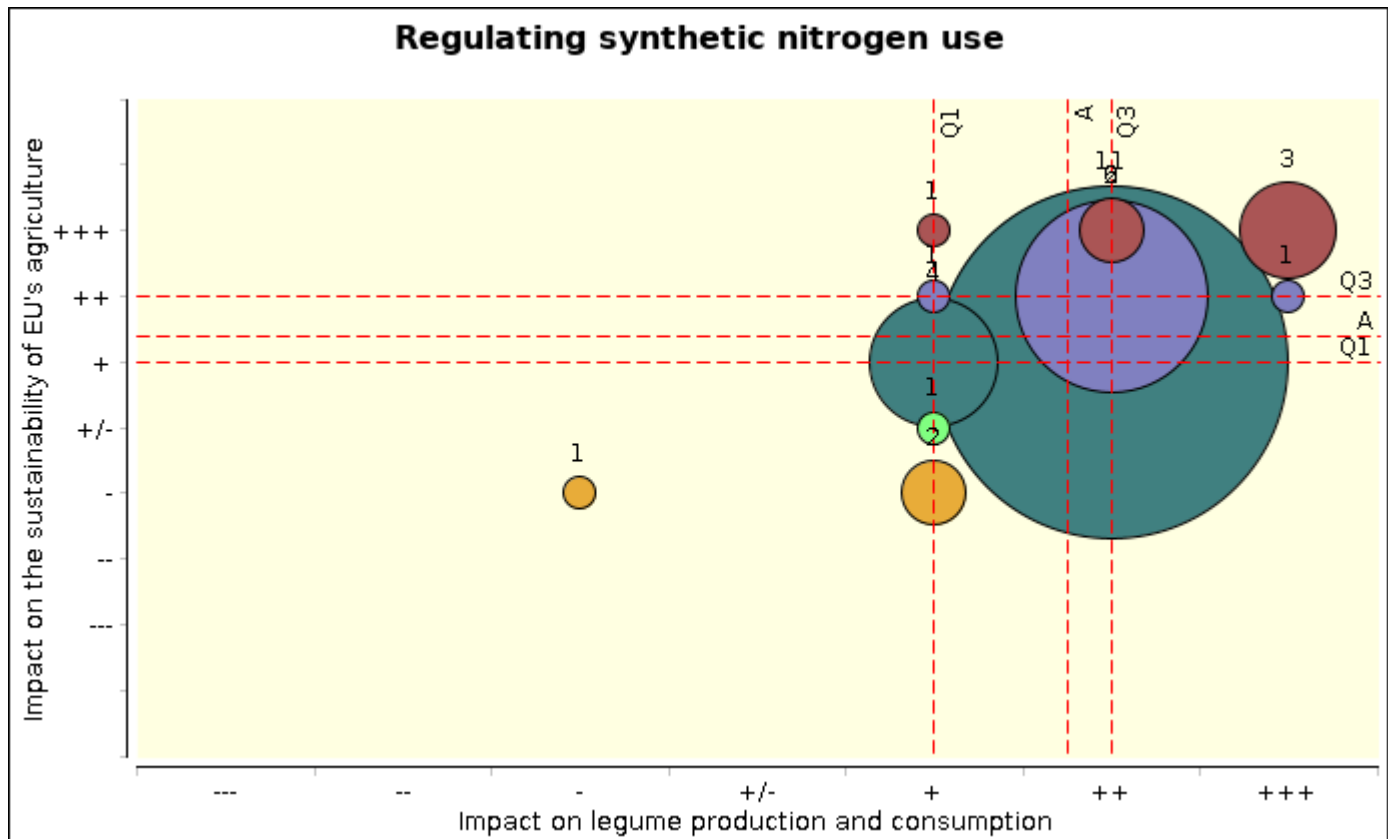


## Regulating synthetic nitrogen use

Imagine that by 2030 stricter environmental and climate regulations are applied on crop and livestock production in Europe. Imagine that the new measures combine legal restrictions on synthetic nitrogen use with a system of allowances for farmers.

Would such a policy change have a rather negative or a rather positive impact on legume production and/or consumption in Europe? Would such a policy change have a rather negative or positive impact on the sustainability of European agriculture in general? In the box below please elaborate your answer (i.e. what other consequences you envisage for such a policy change?)



## COMMENTS

*Comment date Jun 4, 2020, 10:11:00 PM*

**Impact on legume production and consumption: +++**

**Impact on the sustainability of eu's agriculture: +++**

Sustainability improvement is certain. Improvement/increases in consumption is likely, in that production can be a driver for consumption in the case of legumes, i.e., increased production has the potential to increase consumption.

*Comment date Jun 7, 2020, 9:56:45 PM*

**Impact on legume production and consumption: +++**

**Impact on the sustainability of eu's agriculture: +++**

It is critical that legumes are managed optimally to ensure that their potential benefits are capitalised upon. It would be unfair to push farmers towards increasing legume cropping without first ensuring that the farmers have access to: legume-agronomy training and support (including the use of cover-crops). Also, that the sufficient quantities of crop seeds are actually available for the growers to sow, and that these are for varieties which industry would like. (Note also: the cover crop seed-industry in Europe is not subject to the same QA guarantees as cash crops such as legumes, cereals etc. - in many parts of Europe getting the best out of legumes demands establishing a good cover crop afterwards - though of course they can be used as green manure in their own right).

