



Alternatives to contentious inputs in organic market gardening

FEEDBACK FROM A FRENCH MARKET GARDENER:
GUY RUGEMER – FARM « LES JARDINS DE PAILLIS »



1 worker



3 hectares, including
360 m² of greenhouses



Direct farm sales and
market sales



Start of agricultural activity in 2015 (directly
with organic farming)
Diversified market gardening
Preservation of soils (living soils)
Autonomous and economical system



Self-production of plants and seeds
Constant search for autonomy
Willingness to minimise his impact
on the environment

Foreword

The contentious inputs in organic farming

A European project to find alternatives

Certain permitted inputs in organic farming are controversial because they can pose ethical and environmental problems. They nevertheless continue to be used due to a lack of alternative solutions, whether for technical or economic reasons (examples in market gardening: plastic mulching to manage weeds or peat-based soil for sowing).

The European Organic-PLUS project (2018-2022) aims to research and communicate on alternatives to these inputs. To achieve this, project members are collecting data on a European scale on so-called "O+ innovation" organic farms (farms that use little or no contentious inputs). For more information: www.organic-plus.net.



ABioDoc (the French documentation centre specialising in organic farming, partner of the Organic-PLUS project) asked four French students in the ABCD pro degree ("Organic Agriculture Consulting and Development" professional degree) to carry out surveys on organic producers. These students met Guy Rugemer, an organic market gardener based in central France, which uses alternatives to the use of peat-based potting soil and the use of plastic mulch

1- Green waste compost for sowing without peat soil

Alternatives to peat

When he began growing, in 2015, Guy Rugemer used peat-based potting soil to plant his seedlings in pots. In 2016, he wanted to find alternatives so as to no longer have to buy potting soil for several reasons:

1. Be autonomous;
2. Reduce costs (his production system is based on minimising costs);
3. Be more respectful of the environment.



Then, he started making his own potting soil using green waste compost.

Sowing in the potting soil made from on green waste compost
(photo credit: Guy Rugemer)

" I didn't want to depend on peat which is an exhaustible product " *Guy Rugemer*

" I left a pile of green waste decompose and, after 4 years, I realised that the product obtained was great for sowing.
" *Guy Rugemer*

Guy Rugemer uses two channels to source green waste:

- The nearest recycling centre: the recycling centre delivers (for free) partially crushed green waste to him. These are mainly grass (lawn mowings) and hedge trimmings.
- A landscaper: the landscaper sells him partially crushed green waste for 10€/m³. This green waste is often woodier than the waste delivered by the recycling centre. Guy Rugemer sometimes uses this waste to make potting soil, but often he uses it like Ramial Chipped Wood (RCW = woodchips from branches) (see part 2).

Method of use:

STEP CARRIED OUT AT THE RECYCLING CENTER OR BY THE LANDSCAPER

1

Green waste is partially crushed and delivered to the market gardener

STEPS CARRIED OUT BY GUY RUGEMER

2

Guy Rugemer lets the pile of green waste decompose (without intervening) for a minimum of 2 years

Oversized materials are returned to the pile to be decomposed again

3

When the pile is sufficiently decomposed he sieves it to obtain a sufficiently fine substrate to be suitable for sowing

4

He then puts the sieved compost in pots using a clod machine

5

He sows his seedlings in pots



Pile of green waste in decomposition (photo credit: Guy Rugemer)

Guy Rugemer lets the pile decompose without intervening because he is not equipped enough to turn it over and ventilate it, and because this step would be too time-consuming. The decomposition is however quite slow (between 2 and 4 years), which requires forward planning.

"It is possible with all plants, even conifers! It's all a question of time: the right fungi must develop to decompose the mixture." *Guy Rugemer*



Green waste in decomposed (photo credit: Guy Rugemer)

He has been using this technique for three years and is fully satisfied.

Nevertheless, making your own potting soil requires a good work organisation and extra time. In addition, this method requires real anticipation: it is necessary to take into account the decomposition time of the pile of green waste, and it is also necessary to anticipate the sieving step to carry out this step in good conditions, in other words, when the pile is dry (sieving is much harder and more time-consuming when the compost is wet).

To make large volumes, Guy Rugemer also recommends equipping yourself with specific tools for sieving. Currently, he sieves his compost manually, but he thinks of self-building a tool from a washing machine drum (always with the aim of limiting his loads).

