A GREEN SOLUTION TO OLIVE OIL POMACE AND OLIVE MILL WASTE WATER THAT BENEFITS ALL

USING VERMICOMPOST TO DEVELOP ADDITIONA
INDUSTRY AND REDUCING THE IMPACT TH

This proposal is looking to establish funding to establish a low cost best practice and procedure that can be implemented by individual Olive farmers to process their own waste olive pomace and utilize the OMWW produced in olive oil production in that process.

In a manor that would produce such an additional income it would match or sup parse the revenue from the olive production itself but still be reliant on that production to exist.

The employment and products produced in the process of using vermiculture to compost olive pomace and OMWW goes far beyond the statements set out in this short document.

The Wormearth compost produced from the olive pomace and manure mix is a superior product to peat based compost.

Worms can be used as a high protein food once processed.

The liquid collected (*Compost tea is a liquid solution collected from the process or made by infusion*) has been recognized as a wonder plant food for many years by gardeners and has a high demand from all growers.

Vermicompost tea has been shown to cause a 173.5% increase in plant growth by mass over plants grown without castings. These results were seen with only a 10% addition of castings to produce these results.

AL EMPLOYMENT AND INCOME IN THE OLIVE OIL HIS INDUSTRY HAS ON THE ENVIRONMENT

There is over four million tons olive pomace produced every year which up until recently was sent to land fill or sent for expensive forms of chemical processing.

By developing a process and practice that returns that pomace to the farms that produce the olives for Vermi-composting you can return the land to agro-silvo -pastoral system and not chemical based production, improving the quality of olives produced.

Reducing costs and the reliance on chemical fertilizers to the farmer, which could lead to green accreditation.

Reducing transport and cost of disposal which impacts on the carbon foot print of the olive oil industry.

Additional employment in areas that are seeing major reductions at this time due to continued mechanization in agriculture.

We would look to develop a best production practice and low cost build template that can be implemented by all olive farmers. One that can be scaled to each farm or mills requirements

Vermicompost can offer a sustainable and substantial subsidiary income for those farmers.

A good idea does not have to be a complicated one, after all the olive pomace problem starts in the olive grove how apt a solution it would be if it were the olive grower that provided the solution to the olive waste issues.

In the Mediterranean basin and since early civilizations, olive trees were valued as symbols of wisdom, peace, abundance and glory.

The olive tree is most adapted to the Mediterranean climate and is one of its characteristic species.

The Mediterranean region being poor in water resources, rendered the olive tree to become an economically beneficial target. Olive trees depend mainly on rainfall and don't need irrigation on the scale of other crops.

A 15-year study by the University of Jaén carried out at an olive farm called Cortijo Angulo, which only uses compost obtained from olive residues, found that, compared with neighbouring producers that used chemical fertilisers, there was 400% more organic matter in the soil, 26% greater water retention capacity, 600% more total nitrogen, and 1,084% more phosphor The farm also achieved carbon fixation of 40 tonnes per hectare, which means that, from a perspective of mitigating climate change, composting is preferable to valorising the energy from pomace.

In this sense, it was recommended that the Administration deliver CO2-reduction certificates to those farmers that use pomace compost.

José Maria Álvarez pointed out the collateral benefits of composting that were identified in the Cortijo Angulo pilot study the recovery of lost soil fertility as a result of erosion, making land available for grazing animals, and an increase in rabbit and partridge populations. It is possible, therefore, to say that the farm was returning to the classic Mediterranean agro-silvo-pastoral system, offering rich biological diversity and soil protection from erosion compared with agro-chemical exploitation that bases productivity on the use of chemical fertilisers and all olive farmers that embrace the projects proposals should be rewarded by grants or carbon credits they could sell on to industry.

the return to the classic Mediterranean agro-silvo -pastoral system in opposition to the agro-chemical exploitation relays mostly in the use of compost would be produced from pomace locally.