*Comment date Jun 18, 2020, 1:31:43 PM*

**Impact on legume production and consumption: +++**

**Impact on the sustainability of eu's agriculture: +++**

Especially if "legumes" are extended to include clovers and alfalfa which can be biorefined to extract food and feed proteins

*Comment date Jun 3, 2020, 8:48:46 AM*

**Impact on legume production and consumption: +++**

**Impact on the sustainability of eu's agriculture: ++**

There will be technical improvement on synthetic nitrogen to reduce the N<sub>2</sub>O gas emission. Moreover, will legume development will be based upon plant services (nitrogen production to other crops instead of biomass legume production (whole plant or grain)? will there be room for both, or competition among the two issues?

*Comment date Jun 3, 2020, 11:01:39 AM*

**Impact on legume production and consumption: ++**

**Impact on the sustainability of eu's agriculture: +++**

Consumers ask already today for healthy legumes, a more vegetarian diet will increase and with that the consumption of legumes.

Production: Farmers see the market and will react respectively. The organic market is growing.

*Comment date Jun 3, 2020, 8:35:38 AM*

**Impact on legume production and consumption: ++**

**Impact on the sustainability of eu's agriculture: ++**

In relation to the 1st Q I think one needs to distinguish production from consumption. If there were to be measures to restrict the application of synthetic N fertilizer, the consequences for legume

production would be: +++ . However, this does not automatically translate into increased consumption. As regards the implications for the sustainability of EU agriculture, clearly the potential expansion of legumes needs to be part of a new crop rotation regime in which beans & pulses co-exist with grains, roots and tubers. This will require a lot of support from agricultural research and extension - services which have been seriously neglected in recent decades. So legumes really need to be seen as part of a package of measures.

*Comment date Jun 15, 2020, 3:41:55 PM*

**Impact on legume production and consumption: ++**

**Impact on the sustainability of eu's agriculture: ++**

Clearly a policy restricting the use of synthetic nitrogen fertilisers would be favourable for legumes production. Then, since they would be more readily available in the EU market, their consumption would increase at a second step. As regards to sustainability this would substantially improve from legume expansion, if current technical issues on legume cropping would be solved.

*Comment date Jun 19, 2020, 2:40:05 PM*

**Impact on legume production and consumption: ++**

**Impact on the sustainability of eu's agriculture: ++**

Shortage of synthetic nitrogen will stimulate the use of legumes in rotation and reduce the opportunities for high protein feed. The availability of legumes creates circumstances for higher consumption.

*Comment date Jul 8, 2020, 11:54:15 AM*

**Impact on legume production and consumption: ++**

**Impact on the sustainability of eu's agriculture: ++**

Limiting the use of synthetic nitrogen would certainly lead to higher legume production but would need quite a lot of work to optimise crop rotation etc. so that it suits to local conditions. Increasing legume consumption as foods is a harder business as it requires a substantial increase in many European countries and a change in dietary habits which usually takes a rather long time to occur. I presume sustainability would improve significantly but that is a very complex issue, so it is difficult to say how much.

*Comment date Jun 3, 2020, 8:51:59 AM*

**Impact on legume production and consumption: ++**

**Impact on the sustainability of eu's agriculture: +**

Any restriction in use of nitrogen will certainly lead to a modification of the cropping systems. Rotations will be adapted to include nitrogen-fixing crops.

*Comment date Jun 3, 2020, 10:14:37 AM*

**Impact on legume production and consumption: ++**

**Impact on the sustainability of eu's agriculture: +**

With reduced ability to use artificial N or sufficient penalties for doing so, such that its use becomes financially burdensome then the use of natural N provisioning is likely to become increasingly attractive. The temptation is to believe that farmers would embrace grain legumes wholeheartedly but they need also to be able to make a profit from their sale and to be reasonably confident in the performance of legumes as a crop. Frequently this is not the case. The inability to combat pests and diseases is a major reason why many organic growers do not produce grain legumes - even though they realise there are potentially enormous benefits in doing so. Others would not be without them and accept their unreliability as part of the overall cost- preferring to review their profitability across the whole rotation and farming enterprise rather than on a more narrow crop by crop basis. This method of evaluation is one that surely has to be encouraged.

Consumption is ill defined in this question. Increased availability will increase consumption in the animal feed sector, perhaps at the expense of imported soya, BUT this sector may also decline if the costs of production rise and meat consumption is to be discouraged with higher prices and negative environmental messages. Consistency of availability of product is an often declared reason for the current low level of use, therefore more availability would potentially drive consumption. Greater availability will also be consumed by the rising vegetable protein market so consumption is covered here too. Will people consume more pulses directly as food?- probably yes BUT not due to the measures posed in this question.

It is also not clear that growers who cannot use N to produce Cereals would continue to crop at all. With changing climate there is a distinct possibility that there may be those who wholeheartedly embrace environmental schemes to quite production of commodity food altogether.

*Comment date Jun 3, 2020, 2:46:52 PM*

**Impact on legume production and consumption: ++**

**Impact on the sustainability of eu's agriculture: +**

In order to really transform into sustainable production systems, restrictions on pesticide use would also be needed. That would force a shift in production towards more integrated and diverse systems and would support biodiversity, water quality, soil quality etc. at the same time.

*Comment date Jun 18, 2020, 6:31:09 AM*

**Impact on legume production and consumption: ++**

**Impact on the sustainability of eu's agriculture: +**

I assume that restrictions on mineral N would increase the use of organic N, including legumes and slurry. One might see a change in crop rotations, geographical redistribution of livestock farming (or

more likely increase of slurry trafficking) and maybe in increase of cheaper imports. The impact on legume consumption can only be speculated on: my hunch is that it would increase. There are many factors that affect the sustainability of agriculture overall, so I remain somewhat positive but mostly sceptic on this issue.

