DRYMARIA CORDATA

Family: *Caryophyllaceae (annual)*

Common names: *Petit mouron or Mouron blanc (French), West Indian chickweed or tropical chickweed (English), chischina (Spanish), Pilipili (Polynesian)*

West Indian chickweed is a local plant that is widespread in Martinique and Guadeloupe. It grows spontaneously in some established banana plantations (Nord Atlantique region in Martinique, Capesterre region in Guadeloupe), and less commonly in fallows (Centre region Martinique).

Stems of this herb are up to 30 cm long, slender, weak, creeping and extensively branched (1). Circular or oval-shaped leaves grow in opposite pairs, almost without petioles, and have 3-5 ribs extending from the base. The width of these leaves varies depending on the sunlight. The very small white flowers are arranged in small groups at the tips of stems or secondary branches (2). The pedicels are dotted with viscous glandular hairs. The fruit is a capsule divided into 3 valves containing 5-7 black seeds. West Indian chickweed roots are fibrous and grow from stem nodes in contact with the soil. The plants propagate vegetatively (stolons) or via seeds throughout the year.

West Indian chickweed - *Drymaria cordata*

Under shade: green well developed leaves - Photo IT2

Under high sunlight: small leaves (yellow if under water stress) - Photo IT2

1. AGRICULTURAL BENEFITS

1.1- Nonhost of the main banana parasites

Sensitivity tests have shown that the main banana nematode does not propagate on West Indian chickweed (CIRAD results, April 2011).

1.2- Very effective soil cover

With its creeping stems, West Indian chickweed can quickly spread over bare areas and form a dense cover. This plant is not very bulky due to its prostrate habit. It is highly resistant to trampling and does not hamper movement in the plots.

1.3- Shade tolerance

West Indian chickweed is tolerant to shade and sunshine (when water supplies are not limited). It is thus perfectly suited for an association in a banana plantation.

1.4- Weed control

West Indian chickweed is not very aggressive against other weeds when in its establishment phase, so it generally needs to be accompanied. Once established, it forms a monospecific cover and substantially reduces the weed pressure (allelopathic effects on the germination of other weeds are being assessed).

2. ACCOMPANYING SPONTANEOUS COVER

When West Indian chickweed emerges spontaneously, to obtain a monospecific cover it is necessary to:

- manage harvest waste: it is essential to avoid covering areas where this chickweed is growing. When the plant is well established, this parameter becomes secondary since it is able to recover very rapidly following leaf degradation.

- accompany it with manual weeding and/or directed herbicide sprays. Promote the use of low-volume sprayers.

Spontaneous West Indian chickweed cover in a banana plantation - Photo IT2

3. PLANTING WEST INDIAN CHICKWEED IN BANANA PLANTATIONS

It is possible to plant this species using cuttings collected in areas where it is already present or in the form of blocks of cuttings produced in nurseries.

3.1- Where and when?

West Indian chickweed grows better and more densely under semi-shaded conditions (reduced water stress and weed pressure).

The aim is to plant it during the 1st crop cycle in order to reduce herbicide use. Planting is optimal in a banana plantation of 4 months old at least, with low but existing shade in order to reduce weed pressure (see diagram below).

Avoid dry season planting in lowland areas with little rainfall.

3.2- Planting blocks of cuttings in the field

Nursery production of 40 x 60 cm blocks of cuttings, coconut fibre or peat substrate.

Two steps:
Transport and planting in the field ▶4 d of labour/ha.

Material required:
- 150 blocks/ha minimum (900 small blocks).
- Machete, hoe.

Method:
- Turned over blocks are cut into 6 small 20 x 20 cm blocks with a machete.
- Holes are dug with a hoe/fork between banana trees along single or multiple lanes under drip irrigation conditions or along narrow lanes under the canopy. NB: small blocks to be set under drippers in drip irrigation systems.
- Small blocks are planted at 2 m intervals between banana trees.
- The substrate should be in full contact with the soil to ensure optimal growth.