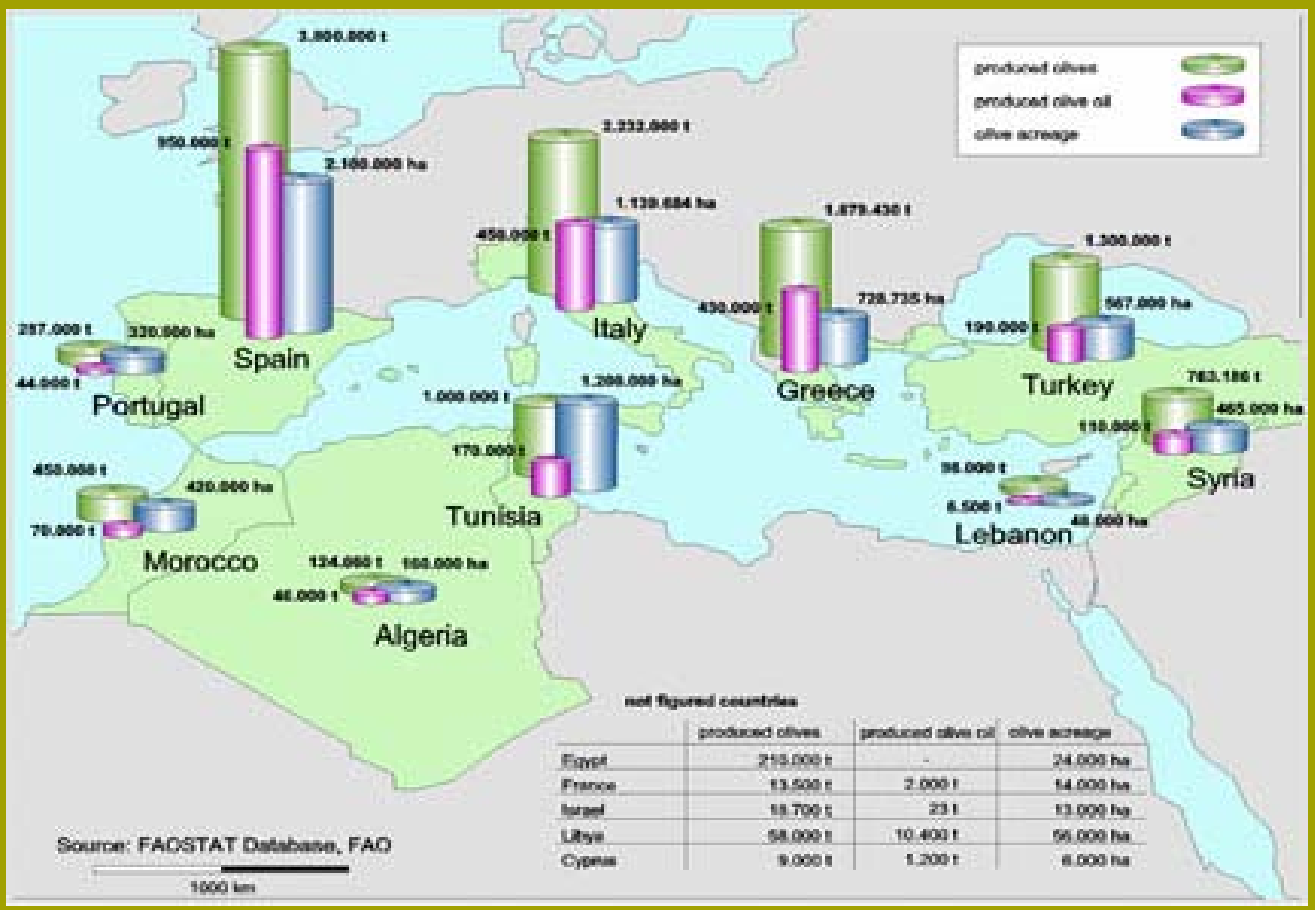
Management is integral to the success of silvo-pastures, but producers currently lack

The information, compost and decision support systems needed to implement the practices. Guidelines are especially needed to help producers manage competition for light, water, and nutrients

In this context, livestock should be viewed as both a product and a management tool, particularly where competition between trees and grass can be reduced by grazing.

The continued application of treated olive waste by the Worm Earth project has a reparative effect and prevents soil erosion.

It also offers additional revenue income to olive farmers in grazing, compost products for sale and other high value benefits as shown in the pilot project that operated on Zykenthos in 2008/9.



The sta
does no

It can r
that cre

The nex
product
out on
2009.

It was e
correct
could b
and stra
vermicu

The mo
pomace
is, it is
uses all
product
someth
even tu
vated c
OMWW

Sadly C
acciden
wife As
(4) far

Craig w
eco pro
project
Ashley
would b

tement “The perfect storm”
ot have to relate to a disaster.

efer to any chain of events
eate a exceptional happening.

xt pages show the trial
tion that Craig Weston carried
the island of Zante in 2008 to

established that at the
mixtures, olive oil pomace
e mixed with animal manure
aw providing a high quality
ulture environment.

ost attractive part of this olive
e vermi-composting proposal
a 100% green process that
of the waste produced in oil
tion, the pomace and OMWW
ing not achieved before,
rning the stones into acti-
harcoal to use in filtering the
.

raig died in a swimming pool
t in August 2011 leaving his
hley and their daughter Luci
to early.

as well know on Zante for his
jects, he’s plastic recycle
is well used on the island.
and I feel that this project
be a fitting memorial to he's

unique solutions to environmental issues.

Some of the Benefits of the Watson vermin-culture process.

100% conversion of Olive pomace & OMWW.