*Comment date Jun 22, 2020, 1:04:36 PM*

**Impact on legume production and consumption: ++**

**Impact on the sustainability of eu's agriculture: +**

In relation to the first question, I think effect on production is different than effect on consumption. If there were to be measures to restrict the application of synthetic N fertilizer, legume production would certainly increase. But, to increase consumption is also necessary to make awareness raising campaigns.

*Comment date Jun 22, 2020, 6:53:49 PM*

**Impact on legume production and consumption: ++**

**Impact on the sustainability of eu's agriculture: +**

Stricter environmental and climate regulations related to synthetic nitrogen use will inevitably lead to favourable changes in cropping patterns and practices.

*Comment date Jun 30, 2020, 5:15:12 AM*

**Impact on legume production and consumption: ++**

**Impact on the sustainability of eu's agriculture: +**

I think that this policy change is going to have a positive impact on organic farming in European agriculture....Increase of organic farmers and certified bio products.

*Comment date Jul 10, 2020, 9:28:59 AM*

**Impact on legume production and consumption: ++**

**Impact on the sustainability of eu's agriculture: +**

Future regulations will play a role in inclusion of legume in crop rotations. Policies aimed at restricting synthetic nitrogen use will surely enhance legume area and production.

*Comment date Jul 1, 2020, 9:13:22 PM*

**Impact on legume production and consumption: +**

**Impact on the sustainability of eu's agriculture: +++**

It is not clear what the allowance refers to. If the reduction in the use of nitrogen fertilizers and the allowance is linked to the use of legumes, then cultivation would increase.

*Comment date Jun 5, 2020, 5:14:41 PM*

**Impact on legume production and consumption: +**

**Impact on the sustainability of eu's agriculture: +**

Legume production will increase but there are more factors that influence production and consumption (climatic change, trends in consumption)

*Comment date Jun 16, 2020, 7:57:27 AM*

**Impact on legume production and consumption: +**

**Impact on the sustainability of eu's agriculture: +**

Legume production is primarily linked to demand and prices.

The limitation on N use can affect rotation sequences and legumes can be included more frequently in new rotations. What legume is introduced is another question: grain legumes export a lot of N in the grain, forage legumes leave more N. For instance when water availability is low such as in areas with < 400 mm, vetch as forage legume or an increase in fallow can occur.

*Comment date Jul 9, 2020, 11:48:12 AM*

**Impact on legume production and consumption: +**

**Impact on the sustainability of eu's agriculture: +**

I agree that is challenging to score a combined consumption and production outcome. Consumption is unlikely to be affected by production based drivers. I have scored this based purely on the impact on production and have been conservative in terms of the impact because again the policy mix will be important to drive change alongside greater awareness/acceptance of the role that legumes play in the system of fixing nitrogen. As a standalone lever this is unlikely to affect significant change if there is not concurrent levers affecting awareness raising, R&D and implementation guidance, etc. Similarly with sustainability. How is the sustainability being assessed? If one were to incorporate all of the costs and benefits associated with the use of synthetic nitrogen vs legumes the answer may not be straight forward as it will be highly dependent upon associated land management practises, type of legumes and region. In other words it is very context dependent and again reliant on the wider policy mix and implementation

*Comment date Jun 15, 2020, 1:22:33 PM*

**Impact on legume production and consumption: +**

**Impact on the sustainability of eu's agriculture: +/-**

The stated "system of allowances" is too vague for me to address, and could cause as many negatives as positives so I see the sustainability impact as low. Restricting the use of synthetic N might give a mild push to legume production but none at all to consumption, as several other commentators have noted.

*Comment date Jun 3, 2020, 10:51:43 AM*

**Impact on legume production and consumption: +**

**Impact on the sustainability of eu's agriculture: -**

Restrictions on synthetic N use will have a negative impact on crop productivity. To counter this the need will be to create a different balance in the rotations which are likely to lead to the use of more legume crops. This will require considerable research and development work into how legumes can be best used in various rotations, on different soil types, in different climates, etc. Otherwise the effect will be a general reduction in arable crop productivity and sustainability.