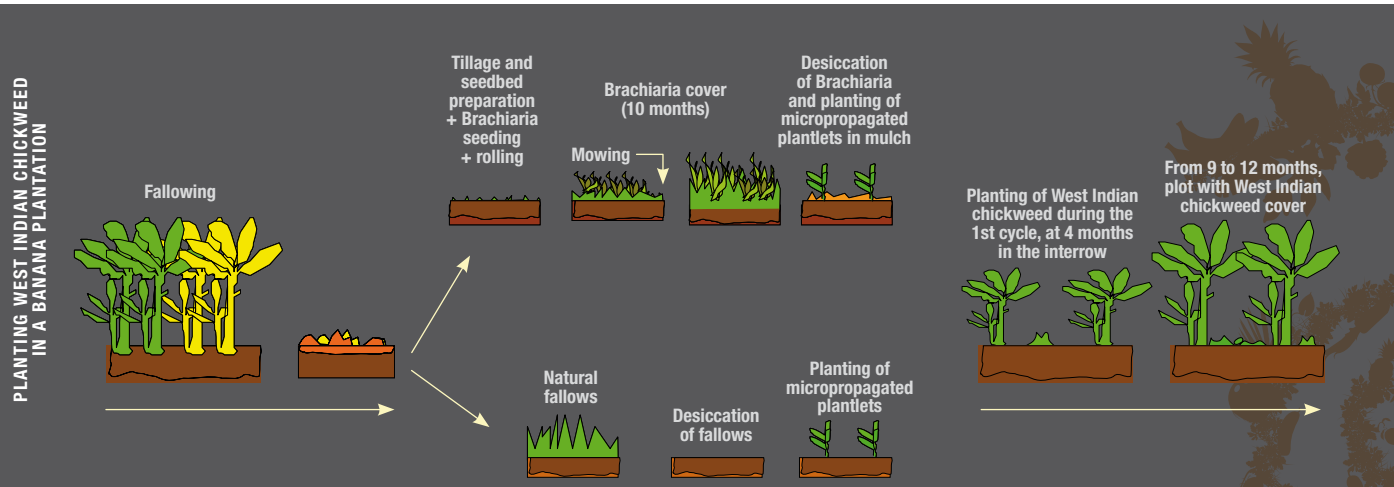
Benefits:
- Root system already well developed in the substrate.
- Dense homogeneous cover insensitive to stress after planting.

Growth rate.

In a semi-shaded banana plantation	Growth in cm/month
Conventional situation with weeds	9.5 12
Situation with manual weeding	12* 15*

Source: IT2 test (A. Ligonière)
*** Accompanying measures improve the growth rate.**

Block of cuttings after 4 weeks of growth in the nursery - Photo IT2



Blocks of cuttings turned over to facilitate cutting into 6 small blocks - Photo IT2

Small blocks planted in the field - Photos IT2

Management (similar to management of a plot with spontaneous West Indian chickweed growth):

- Manage harvest waste while avoiding covering West Indian chickweed seeded blocks.
- Accompany establishment of the cover with selective herbicide sprays or directed contact herbicide sprays.
- With suitable management, complete cover of the plot can be achieved within 9-12 months.

3.3- Planting cuttings

Two steps: cuttings collected by manual uprooting and shallow planting of cuttings in the field ▸ 5-6 days of labour/ha.
Cuttings should not be stored for more than 24 h.

Material required:

- 900 bunches of cuttings (handfuls)/ha minimum, or around 50 kg of fresh material.
- Dibbler/hoe to dig holes or furrows.

Method:

- Manual uprooting of West Indian chickweed cuttings.
- Holes/furrows are dug with a hoe/fork between banana trees, along drip irrigation lines, or along short interrows under the canopy.
- Shallow planting of bunches of cuttings.

