed. This shows effectiveness of these methods. The experiments were carried out in other parts of the coastal zone with equal success rates excluding the controls. This is

an easy method for use since it is not harmful to human health and the environment. It is inexpensive because it only requires the use of black soap on plants and their tree branches. Human beings need to be a bit skilled to use it. Many efforts have been employed in preventing the effects from these caterpillars on rice in the coastal region of Nunez. The methods we employed posed no risks as compared to chemical controls that may result in serious health risks to man and the environment [3, 7, 11-15].

From our observations and results, we recommend the application of these control methods mainly on the edges of rice plantations and nurseries, but general body protection is also required to prevent exposure to the armyworms. In the end, this result encouraged other studies similar to these to conserve our cash crops and preventing the spread of pests.

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