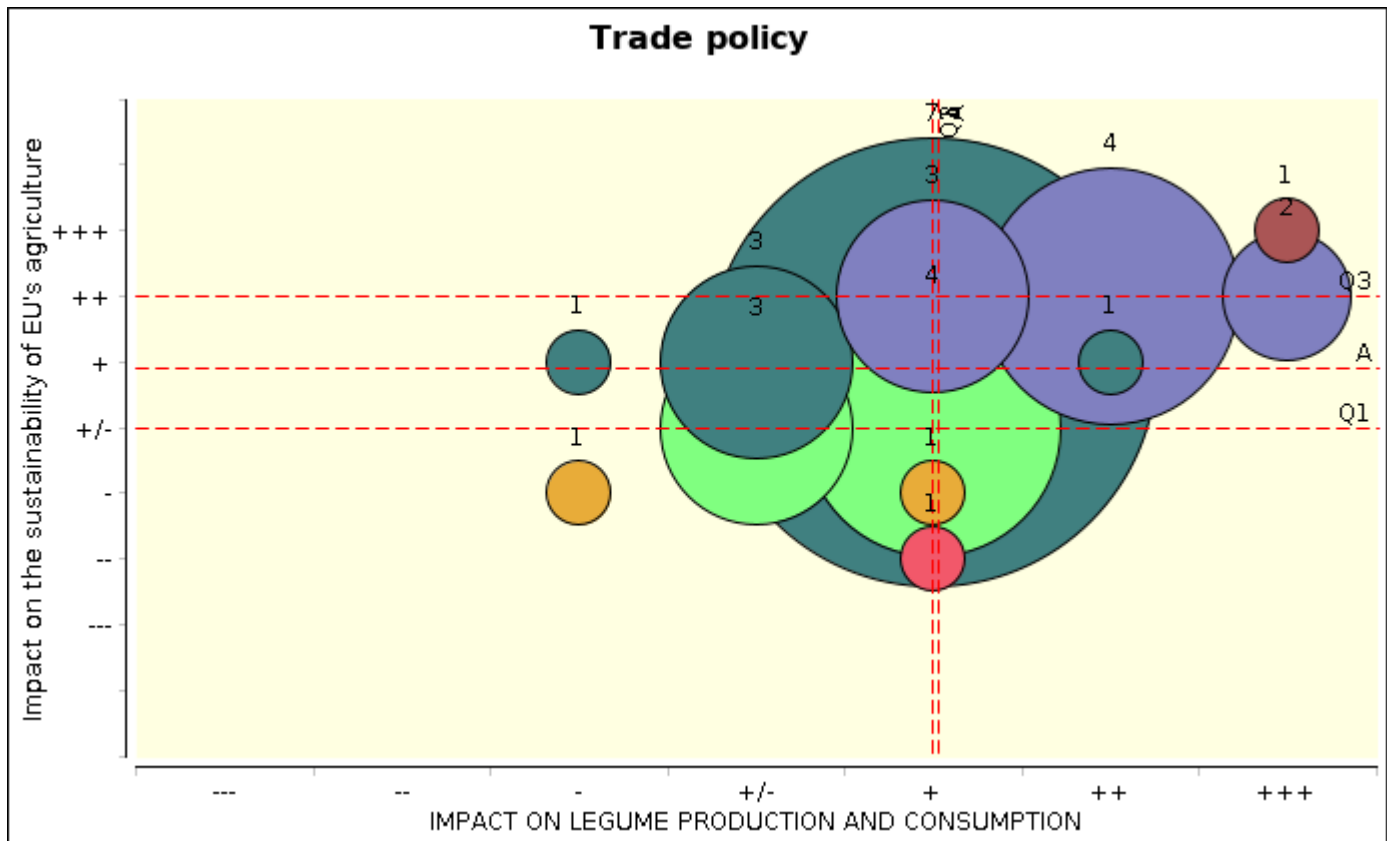
*Comment date Jun 10, 2020, 6:33:03 PM*

The legumes might replace or reduce the application of fertilizers. Therefore more leguminous plants will be used in agriculture and this is more sustainable

## Trade policy

Imagine that by 2030 environmental, safety and ethical standards are increased for imported raw protein sources (used either for feed or food) to close the gap between the standards of imported and homegrown legumes.

Would such a policy change have a rather negative or a rather positive impact on legume production and/or consumption in Europe? Would such a policy change have a rather negative or positive impact on the sustainability of European agriculture in general? In the box below please elaborate your answer (i.e. what other consequences you envisage for such a policy change?)



## COMMENTS

*Comment date Jul 1, 2020, 9:29:37 PM*

**Impact on legume production and consumption: +++**

**Impact on the sustainability of eu's agriculture: ++**

For fair competition, it is always a good idea to align agricultural standards. However, one should also consider that, for example for the Land Use Change category, the soybean area expansion in Eastern European countries can also be included. Because in the 90s many areas fell fallow and are now being used again by the expanding soy cultivation.

*Comment date Jun 3, 2020, 8:52:12 AM*

**Impact on legume production and consumption: ++**

**Impact on the sustainability of eu's agriculture: ++**

That will reduce world competition in prices and increase competitiveness of EU legumes. A high EU quality standard for legumes will promote its use for food instead of feed, and EU could become a legume exporter for food towards countries able to pay for.

*Comment date Jun 4, 2020, 10:53:00 PM*

**Impact on legume production and consumption: ++**



**Impact on the sustainability of eu's agriculture: ++**

Ethics is important. I'm not sure what became of the European Natural Soyfoods Association, but I remember well their Ethical Charter; for example, ENSA members certified that the soy they use does not come from land that was previously rainforest; and that the seed/cultivars were not from GMOs.

*Comment date Jun 22, 2020, 6:56:39 PM*

**Impact on legume production and consumption: ++**

**Impact on the sustainability of eu's agriculture: ++**

Increased environmental, safety and ethical standards for imported raw protein sources will inevitably raise the competitiveness of homegrown legumes.

*Comment date Jun 30, 2020, 5:18:34 AM*

**Impact on legume production and consumption: ++**

**Impact on the sustainability of eu's agriculture: ++**

the possitive impact depends on the rules and regulations...need to be clarified.

*Comment date Jun 3, 2020, 2:49:55 PM*

**Impact on legume production and consumption: ++**

**Impact on the sustainability of eu's agriculture: +**

The impact on sustainability is likely to increase slightly but other measures are needed at the same time to switch to more integrated and diverse systems. This will likely also have an impact on consumer prices, which need to be introduced carefully.

*Comment date Jun 7, 2020, 9:57:54 PM*

**Impact on legume production and consumption: +**

**Impact on the sustainability of eu's agriculture: ++**

It may well be that the price of legumes and legume-derived products may increase. Since cheap imports would be bypassed. That said, if consumers could see the benefits such as to the soil and agrobiodiversity, perhaps they would be happy to pay this cost. Or simply, adapt and get used to it. Also, it appears the main soybean providers are getting wise to the meat value extracted in Europe. Limitations on imported legume grains may need allied to controls on imported meat too. If food prices to go up as we become more organic (legume dependant), how will the poorest in society be guaranteed the same access to good (better ethically and environmentally) legume-based food as the more affluent.

