Dear reader,

In your hands unfolds the very first edition of Organic Times. A magazine called into life by MOA students, with the aim to answer the pressing question:

“What, in the name of Cor, is MOA?”

As Master students studying Organic Agriculture we by definition share the idea that the conventional food system is just not cutting it - and although we think of cake twice-a-day, this is not what we mean here. We deliberately choose to study the complexities of the ways in which we feed ourselves today and tomorrow. So who is this group of idealist do-gooder potlucky tree huggers? And why did we choose to embark on this earth-saving mission? Can we?

On the next pages you will find some of the visions sprouting from our grey organic matter. From our bookshelves to our gardens and kitchens, we take you on a great green journey through the lifestyle called MOA.

We’d like to thank everyone who contributed to the content of Organic Times: Mariana, Dylan, Olivia, Samson, Tamisan, Stella, Jody, Evita, Eddie, Parth, Lisa, Daniëlla, Angelica, Laurie, Phoebe, Gabriela, and Valentin. You helped us capture the MOA spirit!

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Happy harvesting,
Team MOAgazine*

*Heleen Prins, Samuel van Rozelaar, Donatella Gasparro, Francisco Garrido Garza, Nicholas Panayi, Chen Yang, Xinyue Li, Rianne Vastenhouw, Claire Georges, Yaoyun Zhang, Qiqian Jiang

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These wordclouds contain the words most frequently used to describe the MOA programme and MOA students in the responses to our questionnaire.
A brief look into the food system

What do we choose?

For many thousands of years, we lived in Forests. Food growing there wasn’t very easily accessible. To eat, we needed to work together and dig up roots, collect nuts, berries and hunt for animals. At a certain point (around 10,000 years ago), we thought it much more convenient to start farming and began to change the environment around us to fit our needs. We cut down parts of the forest and planted everything in open fields, where we could harvest our food instead of hunt for it. Over time, we understood how plants worked, saved seeds and domesticated animals. Today, many of us live in Cities, where we don’t grow our own food but buy it.

When we buy our food, we make choices. We decide based on price or appearance, on what we think will taste or feel good and our family. However, avocados are not the same everywhere because the soil is not the same everywhere. If the fruit is grown in soil with less nutrients, then it will be less nutritious. If the plant has been sprayed with chemicals, then there will be traces of chemicals in the avocado itself. So, choosing the healthy option is not always as simple as it sounds. Avocados are healthy depending on where and how they were grown.

Further, when we try to make the ‘healthy’ choice, who’s health are we considering? Our personal health? The health of the environment or of our economy? We might opt for Organic (Bio) avocados because they are ‘good for us’, but most of the time these are grown, picked, packaged and transported by ships, trucks and planes which burn fossil fuel causing pollution. Now, we don’t need to be discouraged by this complexity; this is a great opportunity for us to continue to be curious, to keep asking questions and try to make conscious choices. And as someone once told me:

“I don’t always make the right choices. I choose with awareness, and that’s enough.”

Avocados are considered a healthy food. In the last ten years, they have almost become a staple food in our salads and smoothies and are most commonly grown on the other side of the world (probably Mexico). We make this choice for our own health, or for the health of our family. However, avocados are not the same everywhere because the soil is not the same everywhere. If the fruit is grown in soil with less nutrients, then it will be less nutritious. If the plant has been sprayed with chemicals, then there will be traces of chemicals in the avocado itself.

So, choosing the healthy option is not always as simple as it sounds. Avocados are healthy depending on where and how they were grown.

 Yeah, how do we feed the world in 2050?

Almost 10 BILLION people.

Agroecology is not going to do it. Hell, organic agriculture is definitely not going to do it. Efficiency, that’s what we need. We need to produce lots more on the same, if not less, space. That’s it. And actually, only with pesticides, machines, and fertilizers can we do it.

Oil. Hmmmm, yeah baby, oil...

Sounds familiar? The last words maybe not, because those are usually not mentioned in the common discourse on “how to feed the world in 2050”. The “feeding the world” dilemma contains power, lots of it. Those that claim to have the answers immediately gain legitimacy; or rather, the power to do whatever it takes to prevent the future threat. Even if it means we use most of our resources (time, energy, money) to prevent this future threat. This is what we call ontopower.

But what about the current 7 billion? The 2 billion overweight, and the almost 1 billion starved? Is more efficiency (read: more production) going to save them? It sounds much more like an issue of access, than of production and efficiency.

“How to feed the world in 2050” is a very convenient question for the agro-industry to ask the world at a time when the world starts to question the sustainability of that very industry that excels at producing commodities. It is a question that renders solutions like agroecology and organic agriculture immediately incompetent, since they cannot “feed the world in 2050” anyway.

Can they not? Let’s rephrase the question for a second to something much more imminent:

“How can the world feed itself, here and now?”

Maybe with this question we can give power to solutions that do not rely on external inputs and patented technologies only, solutions that build resilient communities and a circular agriculture where there are not 1 billion people undernourished and 2 billion people overweight. Sure, tech is welcome, no actually, tech is needed, but only in the hands of the people. We should not constantly omit the agroecological side of the coin by always asking “but can that feed the world in 2050?” based on assumptions (models) on population, wealth, and meat consumption increases. Because what about 2100, 2200, 2300? The world will exist past 2050 and we would be wise to empower not those that have cleverly patented technologies, but those that are truly feeding their communities in sustainable ways.

And how are we going to do that? Maybe together we can figure it out.

Together.
Hands On MOA: Garden portraits

Organic Agriculture students talk a lot about organic agriculture. But what do they do with it? Here's a little taste of their hands-on garden experiments of this spring!

ANGELICA
Since January I live in a super nice house in Droevendaal! I've never had a garden before, and finally here I found the opportunity to do some gardening, sharing the work, the knowledge and (hopefully) a nice harvest with my housemates! In the pictures we're seeding potatoes before the storm.

CLAIRE
When I arrived in Wageningen in September, I was looking for a place to experiment everything we were talking about in class and to learn from students with previous farming experience. I wanted to grow from seed to fork all kind of veggies and take part in the farm's decisions throughout the seasons. I found all of that in Wageningen Student Farm and even more! Members are conducting many different kinds of projects to "grow together" and get your hands dirty. That's how I ended up learning how to brew delicious beer with the garden's hops!

