



First report of the rice leaf folder, *Cnaphalocrocis medinalis* Guenée, 1854, (Lepidoptera: Crambidae), damaging rice fields in Niger (Republic of Niger, West Africa)

Bibata Ali Outani¹, Haougui Adamou¹, Haoua Bori¹, Basso Adamou¹, Salmou Abdoukarim¹, Rabi Alou²

¹ National Institute of Agronomic Research of Niger, Niamey, Niger

² National Office of Hydro-Agricultural Developments (ONAHA), Niamey, Niger

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Abstract

In October 2026, unusual damage to rice leaves was observed in the rice fields of Saga (Niamey) in Niger. The observed damage includes leaves folded lengthwise and stuck together with silk threads. Greenish, solitary larvae were found inside the folds. The attacked leaves show white streaks. Pupation occurs in the rolled foliage. Morphological examinations confirmed that the pest was *Cnaphalocrocis medinalis* Guenée, 1854, commonly called the rice leaf folder. This is the first report of this pest in rice crops in Niger; the severity of the observed damage could indicate an emerging threat to production in rice-growing areas.

Keywords: Rice, Crambidae, leaf folder, emerging pest, Niger

Introduction

Introduction and field observations

Rice (*Oryza sativa* L.) is the third most cultivated cereal in Niger after millet and sorghum. It is grown on 48714 ha in 2024 with an annual rice production of 164768 tons (Faostat, 2025) ^[1]. So, it's one of the staple foods for the population. But it is a crop whose production faces many phytosanitary constraints (Moche *et al.*, 2020). These include stem borers like *Chilo zacconus*, *Maliarpha separata* and *Sesamia calamistis* (Dabiré *et al.*, 2020).

Material and methods

▪ The site and location

However, in October 2026, during routine monitoring in the

rice-growing area of Saga in Commune 4 of Niamey, Niger (13°27'41.35''N 2°08'52.22''E), some rice farmers became concerned about damage they had never seen on rice leaves.

▪ Damages caused by the insect pest

On the attacked plants, the leaves are folded and rolled three by three with fine silk threads to form a tube containing solitary larvae that feed on these leaves. These larvae strip the green tissue of the mesophyll and leave behind excrement that remains attached to the plants. The tips of the attacked leaves dry out and turn whitish, reducing the plant's photosynthetic capacity. In some samples, the attacked plants are stunted, with poorly filled ears that still remain green (Figure 1).



Fig 1: Field symptoms of *Cnaphalocrocis medinalis* in Saga (Niger)

▪ Morphological identification and description

During the prospecting, we collected rolled leaves, some of which contained chrysalides that could be seen once the silk cocoon was broken. The samples were taken to the laboratory

and incubated in Petri dishes. Seven (7) days later, the adults (butterflies) began to emerge. Then measurements were taken for the identification of the involved insect. The results of these measurements are recorded in Table 1.

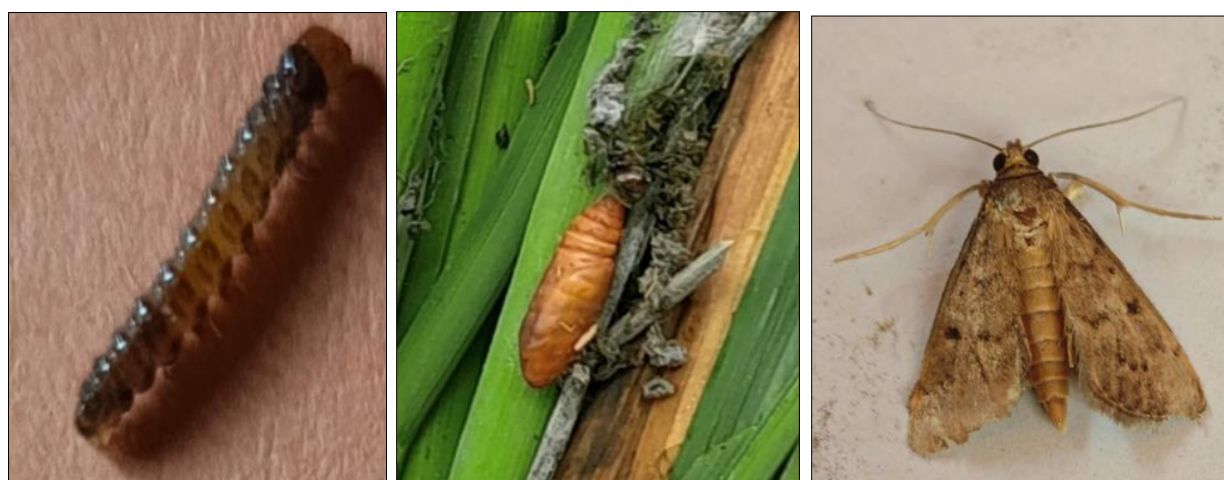
Table 1: Morphometric ranges of *Cnaphalocrocis medinalis* developmental stages.