*Comment date Jun 21, 2020, 10:05:34 AM*

**Impact on legume production and consumption: +**

**Impact on the sustainability of eu's agriculture: ++**

I presume legume consumption includes the animals consuming locally produced legumes. The other part is that there will be methods to make locally produced legumes more attractive due to innovative products and processing methods.

For animals, however, it is more critical that they consume non-grain legumes rather than grain legumes which ecologically would also be much more useful. There fore, legume production should increase also for the non-grain legumes!

*Comment date Jun 3, 2020, 11:06:55 AM*

**Impact on legume production and consumption: +**

**Impact on the sustainability of eu's agriculture: +**

The impact will be moderate, but there will be an effect.

It depends on more and other rules and regulations (e.g. DG SAN)

Also in the meat consumption, the farm-to-fork principle is increasing. More people will be sensibilized for the kind of animal production.

*Comment date Jun 15, 2020, 3:46:52 PM*

**Impact on legume production and consumption: +**

**Impact on the sustainability of eu's agriculture: +**

A safe supply of legumes from EU agriculture would improve their place in the market and a preference of these by the consumers against the imported protein would add to sustainability of EU agriculture.

*Comment date Jun 18, 2020, 6:39:41 AM*

**Impact on legume production and consumption: +**

**Impact on the sustainability of eu's agriculture: +**

I am not an expert in economy. But I am cautiously optimistic.

*Comment date Jul 8, 2020, 12:07:45 PM*

**Impact on legume production and consumption: +**

**Impact on the sustainability of eu's agriculture: +**

I think this is a very speculative situation - what exactly are the environmental, safety and ethical standards? If they are more like voluntary recommendations, I do not think they have much of an effect. If they are more strict and really able to limit the import of soy produced by destroying rain forests in Amazon, there could have an positive impact in legume production in Europe and on sustainability as well.

*Comment date Jul 9, 2020, 11:54:02 AM*

**Impact on legume production and consumption: +****Impact on the sustainability of eu's agriculture: +**

Again I found it a challenge to disaggregate production and consumption so have scored this largely on production as it is clear given current consumer behaviour that source of legume is not necessarily a significant driver of change or there would be a far greater demand for domestically produced legumes. I also agree with the concern of how the metrics would be applied and whether or not this would be voluntary or mandatory. As with sustainability my concerns from the previous question would be the same. If one were to view the production of legumes across the whole of Europe would the sustainability from cradle to grave actually be better than those produced elsewhere.

*Comment date Jun 3, 2020, 8:46:05 AM*

**Impact on legume production and consumption: +****Impact on the sustainability of eu's agriculture: +/-**

On Q2 I left the marker at the mid-range (neither + or -) so the graph above is incorrectly representing my view. My bigger concern is the role legumes will play in animal feeds the production of which I think have to be substantially reduced in line with EAT-Lancet proposals to cut meat consumption by half. Cheap soy meal from Brazil & elsewhere in S. America has to be eliminated in the interests of ecological restoration. On the consumption side we have to work our way through the issue of non-dairy milk - not just soy but almond etc.

*Comment date Jun 4, 2020, 12:26:31 PM*

**Impact on legume production and consumption: +****Impact on the sustainability of eu's agriculture: +/-**

not sure about safety and its impact - was meant as perception of safety?

*Comment date Jun 16, 2020, 8:12:32 AM*

**Impact on legume production and consumption: +**

**Impact on the sustainability of eu's agriculture: +/-**

I am no expert on these matters so just some comments:

Don't these questions simplify the scenario too much?

Trade: pulses for feed and pulses for human consumption. Import taxes or tariffs can help nevertheless we also need to contemplate the need for stable supply for both feed or food.

The farmers I have met in our H2020 project welcome legumes, nevertheless, except for soybean, they have too many problems with diseases, weeds and pests.

*Comment date Jun 3, 2020, 10:58:40 AM*

**Impact on legume production and consumption: +**

**Impact on the sustainability of eu's agriculture: --**

Restrictions on imported proteins on apparent "ethical" grounds would increase animal feed costs reducing livestock farming competitiveness. The benefit to EU legume production would be limited as replacement protein crop production would be more costly than current imports.

*Comment date Jun 19, 2020, 2:44:06 PM*

**Impact on legume production and consumption: +/-**

**Impact on the sustainability of eu's agriculture: +**

Exporting countries are expected to improve their standards within a few years.

*Comment date Jun 3, 2020, 10:22:53 AM*

**Impact on legume production and consumption: +/-**

**Impact on the sustainability of eu's agriculture: +/-**

I don't understand how safety is a part of this. IN what respect do you equate imported vegetable protein with a lack of safety? Nor am I sure I understand the meaning of the term Ethical in the question.

If by Ethical you mean the concept of exporting our protein production and the consequential land use change and associated carbon emissions then I assume this means trade barriers and restrictions on imports of products that do not meet the standards. This will only impact the EU production if the barriers can be made to stick and the cost of meeting the standards is so high that they cannot be overcome without cost implications that make the imports economically uncompetitive.

For this lack of clarity I have not ranked the +/- effect.

*Comment date Jun 15, 2020, 1:30:16 PM*

**Impact on legume production and consumption: +/-**

**Impact on the sustainability of eu's agriculture: +/-**

Unfortunately, this is another hypothesis loaded with vagueness. Whose ethics, what definition of safety? There is a noisy community in Europe that views GMOs as unethical and unsafe (they are not) and "Organic" as ethical and safe (it is not). Leaving that aside, if I try to take a more general view of the underlying message, we are considering here tools to avoid land-use change in Brazilian rainforests and Argentinian pampas. This is still not going to affect legumes or sustainability.

*Comment date Jun 22, 2020, 1:07:16 PM*

**Impact on legume production and consumption: -**

**Impact on the sustainability of eu's agriculture: +**

Impact on consumption could be negative since legumes are not sufficiently grown in europe today.