DANIELLA
In the almost 5 years I live in Droef with a garden I tried out quite some things. After a half year break, because of my exchange abroad that was exactly in the garden season, I decided that this will be my best garden year so far! In the back of my garden is a small field (this year larger than ever) where I grow many different vegetables and some fruits, flowers and herbs. Here I try to combine the crops in such a way that they can support each other. Also on other plots around the house I grow some food (for both humans and insects). We planned for example to build a potato tower, strawberry wall and herb spiral, and in the borders of my garden I helped some edible wild plants migrating there. I'm happy to have good help in the garden, in the form of both human housemates and chickens!

DONATELLA
In my house garden I'm redesigning vegetables beds after more than one year of abandonment. We started planting all sorts of things: lettuces, cabbages, pumpkins, carrots, flowers, herbs... mixing different families in order to facilitate pollination, keeping out pests, promote biodiversity, attract natural enemies... For this year I kept the design quite simple — yet quite funky and sinusuous - and left the soil uncovered, but I will experiment in the coming seasons also with sheet mulching. I can't wait to see my seeds sprout!

LISA
This is me at the creative garden harvesting some rhubarb. Since I came to Wageningen I go there on a regular basis because it makes me happy to be active outside and to grow my own food in good company. Even though it is only a weekend activity and different from farming there is still always something you can learn and for me it completes the theory we gain in the classroom; working with soil is different from reading about it.

MARIANA
For the last few months, my boyfriend Dylan and I have been proud owners of a private plot in the Creative Garden! I love having an excuse to wander in the garden every other day now that the days are longer and the temperature warmer. There's loads of tools and resources available to members: including some veteran gardeners who are always willing to answer questions! One of my favorite aspects about community gardens is the people you meet there and the conversations had while working side by side. Having said that, we are always looking for garden buddies to come and give us a hand, so if you're interested in getting your hands a little dirty sometime — let me know!
Recipe: Vegetable Sambar

Spice up those potlucks: a MOA Café favourite

1. Finely chop all the veggies and keep them aside.
2. Rinse the dal in water well and cook it in 2 to 2.5 cups water in the pressure cooker, for 8 to 9 whistles on medium to high flame following which the dal turns soft and mushy.
3. Once the pressure settles down on its own, remove the lid and add the chopped veggies.
4. Add turmeric powder, red chili powder, coriander powder, asafoetida and salt as per taste.
5. Add 1 cup of water and stir well.
6. Pressure cook again for 1 whistle on medium to high flame to ensure that all vegetables are cooked evenly.
7. Allow the pressure to settle down on its own, remove the lid and add the 1-1.5 tbsp of sambar powder and 1tbsp of tamarind paste and allow the curry to boil till it turns thick.
8. In case the consistency of sambar is too thick, then add some water until right thickness is obtained.

Serve the curry with rice and add a tinge of lemon to make the meal heavenly.

Bon appetit 😋

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BY PARTH SHAH

Recipe: Vegetable Sambar

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Serve the curry with rice and add a tinge of lemon to make the meal heavenly.

Bon appetit 😋

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BY TAMISAN LATHEROW

Would you like smeerwortel, bieslook, or sla?

She’s doing something with agriculture...at a castle I think?

Like many internationals, I talk to my family back home quite often. One of the things that always makes me laugh is how my family explains what I’m doing at Wageningen. “She’s doing something with agriculture...at a castle I think;” is my mom’s current response. You see, back in October I took on the task of working in a castle garden for my internship, and while for many months my work was limited to research and garden plans, I didn’t really understand the scale and just how physical working in the garden would be.

Landgoed Zuylestein is in Amerongen, about 10 miles from Wageningen and about a 35 minute bus ride each way. The acre “moestuin,” or market garden, is just a small fraction of the 160 hectare facility, but believe me it’s enough when you are used to sitting in class all day! I’m typically on-site four days a week around 8.5-9hrs each day. The goal of my project is to test different composting, mulching, intercropping, and companion planting methods (agroecological practices within a historical context). For example, we’re doing deep bedding sheet mulching in one area, lasagna beds in another, companion and intercropping for pest management, and (hopefully) a Victorian mushroom bed.

With only three weeks to go, I’m not sure if we will get everything done in time, and if we do, I’m not sure if my second round of soil sampling will show any differences, but I can definitely say that if someone in the future asks me to help with their “garden,” I’m going to double check the dimensions first!

As with most internships, there have definitely been some highs and lows. Shoveling horse dung in the rain or coming in and seeing all the new cabbage plants eaten by snails were definitely lows, but finishing the deep mulching area or running the garden alone for two weeks or giving my first tour of the facility all seem to help balance the scales.

Looking toward the future, I’m pretty confident the biggest garden I personally ever want is ten meters square or less, but how often in life do you get to say you ran a castle market garden? And for the people who keep bugging me about my horrible Dutch language skills...when I leave I will be able to say several hundred words...all vegetables!
Why organic is more expensive...

By Qi Jiang

6 reasons why you can't afford organic food

1. Time requirements

Much of organic pricing can be attributed to time issues. Time is money after all, and organic growers spend a lot more time on their crops than conventional growers. The Organic Farming Research Foundation notes that: “The organic price tag more closely reflects the true cost of growing the food [including] substituting labor and intensive management for chemicals, growing, harvesting, transportation, and storage.”

Because organic growers don’t use the same amounts of harmful pesticides on their crops, they have to look for other, often manual methods of controlling pests and diseases. These methods keep pesticides out of people and the environment, but they do cost more. There’s also ongoing education for organic growers, the certification process, paperwork, inspections, planning and more that are factored into the organic grower’s schedule.

Organic foods derived from animals cost more than their conventional counterparts for the same reasons. There is more hands-on care required for organic livestock. All this costs money, of course.

2. Organic certification

Organic certification, as noted above, is time-consuming, but it’s also flat out expensive for many growers and handlers. Not only are first-time certification costs steep, averaging around $700 to $1,200 per operation, but there are other certification costs involved as well. Some of the major certification costs include renewal certification costs, education, suitable organic land, livestock from organic origins, organic seed, and special processing equipment.

Due to the higher cost and time involved, it’s necessary for organic growers to look for other, often manual methods of controlling pests and diseases. These methods keep pesticides out of people and the environment, but they do cost more. There’s also ongoing education for organic growers, the certification process, paperwork, inspections, planning and more that are factored into the organic grower’s schedule.

3. Special facilities

From growers to processors, most organic certified operations need special land and/or facilities before they can produce food. Organic land costs much more than conventional farmland because there’s a long list of qualities that organic land must possess. This applies to organic land used for crops or livestock.

On top of land issues, many organic operations are so small that they don’t warrant a full-scale manufacturing facility of their own, which means either locating an organic operation with which they can share space or purchasing special equipment for a conventional facility. If an organic company shares space with a conventional company, more time must be spent making sure that products aren’t mixed, or if they are mixed, that processing machines are properly cleaned before they’re used for organics.

