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MAJOR PESTS OF ESCALLION (ALLIUM FISTULOSUM) IN JAMAICA

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INTRODUCTION: Escallion is a popular spice that is used to season virtually every Jamaican dish. Its production has been concentrated in mostly dry, hot areas with limited water supply such as South St. Elizabeth. These conditions are ideal for the development of many insects and diseases that may destroy the escallion crop. This factsheet seeks to present information on the identity and management of such pests.

INSECT PESTS ON ESCALLION: Onion thrips, *Thrips tabaci*

Description: White to pale yellow in colour (Figure 1A). The adults are 2 mm long; pale yellow to dark brown in colour and have fully developed wings which at rest are folded along the back of the insect (Figure 1B).

Damage and Importance: They start the feeding by piercing and rasping the leaf surface with their mouth parts to release the liquids from the plant cells, the thrips release substances that help predigest the onion plant tissue, and then with their mouth they suck up the plant content (Figure 1C).

Figures 1: **A. Onion thrips (nymph)** **B. Onion thrips (Adult)** **C. Damage by onion thrips**

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Monitoring: Monitor adults by using yellow or white sticky traps. Inspect the newest leaves. Inspect up to 5 plants per inspection site and a threshold value of 3 thrips per green leaf or at 20% of the plants infested with thrips. During the early part of the season there are more thrips in the borders than in the center of the crop because thrips build up in numbers outside the crop before they migrate to it. Sometimes control measures should be taken just in the crop borders.

***Cultural & Agronomic Practices*: 1.** Plant mainly in the rainy season **2**. There should be an onion free period (2-3 weeks) before each planting to interrupt the thrips cycle by removing host plants.**3**. Use overhead irrigation to simulate rainfall and control the thrips. **4**. Maintain a good water supply to the plants during the whole season. If the onion plant is under water stress the thrips damage may be magnified because the plant is losing large amounts of water from the damaged tissue.

5. Also proper fertilization may help to reduce the impact of the thrips in the plant. **6.** Younger plots should be planted upwind of older plots, relative to prevailing winds, to make it harder for the thrips to find the new plantings. **7**. Remove unharvested plant parts **8.** Plant cultivars that have a more open growth characteristic (leaves separated from base rather than tightly bundled) are less attractive to thrips because they provide less refuge for them. **9.** Intercropping with carrots have been reported to reduce thrips population.

Chemical control: In order to reduce pest resistance use as little pesticides as possible in an IPM program. It is important for the product to reach inside the plant base of the leaves where the majority of the thrips are located. Using high pressure and high water volume in the application enables this to occur. Diazinon and cypermethrin ( )is effective against this pest.

Leafminer, *Liriomyza trifolii*

Description and lifecycle: The maggots are bright yellow to yellow green in color (Figure 2A & B) measuring 1/6 inch in length and 1/50 inch in breadth. The adult is a small fly of mat gray with black and yellow splotches and about 1/12 inch of length (Figure 2C).

Damage: The first larval stage of the leafminer burrows into the centre of the leaf (mesophyll) tissue. The second stage also feeds in the mesophyl tissue. The third stage larva concentrates its feeding towards the upper leaf surface. When it is mature, it cuts a longitudinal slit in the leaf and leaves to pupate on the leaf surface or on the ground. The larval leaf mine is long, narrow and not greatly widening towards the end on large leaf surfaces (Figure 2D). Larval mines in small leaves with limited feeding space is characterized by a secondary blotch. Damage caused by a single larva is minimal, however when large populations are present they are capable of destroying leaves and affecting the growth of plants.

Figures 2: A. Larva in mine B. Larva C. Adult fly of leafminer D. Damage by leafminer

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Biological Control: Natural enemies are quite effective in controlling the pest on most crops.

Chemical Control: Cyromazine (Trigard®) and abamectin (Avid®) are effective against this leafminer pest. The pest is highly resistant to most other insecticides.

Beet army worm, Spodoptera exigua

Description and lifecycle: The younger larvae are pale green or yellow in color (Figure 3A) while the older larvae are darker when viewed from above and possess a dark lateral stripe (Figure 3B). The forewings are mottled gray and brown, and normally with an irregular banding pattern and a light colored bean-shaped spot (Figure 3C).