*Comment date Jun 3, 2020, 9:11:49 AM*

**Impact on legume production and consumption: -**

**Impact on the sustainability of eu's agriculture: -**

EU regulations and approach between nations are still massive. also geography of individual countries will come at play if legume crops can be put further in the system. aswell as arable lands. restrictions will more likely affect consumer pricing on pulses. so would see charge other protein sources with taxes to compensate meat/fish. so people will look at plant based alternatives. animal feed tradition is aiming to take in the cheapest protein source. what is soy today. or peas.

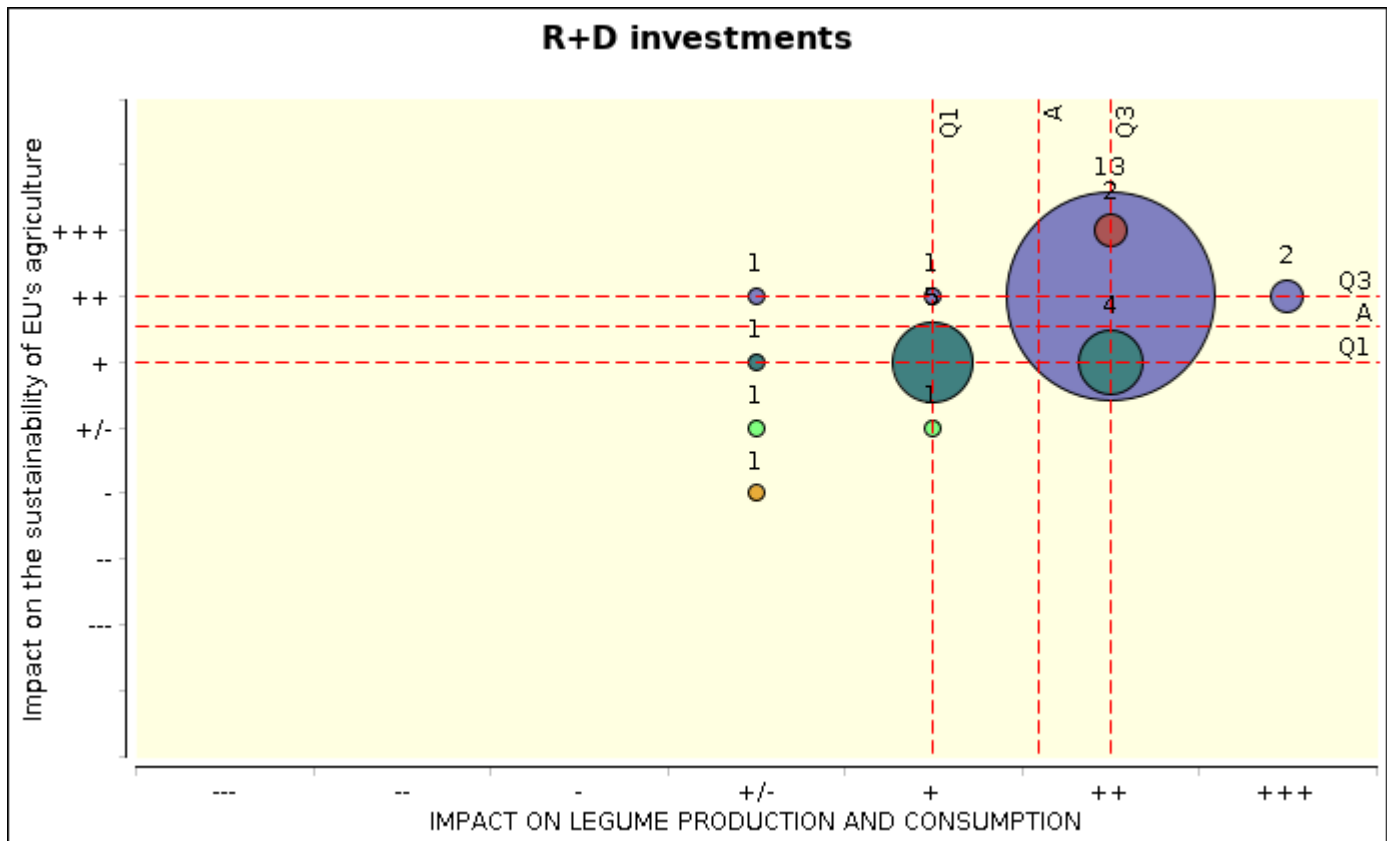
it will potentially increase competitiveness of prices of EU legumes. fact is many classes for food consumption are not sufficiently grown in europe today. and it will be problematic to grow all classes legumes in europe on commercial scale. ass would need to develop new varieties. possible using modern GM techniques.

so more likely cost of legumes to consumer will go higher rather than making EU pulses more competitive

## R+D investments

Imagine that by 2030 public investments in R&D are focused on new breeds, effective crop rotation schemes, new strategies to better recycle nitrogen, and novel options for the storage and processing of legumes.

Would such a policy change have a rather negative or positive impact on legume production and/or consumption in Europe? Would such a policy change have a rather negative or positive impact on the sustainability of European agriculture in general? In the box below please elaborate your answer (i.e. what other consequences you envisage for such a policy change?)



## COMMENTS

*Comment date Jun 19, 2020, 2:46:34 PM*

**Impact on legume production and consumption: +++**

**Impact on the sustainability of eu's agriculture: ++**

New breeds are urgently needed for climate adaptation, higher yields per hectare and culinary qualities. This will stimulate consumption and makes the crops more economically interesting for farmers.