4. Cheap synthetics

Organic food producers don’t use the same readily available cheap additives, flavors, and preservatives as conventional food producers do. There’s a long list of known harmful ingredients not allowed in organic food. This means organic producers must find other, less harmful but often less available and more expensive ingredients instead. It obviously costs less to use synthetic food items, so conventional food companies get a real financial break that organic companies don’t.

5. Unfair subsidy

Food prices are often influenced by subsidies, and conventional, junk-minded food is subsidized far more often than organics and healthier crops. Back in 2008, the House Appropriations Committee found that spending on farm subsidies totaled $7.5 billion annually, while just $5 million was given to organic and local food programs combined.

In most cases, subsidies are very specifically geared towards large-scale agribusiness operations, not smaller or even mid-sized organic farms. When a crop does receive a subsidy it lowers the cost consumers must pay for the end food item. Since conventional food gets the bulk of subsidies, organic prices seem higher than they are because conventional food prices are way lower than they should be.

6. The missing story

At first glance, organic food appears to be more expensive than conventional. But consider that a very large piece of the story is missing, at least where the public is concerned. There’s a lot of evidence that shows we do pay more for conventional food, it’s just harder to see because we pay these costs indirectly.

Current conventional food costs fail to reflect some key points. For example, the cost of conventional food doesn’t reflect the costs to the environment such as land, soil and water pollution. We pay for these costs through our tax dollars, not through our food budget.

Conventional food production also costs more for pesticide manufacturing and disposal. Pesticides, a known health risk, are abundant in conventional food, so when we eat pesticide-filled foods, we rack up bigger bills for medical expenses as well. Lastly, organics provide better animal welfare, promote rural development and help increase jobs — issues at which the conventional food production system fails miserably.

It’s disheartening when you see a cheap jar of conventional peanut butter or bag of conventional apples sitting right next to their higher-priced organic versions, but once you look at the whole story, it’s easy to see that organic offer benefits and long-term money savings that conventional food never will.
Sweet potato CRISP(R)S

Exploring smallholder farms intensification and gene editing opportunities and challenges through the case of sweet potato.

The world is not passing through the nicest of its phases. Global food security is a major challenge in a non-stop increasing world population scenario, especially addressing developing countries and rural areas.

Did you hear that agricultural production should increase by 70% in order to feed a population of 9.7 billion people by 2050? It’s a narrative we’ve heard quite a bit about recently. But this notion has been challenged and it has been argued that we will already produce enough to feed everybody (2). But this global issue has many different local facets: is it then a problem of distribution? Or food waste? To address issues of food security in the South, it is not enough to produce larger amount of food in the North. We are increasingly aware that food must be produced where it is consumed (2). But how should that food be produced? The technologies that are on offer for food production are being developed for high-intensity western production systems, and there’s a bit of a mismatch then if we try to apply them to lower input systems. Should these technologies be exported to developing communities, or not? And which ones? If not, how to improve those production systems?

When population grows fast in countries fed by traditional smallholder family farms, more food is needed right away, and higher intensity is often the answer. This means gradual abandonment of traditional methods towards several monocrop successions, reduction in fallow years, establishment of pests, and soil fertility depletion.

How to tackle this trend? How to ensure increased production sustainably in the long term?

Let’s explore this issue through the case of the sweet potato and the pest/disease management problems arising from shifts in smallholder production of this crop around the world.

WHY SWEET POTATO?

Sweet potato is a very genetically diverse crop with thousands of varieties (5000 only in Papua New Guinea), being grown all over the world in a broad range of climates, altitudes and soil types. The sweet potato production systems are also quite diverse, from high-input industrial systems to low-input subsistence and many manifestations in between.

Although sweet potato still receives little attention from media and research, it ranks seventh in the worldwide total food production, right after soybeans.

WHAT’S GOING ON IN SWEET POTATO FIELDS?

Authors Johnson & Gurr reviewed the information on the pests and diseases of sweet potato and the associated management practices in various production systems. Besides pests like weevils, there are over thirty diseases affecting sweet potato, caused by ancient even greater number of pathogens including viruses, fungi, bacteria, and phytoplasmas. These pathogens are problematic in all production systems, indiscriminate of scale.

A challenge faced by all production systems, is detection of pathogens in planting material. Sweet potato is vegetatively propagated, meaning that the vines, slips, and storage roots of the sweet potato are used to generate the next crop generation. This planting material is often asymptomatic, making it very easy to spread disease without even knowing it.

Sweet potato is also susceptible to a variety of rot-inducing pathogens post harvest. This is less of a concern for smallholder systems practicing piecemeal harvesting (thanks to in-ground storage) but is likely to become more of an issue for those farmers transitioning towards commercial production and may be lacking in the proper storage facilities.

Pest control technologies vary from FT to resistance breeding. Genetic engineering is changing fast, and some argue that novel techniques like CRISPR-Cas9 can play a remarkable role in breeding 3.5.

A DIVE INTO CRISPR-CAS9

WHAT, WHERE, WHY, AND ABOVE ALL: YES OR NO?

Have you already heard about CRISPR-Cas9? The scientific world is in great turmoil about it and the debate has already got to the point of some calling for a moratorium. What are we talking about, and why is it that so controversial?

CRISPR stands for ‘clustered regularly interspaced short palindromic repeats’; it is being harnessed as a gene editing tool that employs the power of thousands of years of microbial immune system evolution for application in any living organism. A multitude of scientific fields are utilizing this natural defense mechanism to very precisely splice out a target sequence of DNA and (in many cases) replace it with a desired genetic sequence, effectively altering the genetic expression of whichever desired organism. Critics of this technology might find it dangerous to perform such modifications while supporters of this technology argue that plant breeders have done the same thing for years, but we now have the means to achieve a better result in a fraction of the time.

SWEET POTATO CRISP(R)S - WITH A PINCH OF SALT

It’s true, CRISPR-Cas9 is easy and cheap – or, better, easier and cheaper - than all the other genome editing techniques. Nevertheless, applying it to a staple and extremely varied crop as sweet potato is not that straightforward. And still, equipped laboratories, as well as human competencies, are needed (we’re quite far from create-your-own-plant-at-home tool kits).

Specific CRISPR-Cas9 and crRNA designs need to be developed for each specific gene that we want to edit. This means, first, to know what-does-what in the sweet potato genome. And it implies an enormous amount of genes to delete/silence/insert to address several different target organisms, in several different plant varieties, and in several different regions of the world.