Use of Olive Mill Waste Water in the process instead of fresh, removing the need To send that OMWW to be chemical treated as is now under EU rules.

Process can be performed At producing olive farms removing the need to transport waste to land fill.

Six positive revenue opportunities from the Process being;
Compost
Liquid fertiliser
Animal protein production
Olive farm grazing as an additional income for farms.
Increased employment from compost production.
Sale of compost

For the area the production brings additional employment in production, animal management and administration.

Kalipado W

Kalipado Worm Farm, started in 2008, A passion for fishing and a problem getting live bait here on our beautiful Greek island Zakynthos, live bait was available but you only got 10 to 12 worms (nearly dead in the tub) and not very lively for the hook, at a cost of 4-00 euro's,

Well, my brother was coming over from Manchester to visit for a fishing trip, those days I had an 8 metre Trophy Bay liner Skiff, pushed along by a Yamaha 55 outboard which flew like the wind , 33 knots on a flat sea with 6 passengers,

Worm Farm

She was amazing, we called her " KNOT FOR SAIL " I ran fishing trips for tourists, four hourly trips, picked up and dropped off at the hotel for 35 euro, including tackle n bait, Barracuda, Dorado, Tuna, King Mackerel,& Jacks to name a few of the fish we could catch,

so i rang my brother in Manchester to bring out some worms, as i wanted to try the river for Sea Bass and Mullet! he did this, we went fishing we had a ball and caught tons of fish "with the worms" some worms were left over and not thinking i just put them in the garage and forgot about them.

My brother went back to sunny Manchester and it was back to taking tourists out on the boat for me.

Looking closer I thought these look like eggs! out came the lap top, on the internet, worm farming was the target. It

Three weeks later I was in the garage and saw the worm tub thinking OMG they going to be rank after all his time, and when I reluctantly opened the lid, the soil was covered in a mass of tiny green balls

seems my worms had found a perfect condition to breed in the tub in my garage, and so I read on learning that male and females worms (forget the scientific name) lay eggs in the right conditions, and a worm can lay eggs every two weeks !

Did my research on the worm farming business.

I approached local fishing tackle shops here on the island and said if i could supply live bait would you buy it ? every one I approached was excited, and we decided to have a go.

I ordered 10,000 worms (a breeders pack)

I sourced (ok scrounged) loads of tubs and massive planters form local garden centres and got the local farm owner Yannis to drop me 4 tons of manure.

I'd built a special 4mtr by 3mtr breeding shed and a 30 foot poly tunnel to house the tubs and worms,

I put 50% compost and 50% manure in a tub with 1-000 DENDROBENA garden worms and did this to all the tubs I had, (see pictures) moisture and temperature are very important, also lighting.

Worms lay eggs on the surface of the compound they live in, they come up to lay their eggs, then go back down to eat and breed,

But if its dark they WILL crawl out of the tubs and are gone, so I devised a 12watt lighting system with energy saving bulbs on top of each tub, that were set with a timer.

One month later I was seeing eggs, the idea is to empty the contents out on to a table and sort out the eggs, but that was to slow and time consuming so i use to take all worms out

(1,000) and put them in a fresh tub of compost and manure, 6 to 8 weeks later the eggs hatch, some have 2 worms in each egg ! 3 months later the worms will them selves lay eggs, so 1,000

Buying compost was getting expensive as 40-50.000 worms were eating it like it was going out of fashion, so i decided to look for a new feed, and right on my doorstep, Greece being one of the biggest exporters of

worms make approximately 2,000 eggs some hatch double, (remember this is once a month)

Olives, was the perfect worm feed, OLIVE WASTE (pomace) that's the crushed leaves pith and shells from the olives after the oils have been extracted,

thousands of tons of this pomice is produced on this tiny island alone.

Its a nightmare to get rid of, because of its acidity, not good for animal feeds, no good for the fields, unless its buried for a year or two, to let nature take its coarse and filter it with natural rain water !!

But you add my manure mix and olive waste in amounts that I have, after lots of research, developed and you have a feed that worms thrive on, yes thrive

Now let me tell you this 1,000 worms in a tub with a fresh olive waste mix, left for a month (just mist spray the surface every two days for moisture) and you have the finest growing compound money can buy with a PH of 6.5 perfect.

I was selling this in 10 ltr bags for 1,50 euro and I couldn't produce enough, look at the green bags outside my worm shed ! it was selling faster than i could produce it in the small area i had allocated for the project.

I planted a grape vine in typical Greek soil and the same type grape vine in my special compound, mine grew 3 times taller per month than the vine in the Greek soil, i still have those vines today and they give me plenty of grapes.