Damage: Larvae feed on both foliage and fruit. Young larvae feed gregariously and skeletonize foliage. As they mature, larvae become solitary and eat large irregular holes in foliage.

Figure 3: A. Beet Army worm larvae B. Beet Army worm mature larva C. Adult moth of beet army worm

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***Monitoring*:** Pheromone traps can be used to detect the presence of adult beet armyworm. Visual sampling for damage and larvae, combined with an action threshold of 0.3 larvae per plant. Regular monitoring of crops, probably about twice per week, is recommended because adults frequently invade from surrounding crops or weeds.

***Biological Control*:** Numerous native natural enemies have adapted to this pest. Parasitoids and predators exists that attack all stages of the pest. The important mortality factors vary among crops, and among geographic regions. None except the nuclear polyhedrosis virus are highly specific to beet armyworm, which may explain why they are not especially effective. Virus is considered to be the most important mortality factor.

Chemical control: Beet armyworm larvae are susceptible to neem products, eggs can be killed with petroleum oil, and both eggs and young larvae can be controlled with foliar applications of 5% cottonseed oil, but this concentration is damaging to some plants. The use of formulations of *Bacillus thuringiensis* (Dipel®, Xentari®®, Agree®, NewBt®) can also be used to effectively manage this pest.

PLANT DISEASES OF ESCALLION:

Downy mildew (*Peronospora destructor*) & Purple blotch (*Alternaria porri*)

Symptoms: Symptoms of both diseases are similar. It consist of white to light green spots on leaves, which later darken. A fuzzy, gray growth is seen on the leaf surface, particularly during periods of high humidity. Lesions enlarge and leaf tissue dies. Lesions may resemble those caused by the purple blotch fungus (Figure 4A & B).

Control: The control for both diseases is similar. They mildew can be controlled by keeping foliage dry. Fields should be monitored closely, particularly during prolonged cold, wet weather, when the disease is more likely to occur. Fungicides that are highly effective against downy mildew, such as Ridomil and Aliette, should be applied following the first report of downy mildew in the growing area. Use surface or buried drip or T-tape especially in crop's late stage.

Figure 4: **A. Downy mildew (*Peronospora destructor*)** **B. Purple blotch (*Alternaria porri*)**

Powdery mildew (*Leveillula taurica*)

Symptoms: The earliest symptom is a pale discoloration of the leaf. Circular spots with white, powdery growth eventually occur (Figure 5).

Control: There are no control recommendations, since the disease is not a serious problem.

Figure 5: Powdery Mildew

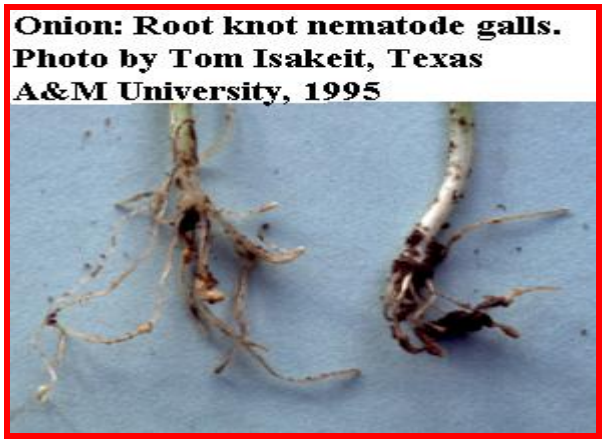
Stemphyllium Blight (*Stemphyllium vesicarium*):

Symptoms: Lesions are initially light yellow to brown and water-soaked. They elongate, often reaching the leaf tips, and become dark brown to black (Figure 6A & B). The disease can become serious following periods of more than 24 hours of rainy weather.

Control: Fungicides used to control purple blotch will also control this disease.

Figure 6: A. Powdery mildew (*Leveillula taurica*) **B. Stemphyllium Blight (*Stemphyllium vesicarium*)**

NEMATODE AFFECTING ESCALLION:



Root Knot Nematode (*Meloidogyne* spp)

Description: Portions of the roots have swollen areas (Figure 7)

Control: Proper land preparation and practice deep ploughing. The use of organic matter and mulching reduces infestation in the field. The use of nematicide is not encouraged on such a short term crop

Figure 7: Root Knot Nematode Galls

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