Stade de development	Parameters	Size (mm)
larva (before pupation)	Body length	15,97±1,28
Chrysalids	Body length	9,71±1,13
Adults	Wingspan	16,01±0,64
	Body length	9,39±1,08

The morphological characteristics of the different developmental stages are as follows.

- **Larva:** the body is light green but the head is light brown. Disturbed larvae in their nest are very active.
- **Chrysalide:** light brown to dark brown color.

- **Adult (butterfly):** straw yellow to golden yellow color, but some specimens show yellow-brown butterflies. The forewings are triangular, with two distinct wavy dark brown cross bands across the entire surface. The edges are brownish (Figure 2).



The last instar larva

A pupa with silk and frass

Dorsal view of the adult moth

Fig 2 : different stages of development of *Cnaphalocrocis medinalis*

Morphological diagnoses were performed using taxonomic keys (Saini *et al.*, 2017^[19]; Barrion and Litsinger, 1994)^[20].

▪ Reference specimens

The reference specimens were deposited at the National Institute of Agronomic Research of Niger (INRAN) under the reference number OS/Cm/2026.

Discussion and agronomic significance

Based on these established morphological criteria, the specimens were unambiguously identified as *Cnaphalocrocis medinalis* Guenée, 1854 (*Lepidoptera: Crambidae*). The morphometric criteria obtained are consistent with those established by other authors (Khan, 1988; Bui, 2013; NPPC, 2017; Grahame, 2019)^[4, 5, 7]. This pest is actually part of a complex of leaf folders and leaf rollers, with *Marasmia trapezalis* considered the most dominant species in West Africa. However, the latter is mainly found in very humid sudanian zones (Ogah and Nwilene, 2017)^[8] in the same way as *Cnaphalocrocis medinalis* (Han *et al.*, 2026)^[9]. Moreover, some authors think they are of the same genus. Thus, several species of *Marasmia* have been moved to the genus *Cnaphalocrocis*, as is the case with *Marasmia exigua*, which becomes *Cnaphalocrocis exigua*. These two genera are now considered synonyms (Singh, 1997^[10]; CABI, 2018). They are all pests that are most often found in rice-growing ecosystems in Asia (Bradley, 1981^[12]; Parasappa, 2017). For several authors its presence in the Sahelian part of West Africa has long been overlooked or unreported (Khawaja and Khan, 2022^[14]; Shafina *et al.*, 2026^[15]; Han *et al.*, 2026)^[9]. However, *Cnaphalocrocis medinalis* has been reported in Madagascar and in Kenya in East Africa and (Pierre *et al.*, 2013)^[16]. The presence of this species, which is normally tied to wetland areas like the entire complex of rice leafrollers and folder moths, in a Sahelian area can be explained by its migratory insect nature. Indeed, it can be carried by monsoon from wet areas to dry zones winds Roy

et al., 2025)^[17]. Thus, in the Sahel, it can take advantage of air currents linked to the intertropical front moving from south-west to north to colonize arid Sahel areas. It establishes itself in large rice perimeters (like ours) that create specific microclimates where the dense rice foliage and evapotranspiration maintain a locally high relative humidity, often above 70-80% (Shafina *et al.*, 2026^[15]; Roy *et al.*, 2025)^[17].

The discovery of this insect pest is a warning sign for farmers in Niger. In the visited fields, rice farmers noticed severe damage to 20 to 25% of the rice leaves. So, it would be a good idea to keep up immediate community monitoring and map its distribution in other rice-growing systems. It's also important to raise awareness among decision-makers and to train both agricultural extension agents and rice farmers, as suggested by Bilal *et al.* (2024)^[18].

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