Red rust thrips present multiple challenges to the application of IPM based on scouting and thresholds. Exclusion-based IPM does not depend on thresholds and monitoring, but timely practices are still essential.

Bagging the closed bell should be practiced without fail to ensure minimum losses. Applications to the closed bell prior to bagging do not result in further loss reduction. However, losses must be monitored.

To improve management effectiveness, losses in the packing station should be monitored and practices damaging to natural control organisms should be minimized.

Red rust thrips is a cosmetic damage with zero tolerance for export caused by Chaetanapaphothis signipennis and C. orchidis. Losses reached 20-60% in organic banana in Ecuador and Peru from 2011 onwards. These thrips are found on pseudostumps and young suckers, but economic damage occurs when the adult female lays eggs between tender fingers. The nymphs feed on the surface of the peel, causing ozone sap which oxidizes tining rust-colored.

Bagging is a required practice for export banana to protect the fingers from a range of causes of blemishes – leaf movement, animals and insects. Different sizes and colors are used for different purposes depending on the country. To achieve protection from thrips, bags must be attached before the first flower bract starts to open (see photos with closed vs slightly opened bracts). Bags should be translucent to allow dark refuge for thrips.

Due to weekly harvests, smallholder growers quantity blemish-free bananas in total boxes and field yield per box, but not to quantify reject bananas or causes. A simple method was designed to identify causes of blemishes in 100 reject clusters and quantify total weight of bunches brought to the packing station. Losses were quantified in 10 farms in banana zones in Ecuador, Peru and Dominican Republic in two contrasting seasons of the year (Table 4 below).

Red rust Thrips

Table 1: Red rust damage on young fingers. Table 2: Adult. C. signipennis trapped with blue sticky traps and water traps placed at leaf wheel height. The use of traps and attractants to simplify monitoring thrips levels was not reliable for research or field scouting. Even in fields with heavy infestations verified by examination under leaf sheaths of 1-1.5 m suckers, very few red rust thrips. Although many Frankliniella panulica were trapped. CONCLUSION: thrips do not fly from mat to mat. They only fly-hop short distances within a single mat.

Table 3: Effectiveness of bagging alone and with applications of biopesticides to reduce damage from C. signipennis.

Table 4: Total rejects and % causes of rejects in two seasons showing relative importance of red rust thrips.

Table 5: Naturally occurring beneficial organisms by life stage C. signipennis and the preliminary reports on thrips control.

Number of adults C. signipennis was identified to determine that damage occurs even with the presence of only a few thrips. Although damage is light at lower densities, zero tolerance means such bananas are not exported. CONCLUSION: the threshold is almost zero for minimal practices which reduce thrips access to the emerging bell.

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Reject bananas due to red rust in 2016 were far below losses reported in 2011-2013 making up only 2-5% of total losses and varying from 4.28% as the cause of loss. This suggests that growers have intensified practices to reduce red rust rejects. However, losses from farm to farm were highly variable from nearly zero to 70%. A survey of practices done simultaneously found frequent use of applications to the leaf whorl, the bell, pseudostump and generally. Biopesticides being used while certified for use in organic production, have reported negative effects on parasitoids, predatory mites and aquatic organisms. Other causes generated greater rejects than red rust. The monthly sampling of rejects and their causes provides data to orient improved practices in bunch management.

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