Production of compost from green waste compost	
Advantages	Disadvantages
<ul style="list-style-type: none"> - Effective; - Economic; - Local and renewable resource; - Requires little equipment; - Easy supply. 	<ul style="list-style-type: none"> - Additional time and workload; - Long process that requires anticipation; - Sieving can be long and tedious (it all depends on the level of decomposition and the moisture of the compost pile).

2- Organic mulching to manage weeds while nourishing the soil

Alternatives to plastic

One of the main challenges in diversified organic market gardening is weed control. Right from the start, Guy Rugemer did not want to use plastic mulch for several reasons:

1. Avoid buying plastic tarpaulin;
2. Avoid using a non-renewable material;
3. Preserve his soil (not contaminate it with plastic particles).

Furthermore, his objective is to maximise the biological activity of his soils and to enrich them with humus.

" My goal is to have hyper dynamic soil that looks like forest soil." *Guy Rugemer*

Then, he directly adopted organic mulching in order to reconcile all of his objectives: limiting the development of weeds, while covering and constantly nourishing his soil. For this, he mainly uses two methods of mulching:

- The first consists only of organic mulch: a layer of woody mulch topped with a layer of straw / hay / preserved fodder (depending on his supplies);
- The second combines organic mulching and plastic mulching: a layer of straw topped with a reusable plastic tarpaulin.

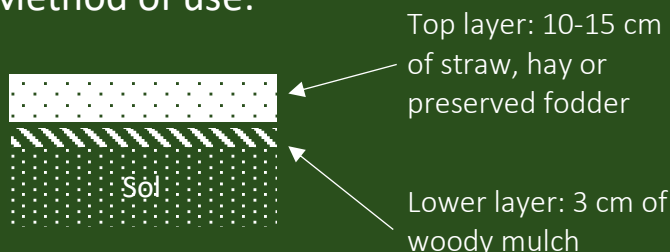
Why are we talking about woody mulch and not Ramial Chipped Wood?

RCW (Ramial Chipped Wood) is shredded branches less than 7 cm in diameter. This reduced diameter gives specific properties to the ground material: the lignin is still developing (it is therefore softer and is more easily degraded by microorganisms). As Guy Rugemer recovers the green waste from a recycling centre and a landscaper, he cannot be certain that this criterion is met (even if it is highly probable that a large part of the crushed plants had a diameter of less than 7 cm). This is why he prefers to rather speak of chipped woody plants which includes branches, trunks and leaves.

Method based only on organic mulch:

This method is best used on land where the weed pressure is low.

Method of use:



The thickness of the top layer must be constant: straw, hay or preserved fodder should be added as soon as necessary. The three centimeters of woody mulch is however sufficient to feed the land for three years.



Strawberry plants in an organic mulch
(photo credit: Guy Rugemer)

The objective of the woody mulch is to enrich the soil with humus. For this, Guy Rugemer mainly uses green waste provided by a landscaper (richer in fragmented wood than green waste from the recycling center). He lets the woody green waste decompose a little before spreading it in his land to avoid a

"I was inspired by the work done by Benoit Noël (agronomist) on the Ramial chipped Wood." Guy Rugemer

nitrogen deficiency. However, the level of decomposition of this woody waste remains less advanced than the green waste used to make potting soil, and it is not sieved (it is spread with woody pieces). With this method, Guy Rugemer brings in carbon and allows his soil to store organic matter.

"To sow, I create a furrow in the mulch with my brushcutter. I tilt the rotor vertically to make the furrow."

Guy Rugemer

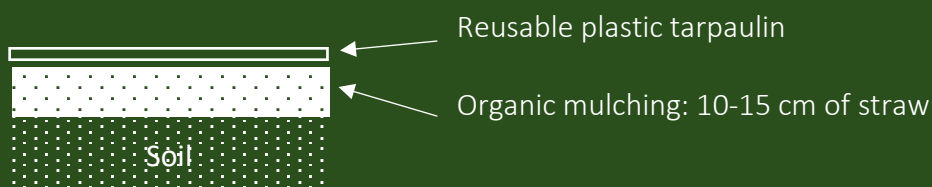
The layer of straw, hay or preserved fodder will degrade faster and provides nitrogen more quickly. This layer must be thick enough to prevent weeds germinating and growing. If the weed pressure remains low, straw is added regularly. If the weed pressure becomes too high, the second method (straw + plastic sheet) is used. Guy Rugemer gets straw, hay and preserved fodder from neighbouring farmers. As his neighbours give it for free, he does not choose them and adjusts his practices according to what he receives.