That does not sound that possible if nobody is willing to pay for it in smallholder subsistence agriculture contests. And above all, it’s worth to imagine genomic editing in sweet potatoes as feasible, we should go a step further and consider socio-ecological risks.

From an environmental point of view, little is still known about the long term effects of GMOs release and their interaction with autochthonous plant-microbial communities. In addition, there’s little we can predict if nothing is still known about which genes should be edited for which target organism.

A stronger point against any kind of top-down technology is the seed sovereignty issue. Farmers based on a low input system would become reliant on external propagation material and would be left out of the breeding decision-making process.

FINAL THOUGHTS

Genetic engineering is a promising and fast developing field that will allow humans to create fast solutions to many issues quite soon.

But that is not a universal solution for everything. Many more things are happening in the scientific and agricultural world, with an effort to match the global climate urgencies with the rising food demand.

Ecological intensification (2) may play a key role in developing and developed countries in order to increase food production per hectare, not only without harnessing natural resources, but while improving and restoring a depleted environment that we cannot afford to exploit anymore.

This is an abridged version of an article previously published on The Living Soil blog

BY DONATELLA GASPARRO AND OLIVIA ELSNPETER

THE BIG PICTURE

Exploring smallholder farms intensification and gene editing opportunities and challenges through the case of sweet potato.

BY DONATELLA GASPARRO AND OLIVIA ELSNPETER

CRISP(R)S

BY DONATELLA GASPARRO AND OLIVIA ELSNPETER

ABOVE ALL: YES OR NO?

WHAT, WHERE, WHY, AND ABOVE ALL: YES OR NO?

A DIVE INTO CRISPR-CAS9

WHAT, WHERE, WHY, AND ABOVE ALL: YES OR NO?

A DIVE INTO CRISPR-CAS9

WHAT, WHERE, WHY, AND ABOVE ALL: YES OR NO?
Life After MOA

Where is all of this going, anyway?

QUESTIONNAIRE BY RIANNE VASTENHOUW

What else?

CONSULTANCY

- Working for FAO
- Educator teaching people to eat more sustainably
- Lobby for farmers, consult municipalities on sustainable food governance
- Educator & consultant in permaculture/agroecology design
- Communicating/teaching/inspiring about regenerative agricultural systems
- Advisor for biocontrol (not all insects are bad!)
- Spreading knowledge about regenerative agriculture practices

RESEARCH

- Doing a PhD in dairy farming
- Sustainable food production researcher
- Biocontrol Researcher
- Professor in a warm country with lots of free time and a good celery
- Part time teaching/research, part time farming

OTHER DREAMS

- A person who is able to make change of the world in small details
- Part time job, part time farming, father, sailor, ninja apprentice
- A castle, with a restaurant, greenhouse, and ginormous veg & flower garden
- Becoming a professional classical singer. Or if my singer’s career does not work out, saving the world

If I were UN Secretary,

- the UN Secretary I would be, I’d give everyone a flower and we’d sing happily.
- With our good suits in the soil, having fun the sun, we would make a big circle, we would hug everyone!
- When we had Big Questions, we would ask a Big Tree, and before making Big Decisions, About improving the resilience of food production systems to meet the demand of a growing population, We would...
- close our eyes and...
- take a deep breath in!

-Nicholas Panayi

MOTIONTARI ON THE TREES, WHERE WERT

Organic Excursion Times #1

Sometimes we’re allowed off-campus

Do you want to become a farmer?

- YES
- NO
- MAYBE

Tamisan wins the International “Gotta catch ‘em all” samples competition

If I were UN Secretary, the UN Secretary I would be, I’d give everyone a flower and we’d sing happily.
One-fourth of us wants to farm. One-third considers becoming a farmer. What then? We asked.

LinkedIN? No thanks: At least 5 other reasons to change the world through cheese

BY PHOEBE PARROS

Tangy Queso Fresco, an ooey-gooey Camembert, crumbly Lancashire, fruity-nutty Parmigiano-Reggiano; milk is no less than magic. Raw milk and the same basic seven or eight processing steps yield cheese, a product as diverse as it is delicious. Farmstead cheese—cheese made on a farm from the milk of a farmer’s own dairy herd—presents yet another layer of fascination and complexity. This milk is a consequence of interconnected components—soil biota and type, geomorphology, climatic conditions, agronomic processes, animal husbandry and breed, microbiology, chemistry, tradition, culture, policy—all to be balanced and negotiated by a cheesemaker’s expert hand.

Farmstead cheese is a spellbinding socio-material artifact “born and borne through a nexus of relational encounters . . . both constructed and constituted through situated practice.”

My friends—with only a smidgeon of hyperbole—to be a cheesemaker is to have the power of a demi-god.

After 6 years working under other farmers and cheesemakers, I am ready to farm for myself. The goal: A resilient self-complementing silvopasture system with ruminants suited to low-input husbandry.

The challenges? Go ahead, take your pick: land access, access to capital and financing, labor concerns, technical concerns, potential knowledge deficits—it’s enough to dishearten even the most motivated aspirant. But, truth be told, I’ve set a high bar. I don’t just want to make dairy products—I want to awe, to inspire, to catalyze change.

At the risk of appearing fanatical, let me state the mission: I believe in evoking the transformative power of gastronomy to alter people’s relationship to consumption. I believe small-scale farming has a role to play in community building and the capacity to yield profits while assuming social responsibility. I believe that, given the proper context, dairy animals can be part of a regenerative farming system that increases biodiversity, enriches soil quality, and strives towards carbon neutrality.

Someday soon, I will have a farm. On it, I will make cheese. You are invited. Bring your boots.

* Bless you, Stephen Sherwood et al. (2017, p. 212). In the words of the immortal bard, Michael Jackson, “I wanna fit-Flow with you (all night), Dance you into day (sunlight), I wanna rock with you (all night), Rock the night away.”

How to be part of nature again

BY GABRIELA GALARZA FERRÍN

Being born in Ecuador, a megadiverse country, I fell in love with the endless forms of nature and studied Biological Sciences. I wanted to study my country’s biodiversity and help preserve our natural ecosystems. During my bachelor studies, I traveled throughout Ecuador looking for pristine habitats and experiencing different ecosystems. From the Amazon rainforest, the paramo at the high Andes, to the Galapagos Islands.

On this journey, I witnessed the degradation of natural ecosystems, biodiversity loss, unsustainable development, and the growing effects of climate change. I became aware of the challenges of my generation. A sense of urgency made me search for solutions, I wondered how can human beings and nature have a harmonious coexistence?