*Comment date Jul 1, 2020, 9:33:54 PM*

**Impact on legume production and consumption: +++**

**Impact on the sustainability of eu's agriculture: ++**

If investments in R+D increases production and consumption of legumes then it will increase sustainability.

*Comment date Jun 7, 2020, 9:58:24 PM*

**Impact on legume production and consumption: ++**

**Impact on the sustainability of eu's agriculture: +++**

It is also important that the new types are also bred to optimise system functions, and especially soil qualities plus carbon and nitrogen mineralisation rates. Legume productivity/yield would increase as farmers became better at cropping, and types became more adapted, and as agroecosystems themselves normalised in response to increased legume cropping.

*Comment date Jun 3, 2020, 8:55:35 AM*

**Impact on legume production and consumption: ++**

**Impact on the sustainability of eu's agriculture: ++**

Positive impact in a long terme (for the future)

*Comment date Jun 15, 2020, 3:50:23 PM*

**Impact on legume production and consumption: ++**

**Impact on the sustainability of eu's agriculture: ++**

If European R&D is financed into solving the technical shortcomings of legume productio, this would substantially improve their production and sustainability in EU agriculture.

*Comment date Jun 16, 2020, 8:15:59 AM*

**Impact on legume production and consumption: ++**

**Impact on the sustainability of eu's agriculture: ++**

New cultivars resistant to diseases (Conventional and genetic editing) and new cropping systems can facilitate introduction of (grain) legumes in rotations because farmers will have a easier task. Nevertheless the price paid for these legumes to the farmer has to be adequate, and consumer demand has to increase.

*Comment date Jun 18, 2020, 6:48:14 AM*

**Impact on legume production and consumption: ++**

**Impact on the sustainability of eu's agriculture: ++**

If the R&D makes legume yield less dependent on the vagaries of weather and pests, I think farmers would be happy to include legumes in their crop rotations. If this is accompanied by improved processing for feed and food the demand may also be growing. Still, customers must be aware of the overall advantages of food and feed from sustainable agriculture and these products must be compatible with their available income.

*Comment date Jul 8, 2020, 12:18:00 PM*

**Impact on legume production and consumption: ++**

**Impact on the sustainability of eu's agriculture: ++**

All those efforts are needed to increase legume production. Too little is paid attention to how increase legume consumption at European populations. There's a lot of work to be carried out in that respect.

*Comment date Jul 9, 2020, 11:55:56 AM*

**Impact on legume production and consumption: ++**

**Impact on the sustainability of eu's agriculture: ++**

I am continuing to score this entirely on production. I agree that levers in this area are likely to have the strongest impact as they will enable issues of geography, implementation and confidence to be addressed in the production system

*Comment date Jun 3, 2020, 8:49:09 AM*

**Impact on legume production and consumption: ++**

**Impact on the sustainability of eu's agriculture: +**

Again, posing the question about production AND consumption is, in my view, a serious mistake here. The implications for production & for sustainability will be positive. But there are no reasons to suggest these measures will have any bearing on consumption.

*Comment date Jun 3, 2020, 2:51:48 PM*

I agree. This needs to be coupled with consumer policies.

*Comment date Jun 3, 2020, 11:05:08 AM*

**Impact on legume production and consumption: ++**

**Impact on the sustainability of eu's agriculture: +**

The problem with legume cropping is relatively low average yields and inconsistent yields making farmers reluctant to take the risk growing legume crops. The need is to target research where it will produce more reliable yields and the areas suggested for R&D spending are not those which will have the necessary impact in the time available. Investment in legume crop development at the farm level is needed urgently. This is especially important as the availability of crop protection products for use on legumes is very restricted and the cost of development of new products by the agrotech industry not currently justified.

*Comment date Jun 15, 2020, 1:31:49 PM*

bravo.



*Comment date Jun 3, 2020, 8:54:50 AM*

**Impact on legume production and consumption: +**

**Impact on the sustainability of eu's agriculture: +**

The main issue of production of legumes in the EU is mainly its profitability for farmers.

*Comment date Jun 3, 2020, 9:18:19 AM*

**Impact on legume production and consumption: +**

**Impact on the sustainability of eu's agriculture: +**

is it profitable for the farmer. thats the question. and is the aim to produce for the meat farms or looking to change consumer diets to more plant based. as it wont work on stand alone basis. long term it could be positive for sustainability. and improved ground conditions. but farmers will need cash crops to continue farming. protein crops for animal feed are price driven. globally. with many european countries not offering the most competitive advantages for a farmer in the global playfield.

ask the question where in europe can you start a commercial farm today and make a living as a farmer from scratch. today this is impossible investment is to high to carry. so in addition to promote these changes. EU and EU countries will need to review the position of the farmer. a jungle of regulations will not help.

*Comment date Jun 3, 2020, 11:11:50 AM*

**Impact on legume production and consumption: +**

**Impact on the sustainability of eu's agriculture: +**

Production will either increase (a little) or stay the same, because with "new" scientific outcomes the status quo will be kept.

The impact on consumption may be not changing, because there is no special understanding of the consumers for changing technologies.

The impact on sustainability may increase, if the technologies are respectively .

*Comment date Jun 15, 2020, 1:33:30 PM*

**Impact on legume production and consumption: +**

**Impact on the sustainability of eu's agriculture: +**

The only one of these measure to affect legume production is the crop rotation schemes. Similarly, nitrogen cycling is the only one that addresses sustainability. Very slight upwards movement.

*Comment date Jun 22, 2020, 6:59:01 PM*

**Impact on legume production and consumption: +**

**Impact on the sustainability of eu's agriculture: +**

Public investments in R&D that are focused on new breeds, effective crop rotation schemes, new strategies to better recycle nitrogen, and novel options for the storage and processing of legumes will have some positive impact. The changes required, however, require more than increased knowledge.