This method can be used both for transplanting plants and for sowing in the open ground (example: carrots, radishes, etc.).

Method combining organic mulching and plastic mulching:

This method is used on plots with high weed pressure, or on "new" plots for the first time or re-cultivated after plant cover.

Method of use:



The objective is to limit the development of weeds as much as possible while continuing to promote biological activity in the soil. To allow the water into his soil, Guy Rugemer regularly pierces the tarpaulin (every 60 cm) in addition to the holes made for planting. He covers the pierced place with a stone.

For the past four years, Guy Rugemer has used an old silage cover donated by a neighbouring farmer. He moves this tarpaulin to the land that needs it. It is fixed to the ground using stones (the staples are not practical because the mulching is too high to allow them to sink well into the ground). This tarpaulin is pierced by hand to transplant seedlings (this method can only be used for planting, not for sowing).

Below the plastic tarpaulin, he uses only straw (no hay or preserved fodder because they would degrade too quickly). At the end of the cultivation, the tarpaulin is removed. The straw below begins to degrade but it is still present as a fairly thick layer. Then, this layer of straw can be used as mulch for sowing or for planting another crop (the thickness of the remaining mulch can then be supplemented with straw, hay or further plastic mulch).

Guy Rugemer adjusts his methods according to:

- The weed pressure of his plots (strong weed development or not);
- The cultivation (nitrogen requirement, cultivation management);
- The need for fertilising soils;
- The quantity of green waste (and woody waste), straw, hay and wrapping available.



Attention points:

Nitrogen deficiency

Organic mulching can cause nitrogen deficiency (imbalance in the C / N ratio). To avoid this, Guy Rugemer is trying to use a woody waste that has already been partially degraded, so it contains more nitrogen. In curative treatment, if he finds a nitrogen deficiency on a crop, he treats it with a nettle maceration (maceration rich in nitrogen) which he makes himself.

Voles

Mulching attracts certain pests. Voles are particularly present on his land. However, they do not do too much damage and are regulated by natural predators (foxes, weasels, etc.). Guy Rugemer is also trying to alternate root and leaf vegetables on his plots to limit their development.

Heating up of the ground

Guy Rugemer adapts his cultural practices, because with mulching, the soil heats up less quickly in spring (certain sowing dates have to be shifted).

Slugs

Another pest attracted by the humid environment created by mulching and protected from the sun: slugs. Guy Rugemer uses organic treatments against these pests.



Salad plantation in an organic mulch (photo credit: Guy Rugemer)

Even if the raw materials used in his organic mulches are not necessarily organic, they remain more respectful of the environment than conventional plastic mulching (local resources). Ultimately, Guy Rugemer would like to self-produce his mulch by mowing the grass strips on his lands.

Concerning the second method and the use of a plastic tarpaulin, even if this solution is not ideal from an environmental point of view, this tarpaulin is nevertheless used in a sustainable way: it has already been used by a farmer, has been used since several years on the farm and Guy Rugemer ensures that no piece of plastic is left in the ground.

Use of organic mulch	
Advantages	Disadvantages
<ul style="list-style-type: none"> - Effective; - Economic; - Local and renewable resource; - Easy supply; - Water saving; - Carbon provision. 	<ul style="list-style-type: none"> - Risk of nitrogen deficiency (C / N ratio); - Requires equipment (tractor) to facilitate spreading the mulch: the volumes to be moved are large; - The ground takes longer to warm up; - Mulching creates a favourable environment to the development of certain pests (voles, slugs).

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This brochure is part of a series of three brochures dedicated to alternatives to contentious inputs. You can consult the two brochures on the Organic-PLUS website (www.organic-plus.net) or on the ABioDoc website (<http://www.abiodoc.com/documents-abiodoc/syntheses-rapports/temoignages-agriculteurs-bio-alternatives-aux-intrants-litigieux>).

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