My answer: Permaculture and Agroecology. There is a potential for transformation on this disciplines that can allow human beings to be part of nature again. My life goal is to create a Permaculture farm on the Ecuadorian cloud forest that produces food, while giving shelter to biodiversity and enhancing the local ecosystem. And to use science to promote Agroecology in Ecuador.

I hope MOA can allow me to better understand the challenges of sustainable agriculture, and to broaden my skills to be a change agent.

How can human beings and nature have a harmonious coexistence?
Recipe: Authentic Lemon Zucchini Risotto

For 4 ± unexpected guests

1 bottle of white wine
Another bottle of white wine
500 gr Arborio rice from the Po Valley, Italy
2 yellow onions from The Hoge Born, chopped finely
2 zucchini’s from The Stroom, not too large, please have mercy. 1 grated, 1 chopped in 1 cm cubes
1 Femminello St. Teresa Lemon from Sicily, squeezed
250 gr of Homestead (aka Greenfeast) Heirloom peas
Vegetable broth - see last month’s recipe
Some shavings of Parmigiano Reggiano from Modena
A generous dash of extra virgin olive oil from Tuscany

You need to be born in Italy, speak the language fluently, and have eaten pasta from under the kitchen table of your nonna for the first 15 years of your life.

Just kidding. Relax, pour yourself a glass, and drizzle some olive oil in a cast iron pan.

Sauté the finely chopped onions in the pan with lid to preserve those delicious fluids. Low heat, please.

Once soft and pearly, add the Arborio rice and fruit for a minute or two.

When finished, pour yourself another glass. Then deglaze the rice with a firm glass of wine and let the alcohol evaporate. Some may find that a shame.

Grate 1 zucchini into the rice.

Now for the multi-tasking (sorry lad): whilst pouring boiling broth spoon by spoon into the pan and stirring through the rice, in another cast iron frying pan fry on high heat the other zucchini, chopped in 1 cm cubes. Salt it, and squeeze the lemon over it once the courgette has gained some nice colour (burn baby, burn).

Add the peas to the rice and continue gradually pouring in the broth and stirring until the rice is soft enough. Finish with salt and pepper.

Serve the risotto with some fried lemony zucchini on top and parmigiano shavings as a crown - first to those salivating the most.

Hello from down the agrifood chain, MOAs! I am studying Food Technology at WUR, and I’d like to share... hey, wait, don’t turn the page!! Come back! We don’t have to be enemies!!

Now that I have your attention — I’d like to share a little story about just how important sustainable cultivation is from a Food Technologist's perspective. In a course I recently took, “Sustainability in Food Chains”, we explored how different methods of preparing foods and ingredients affected overall CO2 emissions, energy use, and water use. In another course “Sustainable Food and Bioprocessing”, we learned about minimizing and reusing waste streams of food production. But one common trend that stuck out to me through all our analysis of process sustainability was just how energy intensive food cultivation is! Many of our objectives that aimed at increasing sustainability only focused on the energy used for processing. In most cases, cultivation accounted for 40-66% of both the energy use and CO2 emissions! An example of Tomato flakes, commonly used in prepared tomato soups, is shown below:

We don’t have to be enemies!!

Now I know what you may be thinking — “Couldn’t we avoid these problems if we just stopped making tomato flakes or industrially produced juice or corn starch?” And while that is a fair point and one very much up for debate, the fact is that these industries exist and will likely exist for a very long time, so it is in humanity’s best interest to shift the way we produce these products from “making more with more” to “making enough (or more!) with less”.

If you’ve made it this far without throwing away the magazine, then I applaud you, and I hope you know that we food technologists are on your side! We aren’t just hidden away in our laboratories, complaining about Organic certification and scheming about how to put as much sugar into the diet as possible (at least not all of us!). We can offer producers ways to minimize waste and increase value, and can work together to ensure sustainable and fair production. So this is my challenge for you; talk to a food technologists and let them know how their decisions affect what happens upstream. Discuss ways we can make it easier for you to decrease energy use and emissions. The more clarity and information exchange we have between producers and processors, the easier it will be to make joint sustainable decisions in the future.


**Bread is Gold**

Castelmagno & Radicchio Ravìolì, Burnt Lime soup, Tres Leches Sponge Cake with Dulce de Leche Ice Cream. As I drudged through the recipes, I satisfy my cravings with another piece of chocolate.

Massimo Bottura, a 3-star Michelin chef famous for his innovative, witty, and oh-so-delicious dishes served in his restaurant Osteria Francescana in Modena, Italy, has provided us with a small gem among cookbooks. Indeed, this book gives us much more than delicious recipes: it tells the story of Refettorio Ambrosiano, a communal dining hall set up by Massimo, where some of the world’s best chefs cooked for Milan’s poor during the six months of Milan’s Expo, 2015.

_*...Real beauty is to see the value in something that might not seem to have any value at all*_

Bread Is Gold takes us on a journey through the six months of Expo, during which celebrated chefs cook with scraps for over 100 people from local homeless shelters. It tells the story of a small community of chefs, volunteers, children, and homeless people emerging around delicious meals made from salvaged food. And yes, it also shares these recipes, along with the stories about the chefs themselves and the particularities that made their nights special. Not the easiest recipes, but definitely a fun read.

_*One-third of the food we produce globally is wasted every year, including nearly four trillion apples. Just imagine how many apple pies we could make?*_

On the bus to BioFach I was reading _The year of the flood_, the second book in Margaret Atwood’s MaddAddam trilogy. The combination of my reading choice, the excursion destination, and the MOA Cafe debate topic prompted me to write my CRISPR essay with a humanities twist. Let’s explore how literature can help us to discuss the future.

Although Atwood wrote the MaddAddam trilogy before CRISPR CAS 9 entered the stage, biotechnology is one of the major themes. The book series describes the remains of a society challenged by climate change and depleted resources, previously ruled by private corporations, and now almost completely wiped out by a bioengineered plague. Before ‘the waterless flood’ brainiac elites lived in heavily secured compounds, creating organ donor pigeons, glow-in-the-dark rose bushes, and headless meat-producing ChickieNobs creatures while the rest of the population struggles to survive in the pleeblands consuming their products. Sounds fun, right?

_*The book series describes the remains of a society challenged with complex topics such as the role of CRISPR in agriculture. It should, however, be an addition to a scientific understanding of this topic. Ideally this combination can help us to define where we are on the spectrum between dystopias of eco-pessimist thinking and progressive techno-utopian thinking. Then, is CRISPR a symptom of humanity’s hubris - and therefore a predictor of our downfall - or is it the cure for a number of its problems?*_

The MaddAddam books are great examples of an exploration of the consequences of science beyond science itself. Rather than criticizing biotechnology, Atwood criticizes humanities: unequal power structures, exclusion, and single-minded thinking. Reading and creating stories of what the future could look like is, besides fun, a great exercise to reflect on today’s debatable topics. Nevertheless, a sceptical attitude should be applied to science and technology and those stories we can find utopias and dystopias in both.