Bag of fresh cuttings collected the same day - Photo IT2

Planting bunches of cuttings - Photo IT2

Planting in furrows with a dibbler - Photo IT2

Cover generated 3 months after cuttings planted in furrows - Photo IT2

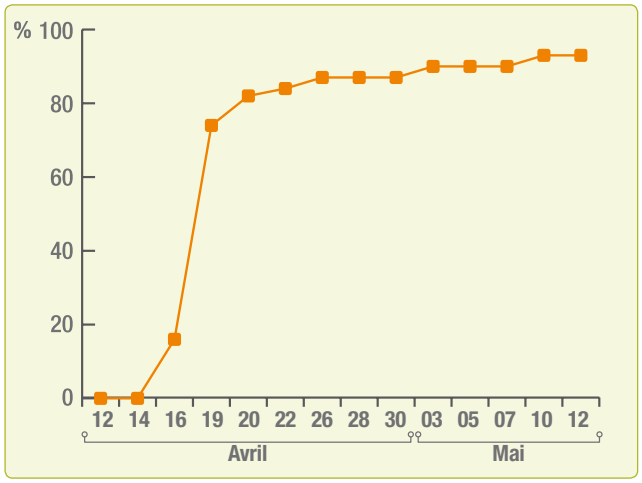
Interesting method to use when West Indian chickweed is already growing on the site or near the farm.

- **Management** (similar to method used for blocks of cuttings).

Despite suitable germination and rapid emergence, seeding is not feasible for the following reasons: the seeds are not marketed; the seeds are tiny (1000-seed weight: 0.66 g), so it is impossible to collect sufficient quantities.

Germination test - Photo IT2

WEST INDIAN CHICKWEED GERMINATION RATE - IT2 TEST, APRIL-MAY, 2010



4. BENEFITS OF USING WEST INDIAN CHICKWEED IN BANANA PLANTATIONS

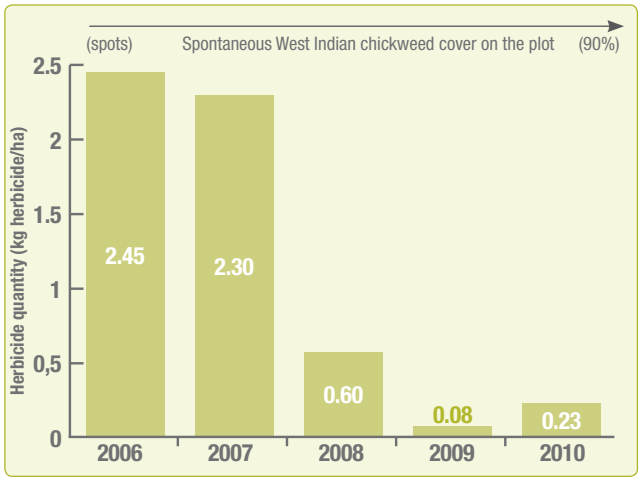
4.1- Agricultural benefits

- Weed control via rapid soil coverage and probable allelopathic effects (secretion of toxins that inhibit the germination of competing weeds).
- Soil protection by limiting erosion phenomena.
- Improved water infiltration and storage in the soil.
- Enhanced biodiversity, especially beneficial organism populations.
- Increased biological activity and organic carbon reserves in the soil.
- Low-lying cover that does not hamper movements in the plot.

4.2- Economic benefits

- Low planting costs, and quick return on investment as early as the 2nd year through a marked reduction or even discontinuation of herbicide sprays.

EXAMPLE OF THE REDUCTION IN HERBICIDE QUANTITIES USED IN A PLOT GRADUALLY COVERED WITH WEST INDIAN CHICKWEED (NORD MARTINIQUE REGION)



Quantity of herbicide active ingredient/ha/year (Moubin plot)

- Reduction or elimination of phytotoxic effects of herbicides on bananas.
- No personal protective equipment, plot retreatment time or preharvest time to manage.

Cover generated 6 months after cuttings planted in furrows - Photo IT2

References:

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