The worms, I was selling to 6 fishing tackle shops, in specially designed tubs, in Cartons that contained 16 tubs, each tub containing 20-25 worms, at an amazing rate, for 1.50 Euros a the shops were selling for 4-00 euro's for doing nothing, great business !
But we have a water problem on the island, and we don't have Mains water like you guys in the UK, we have natural springs under the ground and there are pumps that pump it to premises, but only once or twice a week,

That's when I came up with the idea of using the OMWW.

I researched water filtration and found a company that installed reed filtration beds and talked to the MD James, he did and still does help and without his practice knowledge I don't know what I would have done, he always had the solution to problems that arose. It was he that advised I set up a small reed bed style filter system based on tanks and barrels, it worked like a dream.

After a bit of experimentation on flow and feed rates I got a good clean water that the worms thrived on.

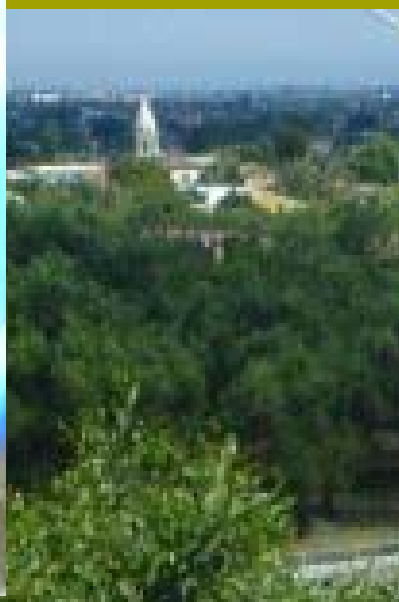
James had a saying "Nature does it day in

Day out, don't argue copy, she knows best!" I did not have any chemical tests or research done on the filtered water but as the worms seemed to thrive on it it did not seem necessary.

I did do ph tests using a swimming pool tester though and after treatment it was close to neutral most of the time.

The islands tackle shops and local fishermen loved the worms.

When I consider that the whole project was the result of discarding a few fishing worms it is hard to comprehend that, that action could result in a solution to a serious pollution problem and employment for many people.



Our lovely hard working worms and the pilot production plant.

This picture was taken at around 5pm, the 50 bags of compost you see stacked by the shed where gone by 8pm that Friday evening, plus worms for fishermen and the liquid fertilizer that I collect from the compost drain, Known as liquid gold.


23-May-08 16:43

For information; Waste from olive oil industry causing health issues for Syria

Syria's huge olive oil industry is leaving its mark on the environment. Waste products from olive oil processing mills which are not properly disposed of are causing soil and water pollution, and killing plant and animal life.

During the processing of olive oil, olives are crushed and mixed with water. The oil is then separated out from the dirty water and solid residue.

"The water used in the process and then discarded is often just pumped out onto surrounding land," environment expert Marwan Dimashki told IRIN.

"This waste water contains polythenols which provide the natural green and black colouring of olives. However, they are chemicals which, when spread in large quantities, change environmental conditions and cause a reduction in soil fertility."

Impact on human health

He said human health could be at risk. "Contaminated water becomes undrinkable. It goes brown and smelly and contains chemicals bad for human consumption, such as some of the polythenols."

Where processing plants are close to rivers, waste water can run off into the rivers, harming aquatic life (with toxic chemicals or through compounds in the waste using up supplies of oxygen) and contaminating human drinking water.

If pomace - the solid residue left over from the processing of olive oil - is not properly dried out and disposed of, it too can seep into the soil, changing the acidity and nutrient make-up.

The impact on human health of consuming the chemicals in olive waste water is still unknown. Catechol, one of the chemicals in the waste water thought by some experts to be harmful, is not considered a threat by the World Health Organization (WHO).

"Catechol is not considered by WHO in its guidelines for drinking water quality and thus there is no proposed drinking-water recommended maximum limit," said Bruce Gordon, head of the drinking water safety and quality team at WHO. However, the International Agency for Research on Cancer (IARC) lists catechol as "possibly carcinogenic to humans".

The problem is not a small-scale one. Syria is the world's fifth largest olive oil producer, contributing 4.6 percent of the world's supply each year from its 920 mills.

The total waste water from Syria's olive oil production amounts to 700,000 cubic metres a year, along with 280,000 tonnes of pomace.

Lack of awareness

The reasons for the contamination include dated technology and a lack of awareness by mill owners.

"The majority of the mills are family-run businesses which still use traditional presses rather than [modern] machinery," Dimashki said. "They do not have the equipment to clean the waste water and often cannot afford to buy it."

In total, 4.6 million tonnes of olive-mill wastewater are produced each year in the EU alone – some 80 to 83% water. Another 15 to 18% are organic compounds – mainly phenols, polyphenols and tannins – while the remainder is inorganic elements such as potassium salts and phosphates.

wormearth@gmx.com