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**Food Security, Agricultural Policies and Economic Growth**

This is the kind of book I aspire to read in my free time, but never really get to next to courses, social life, and a short attention span. So, I took a class around it that would help me get through it and share the reading experience with others. For the Capita Selecta course with the same title organized by the Rural and Environmental History Group I ploughed through this book within three weeks. As the title suggests, it covers a lot of big themes.

Nick Koning, Emeritus Assistant Professor with the Agricultural Economics and Rural Policy Group impressively put his life’s work with the Agricultural Economics and Rural Development Group I ploughed through this book within three weeks. As the title suggests, it covers a lot of big themes.

_*Just imagine how many apple pies we could make?*_

If you have ever wondered how farm policy choices have influenced the evolution of food security in different regions, this book can answer many of your questions. Furthermore, it gives a historical and future perspective on the dynamics of population growth, natural resources, technological innovation and government strategies before and after the fossil biomass revolution. Two main schools of thought about these dynamics are illustrated in the introduction, which describes a fictitious encounter between Thomas Malhuis and Karl Marx. They debate a familiar question: is food security a matter of production or distribution? I would recommend this book just for this creative parody of past and current voices in the ‘how-to-feed-the-world debate’. If you hang on after this Koning takes you further into the field of agricultural economics, the green revolution, welfarism, neoliberalism and possible solutions for future challenges. Like I said: big themes. For MOA students finding their position between techno-optimists and eco-pessimists, agronocologists and food activists this book offers a challenging look into the past, present, and future of food security.

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**The future of agriculture: a literature view**

"...the Happicuppa coffee bush was designed so that all of its beans could ripen simultaneously, and coffee could be grown on huge plantations and harvested with machines. This threw the small growers out of business and reduced both them and their labours to starvation-level poverty.”

- Orxy and Crake: a novel by Margaret Atwood

I enjoy dystopian fiction. Not because I believe that that science is evil, or the end near. In fact, I think I am rather an optimistic person, but hopefully also a realistic one. ‘The fascination for the genre, and probably also my interest in an interdisciplinary program such as MOA, comes from a wish to always ‘see the bigger picture’. It is what we have learned this year: ‘systems thinking’, ‘a holistic approach’, ‘integrated’ and ‘breaking the silos of scientific disciplines’. I believe that works of fiction can help us widen our scopes and allow us to safely do thought experiments with complex topics such as the role of CRISPR in agriculture. It should, however, be an addition to a scientific understanding of this topic. Ideally this combination can help us to define where we are on the spectrum between dystopias of eco-pessimist thinking and progressive techno-utopian thinking. Then, is CRISPR a symptom of humanity’s hubris - and therefore a predictor of our downfall - or is it the cure for a number of its problems?"
MOAbroad

Some of our fellow MOAs in the double degree program have left us after the first semester to do their internships. We asked Valentin: what are you doing in China?

BY VALENTIN LAUBRIET

I am part of the Kunming Institute of Botany in Yunnan, Southern China. It is a large institute with a zoology and a botany department. It is a thrilling place to be for agro-ecology as projects are sprouting all around the province and are being supported by the government which wants to develop the region.

I am working on a mango project in which we are surveying how different mango cultivars are doing at different elevations. I have been involved mostly in the soil analysis in order to fine tune their fertilization scheme.

And here comes the good things that I have learned: first, that I adore soil biology and second, that perfection is the enemy of what is feasible.

Our project is joined with a company that owns a large piece of land, so ultimately, what we do has to be profitable. It turned out to be difficult to explain how investing in the soil in the long run would benefit the company: it would be some investment now and returns in a couple of years. The message did not seem to spike interest. Instead, we realized that the company uses a rather generic fertilizing scheme and we thought that if more soil knowledge was gathered, we could greatly fine tune and hopefully reduce the amount of fertilizer they use. This idea seemed to be accepted more readily: less fertilizers = less money spent on them. (Different approach from the MOA tribe for whom the equation would more likely be like: less fertilizer = less evil and more music festivals). So then we started analyzing the soil at different sites and altitudes. The results are coming in soon so unfortunately I cannot tell you the end of the story yet.

It has been a very healthy process to be surrounded by researchers from all nationalities and ask them a lot of questions about the things they do, what they like about their job, what motivates them etc... I am also particularly grateful for Stefanie Goldberg who is an amazing professor to work with. I would also like to thank my mum for supporting me for all those years.

I'd like to say thank you to the guy who picked up my wallet the other day and gave it back to me as well. And finally a big thank you for the person who invented dumplings.

Perfection is the enemy of what is feasible.

Requiem for a bug

BY LAURIE MAGNIN

I'm tiny, and most of the time you would not even notice me. You have fought against me for almost a century with unethical chemicals. Now that you are winning against many of my species you realize you need me.

My life is short but I accomplish such an impressive work. From decomposing to pollinating, I also provide silk and honey for your family. I concede to not always be pretty but what about humanity?

I don't ask you to be a PhD in entomology but to merely cohabitate respectfully. So, next time, say "Hi" to a dragonfly, be gentle with a beetle, give your apology to a bee for the CCD*, do not clasp the wasp, be friendly with the bumblebee, or offer a flower to a grasshopper.

Respect insects!


Laurie is currently doing her internship in the department of Terrestrial Ecology at the Dutch Institute of Ecology (NIOO-KNAW) on the learning abilities of parasitoids for biological control.
**Some supermarket labels explained**

The organic label indicates that no chemicals were applied during production. It also ensures that nothing artificial (i.e. preservatives and flavor enhancers) was added during the processing phase. Certified organic food is usually more expensive.

This label tells consumers that farmers were treated well during the production phase. Everyone was paid a fair wage and no child labour was exploited.

This label means absolutely nothing. Food companies use this label freely, which is quite misleading for consumers. There is no certifying body controlling if products are indeed 100% natural; in fact, there is no such thing as a 'natural' product.

**Helping define and shape MOA outcomes**

**THIS is a brief comment on the gap that I perceive between the potential of MOA and what it is actually. It is intended to be more constructive than critical, or to provoke constructive responses. I am sure that some will disagree with this comment, but I am really sure that it will resonate with others.**

**WHY I STUDY MOA – THE CENTRALITY OF FOOD.**

Food is a critical interface between humans and the rest of the natural world. Questions around food are at the crux of many of our important decisions as individuals, groups and societies, and central to how we define our place in the world. Our daily relationship with food and eating both reflect and define our approach to ourselves and all that surrounds us, social and natural. Food has, in this sense, a central role in patterning our daily lives and how we approach it is reflective of our worldview and priorities.

**THE CONTRADICTION I SEE.**

It is for me perplexing to see how the MOA programme and its constituent courses have taken over from food in patterning my life. My studies on food systems have revolved around the promise of better, healthier, more harmonious relations between food production, food consumption and the social and natural systems that make up our environment. To me, there is a serious contradiction if these studies leave me time poor and stressed, sometimes forced to hurriedly grab quick, cheap, lifeless food to simply fill a hole and get on with the serious work of completing tasks, hitting deadlines, making the grade. This clashes with my own understanding of how to make new futures – be change, don’t just think change. For me, part of the promise of this programme would be not only to train but also to live well, to grow as people, to commune widely with our peers, to enjoy time to reflect and eat, actively. This serves as an interesting entry point for reflecting more widely on the potential of MOA and where it seems (to me) to be now.

**APPROACHES TO LEARNING.**

How we learn at this university is mostly defined by trying to complete tasks, and ultimately hit grades – working to be granted the symbolic points that somehow assert our worth, both to ourselves and for a labour market. We complete these tasks to deserve and earn symbolic numbers and ultimately a symbolic title as individual capital for our individual careers. But is this why we are here? In our courses and conversations, I perceive that we take seriously the notion that we can contribute to shaping positive futures, and passion to do so has brought many of us here. Is point-scoring the way to achieve this? How will we connect dots, see more widely on the potential of MOA and where it seems (to me) to be now?

**TAKEAWAY MESSAGE.**

I sense that this programme brings together a special mix of people. I believe there is a strong undercurrent of dreams and imagination that doesn’t develop to its potential through our formal learning activities here. A group orientation toward taking time for reflection, connection and creativity may help to develop this undercurrent into real outcomes. Ultimately, we can steer our growth and choose our strategies. MOA outcomes could and should be more than completion of the programme. I wonder whether this resonates with anyone? Or whether anyone can think of constructive approaches to addressing this?
Locally sourced acoustic tunes to brighten the darkest winter night, and spice up any flavorless vegetarian barbecue. With such timeless classics as:
- Wagonwheel
- Perfect
- Blue Moon

We’ve all read and talked about sustainability to the point of not standing the word anymore. What does it mean? What’s sustainable?
Sustainable: able to be maintained at a certain rate or level (Oxford dictionary). Yes, sustainable means keeping things as they are. Preserving the resources we have for future generations while satisfying the needs of present generations.
It’s a pity that we’ve already depleted our soils, polluted our waters and warmed up our atmosphere…
The core concept is easy: sustainable is not enough anymore. Keeping things as they are, not doing harm, it’s not enough.

The task we have now is to do good, have a positive impact, restore what we’ve damaged: here comes the regenerative approach.
At the BIOFACH congress some of us had the chance to attend some conferences, including one about Regenerative Agriculture. Anselm Ibing from Terra Genesis International and Andre Leu from Regeneration International were there and talked about what regenerative agriculture is.
Agriculture. Anselm Ibing from Terra Genesis International and Andre Leu from Regeneration International were there and talked about what regenerative agriculture is.

Anselm mentioned the conceptual shift of paradigm necessary in order express the full potential of the system, with the role of humans shifting from extractive to more than do good: being part and co-evolve with the whole system is the goal (see Figure 1).

Andre Leu is the chair of Regenerative International, that is an indeed an international umbrella organization which includes all those movements like permaculture, agroforestry, agroecology, conservative agriculture and so on that go well beyond barely “sustainable”. In brief, regenerative agriculture is nothing new. But “regeneration” is a complete different approach and a necessary theoretical shift to really make a difference and use words effectively.

Terra Genesis has also a website with an open forum in which to discuss the definition of Regenerative Agriculture and what to include under its umbrella. Visit www.regenerativeagriculturedefinition.com to discover more!

Remeker: Nature’s gift!
On our traditional farm De Groote Voort (‘the big ford’) we make Remeker cheese as Nature intended.

WWW.REMEKER.NL

The only milk we use comes from our own Jersey cows and is unpasteurised. The resulting cheese is 100% organic — including the rind, made from our own ghee — and just a short dip in the brine vats ensures that it is ideal for those who are on a reduced salt diet.

Since 2004 our cows are totally free of antibiotics, receiving — where necessary — purely natural remedies.

Their best daily medicine is their diet of grass and clover, along with the rich variety of other herbs that belong naturally to their pastures.

Occasionally they get a treat of raw oats, rye and other unrefined grains.

The meadows where the cows graze are fertilised with the straw-rich manure from the deep litter cowshed that was specially designed for cows that are allowed to keep their horns.
Organic Excursion Times #2

Peter van de Voort shows off his healthy grassland soils - “It smells like ghee!”

Happy ruminating Remeker cows

FROM the perspective of the development of the international organic industry, organic production has three elements: 1) Do not use genetic engineering technology. 2) Do not use chemically synthesized substances. 3) Emphasize ecological balance and sustainable production technologies. At present, there are many domestic companies that do not use genetic engineering technology and do not use chemically synthesized substances, while neglecting ecological balance and sustainable production technologies.

Firstly, at the beginning of the organic production process, the reason for not using chemical synthetic substances was to consider reducing energy consumption, reducing resource losses, reducing pollution to the environment and ecosystems, and reducing residues of pesticides and veterinary drugs in agricultural products. They are the reasons for industrial development, but it is not the only reason for the development of organic industries.

Secondly, there is no statistical evidence that organic products are safer than conventional products, although pesticides and veterinary drug residues will be low or absent.

Thirdly, studies by scientific research institutions show that organic agriculture can only support 3-4 billion people, and the earth has just celebrated the birth of the seventh billionth inhabitants. Excessive development of organic agriculture internationally will affect World’s food security.

Generally speaking, organic products will have a certain impact on the quality and safety of the final product due to the different production methods, and will help reducing agro-animal residues. However, the knowledge about their contribution to heavy metals and health indicators is limited. The greatest contribution by the organic industry should be the improvement of the ecological environment, the promotion of sustainable agricultural development, and the realization of increased income for farmers.

The future ministry of food

Happy ruminating Remeker cows

The Green Kitchen

JUNUSSTRAAT 47, 6701 AX WAGENINGEN
+31(0)655701200 - hello@thegreenkitchen.nl
www.thegreenkitchen.nl

“The place to be” in Wageningen for vegetarian and vegan food. Our mission is to let you experience that vegetarian food is tasty and healthy. We work with as many organic seasonal products as possible from local suppliers, transforming them into colorful dishes. From homemade quiche to a sandwich with tempeh and kimchi: “good food for a good mood!”

You are welcome to come and enjoy a vegetarian breakfast, lunch or dinner.
The problem: cheap food is actually very expensive
From the use of artificial fertilizer and pesticides to the effects of soil degradation, water pollution, climate change and other so-called externalities? Nature & More is now offering exactly that, in the True Cost of Food campaign. Organic isn’t too expensive, conventional is too cheap! We did the math.

Changing the profit definition: True Cost Accounting for Food, Farming and Finance
In close cooperation with partners such as the FAO, EY and Soil & More international we developed a practical approach to calculate the external costs of food production. In June 2017 we presented the results of our pilot named “True Cost Accounting for Food, Farming and Finance” to HRH Prince Charles. In this project, which was carried out by EY and Soil & More International, we didn’t just look at products, but we also calculated a True Cost Profit & Loss Statement for Eosta as a company. The resulting report presents a practical method and dashboard for the implementation of True Cost Accounting in SME companies in farming, food and finance.

The solution: True Cost Accounting
It is time to get our bookkeeping straight! We need to redefine ‘profit’ and start working with a financial model that also covers societal and environmental costs: people and planet. Placing a clear monetary value on the benefits and impacts of different food production systems as well as redefining our definition of ‘profit’ will enable the introduction of policy mechanisms to penalise damaging practices and reward the development of systems that deliver positive environmental and public health outcomes.

Together with the FAO, Nature & More is proud to introduce The True Cost of Food at a consumer level. We have already made calculations for lemons, oranges, grapes, pineapples, apples, pears, tomatoes, carrots and avocados! These costs are communicated through our Sustainability Flower.

Nature & More is the “trace & tell” consumer trademark and online transparency system of Eosta - where ecology meets economy. We bring you fresh organic fruits & vegetables from all over the world, GMO-free, pesticide-free and free from artificial fertilizers, but with the grower’s story and full transparency about our impacts on planet and people.

WWW.NATUREANDMORE.COM

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WWW.NATUREANDMORE.COM
The organic garden "De Ommuurde Tuin" is the historical kitchen garden of King Willem III. We grow more than 450 varieties of organic vegetables, herbs, tubers, edible flowers and fruits on one hectare. We also work together with the seed bank CGN to grow old varieties. See our website for more info: ommuurdetuin.nl

GET YOUR LOCAL ORGANIC VEGGIES & HERBS HERE. Our farm shop and terrace are open from May until November, every Wednesday and Saturday from 10:00-17:30. Get your veggies, herbs, fruits and seeds here and enjoy with a soup, fresh herb tea or a nice cold beer.

JOIN THE CSA MOVEMENT AS SHAREHOLDER OR VOLUNTEER. You’re most welcome to become a volunteer and learn about agroecology in practice and how to get an income out of a 1 hectare peasant garden. You can also become a shareholder and pick up your share of the harvest (veggy bag) every Tuesday, Wednesday or Saturday at the garden in Renkum or at a pick-up point in Wageningen. Choose your veggy bag:

- S (1 p.) € 6.50 per week
- M (2/3 p.) € 10.60 per week
- L (4 p.) € 15.50 per week

COMING EVENTS OMMUURDE TUIN 2018:
- 3 Juni VELT Tuindag
- 16-17 Juni Midzomerdroomdag
- 22 September Oogstfeest
- Every Thursday Tai Gong (15:15-16:15)

BY YAOYUN ZHANG & FRANCISCO GARRIDO GARZA

An ACT experience

Designing an integrated sustainable food production system for an American High School (period 5, 2018)

Our Academic Consultancy Training project was to design an integrated food production system for The Sage School: an American high school located in the United States. This school is an example of alternative education for adolescents. A new campus is planned to be built, with an integrated food production system. It will be part of the School’s curricula, and will encourage the community to come and learn about alternative and sustainable ways of living. To set the first steps for its creation, our ACT team was composed. Hereby, we explored possibilities and gave further advice to the project commissioner.

Throughout the process, we found that every challenge is change: opportunities to prepare transitions towards sustainability. In less than 8 weeks, we went over numerous discussions, research, brainstorming, contacting experts... we did everything possible to develop the best product possible! Each one of us gave the best to this project in order to take a small step on the road towards a sustainable future regarding food production systems, as well as alternative education systems that are centered on human ecology and community support.
ARIES: You have finally reached maturity, it's time to pair up with a nice biodynamic wine. This would also be a good moment for you to bury the hatchet with your team mate from period 1. You could not agree on the definition of agroecology, but you get it now: it's complicated.

LEO: You have been feeling rather locked in. Perhaps you have been studying too hard behind the computer. Don't panic! Excursions will bridge the gap between the screen and the field. Lighthouse farms are there to guide your journey towards the world outside the classroom.

SAGITTARIUS: Although summer seems to be around the corner, it is recommended to bring rainproof gear to your next excursion. Think well about choosing your tent buddy at the farm. This decision may have a large impact on your agricultural career.

TAURUS: Do you feel tired? Turmeric will boost your energy. Do you feel stressed? Turmeric will calm you down. Do you need more passion in the bedroom? Turmeric will spice up your sex life. Who needs Big Pharma when nature can provide you a healthy life?

GEMINI: Venus is aligned with Saturn. Pay close attention to your radishes because they may sprout any time now. This is also a good moment to think about your personal growth. A walk along the Rhine will yield good results and an unexpected encounter.

PISCES: A new growing season is upon us. You should consider a sustainable intensification of your relationship or seek a more adapted variety. Use your newly acquired agroecological knowledge. Wicked problems ask for diverse solutions.

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GEMINI: Venus is aligned with Saturn. Pay close attention to your radishes because they may sprout any time now. This is also a good moment to think about your personal growth. A walk along the Rhine will yield good results and an unexpected encounter.

PISCES: A new growing season is upon us. You should consider a sustainable intensification of your relationship or seek a more adapted variety. Use your newly acquired agroecological knowledge. Wicked problems ask for diverse solutions.

ARIES: You have finally reached maturity, it's time to pair up with a nice biodynamic wine. This would also be a good moment for you to bury the hatchet with your team mate from period 1. You could not agree on the definition of agroecology, but you get it now: it's complicated.
67% percent of young adult cows prefer walking outside

33% gave no answer