*Comment date Jun 3, 2020, 10:38:32 AM*

**Impact on legume production and consumption: +**

**Impact on the sustainability of eu's agriculture: +/-**

I assume in this answer that the R&D spend is focused around legumes rather than other crops. However I cannot also imagine that other crop areas will not also be developed in the same direction. More efficient N utilisation and N fixing in cereals and the benefits of N preservation in cover crops etc is already running at great speed and with considerable investment. Legume research will only be playing catch up in this respect and will need very considerably more input to make rapid progress.

Investment in new and novel processing will create market demand and the opportunity for growers to profit by supplying new markets with added value.

I see investment in new varieties of legumes as important. Progression of varieties is the natural territory of the breeder BUT they are limited in their interests ( as is the rest of the supply chain) by the size of the market. Production of more is possible using the varieties that already exist. Regional production of species that are not already produced is one potential area that could benefit e.g. chick peas and lentil in NW Europe, though in reality there is probably material in existence that can already be made to work in many situations IF growers see an opportunity to profit and are prepared to experiment, learn and accept some variability in performance year on year.

Any increase in legume production will have an increase on the potential sustainability of the whole system- if correctly intergrated.

Crop protection remains an issue across EU and approvals are removed and the relentlessly rising cost of new registrations become harder and harder to justify on minority crops. For these reasons I have moved the +/- indicator only a small amount.

*Comment date Jun 4, 2020, 12:33:10 PM*

**Impact on legume production and consumption: +/-**

**Impact on the sustainability of eu's agriculture: +/-**

I stay neutral in this answer because it depends on how the outcomes will be made public and what sort of incentives will be allowed to farmers (such as participation schemes?).

Again, I agree with the other commenters about not separating production and consumption



we need to look through the sharing of the added value all along the value chain, with an increasing share for the farmers thanks to good practices and high quality products

*Comment date Jun 3, 2020, 11:10:34 AM*

**Impact on legume production and consumption: +++**

**Impact on the sustainability of eu's agriculture: +**

Agronomists have a key role in improving crop performance on farm. Currently they spend their time and efforts on supporting the major cereals, oilseeds and other crops being grown by farmers. There is little development work to show how they can improve legume crop yields on farm so they have little interest in supporting the crop. Increased development work and expansion of legume crops would increase the interest of farm advisors and lead to major improvement in crop productivity

*Comment date Jun 7, 2020, 10:00:08 PM*

**Impact on legume production and consumption: ++**

**Impact on the sustainability of eu's agriculture: ++**

You might expect a backlash from some agrochemical (especially fertiliser) suppliers. Also, meat producers if the cost of their raw materials is increased. Food legume retailers make high returns on legumes as food - how can a fairer share of these returns be routed back to growers. Not CAP: CAP is not the way forward, and should be phased out, especially for the more affluent farmers in Europe. perhaps CAP needs means tested?

*Comment date Jun 15, 2020, 3:52:31 PM*

**Impact on legume production and consumption: ++**

**Impact on the sustainability of eu's agriculture: ++**

Farm advisory and extension services are very important in transforming EU agriculture, therefore they would result in improving legume production and agriculture sustainability.

*Comment date Jun 16, 2020, 8:34:58 AM*

**Impact on legume production and consumption: ++**

**Impact on the sustainability of eu's agriculture: ++**

The new CAP is considering backing extension services. This is a crucial point. Recovering these services will have an impact if demand, prices, consumption run parallel.

*Comment date Jun 21, 2020, 10:08:13 AM*

**Impact on legume production and consumption: ++**

**Impact on the sustainability of eu's agriculture: ++**

I consider the fact that rotations and the production of legumes are basically not taught in vocational training and thus also not part of the advisory work in most places one of the main stumbling blocks. Many farmers simply have no clue about legume production as their fathers did not grow them anymore and they were not taught about them.

*Comment date Jul 9, 2020, 11:58:11 AM*

**Impact on legume production and consumption: ++**

**Impact on the sustainability of eu's agriculture: ++**

Again scored solely on production. Comments on previous answers with relation to R&D apply here as well

*Comment date Jul 1, 2020, 9:41:33 PM*

**Impact on legume production and consumption: ++**

**Impact on the sustainability of eu's agriculture: +**

Advisory services should be trained to advise on growing legumes. Many consultants don't know much about legumes. So it has to start from the scratch.

*Comment date Jun 3, 2020, 11:29:57 AM*

**Impact on legume production and consumption: +**

**Impact on the sustainability of eu's agriculture: ++**

Farmers get more information, advices and knowledge. This could lead to an increased production of legumes.

For consumption there should be no impact

For a sustainable agriculture a better knowledge and entrance to resources would have a bigger impact. Questionable is, if all farmers would have a profit from that or if again the small family farms become forgotten.

*Comment date Jun 22, 2020, 1:09:51 PM*

**Impact on legume production and consumption: +**

**Impact on the sustainability of eu's agriculture: ++**

Higher impact on sustainability, legumes production and consumption are not directly effected.

*Comment date Jun 30, 2020, 5:22:04 AM*

**Impact on legume production and consumption: +**

**Impact on the sustainability of eu's agriculture: ++**

the role of agronomist - technical consultants is very critical for the implementation of such policies.

*Comment date Jun 3, 2020, 8:56:33 AM*

**Impact on legume production and consumption: +**

**Impact on the sustainability of eu's agriculture: +**

How can policy impact the development of extension services. These were largely in place a few decades ago before declining. How to restore these? Who will pay ?

*Comment date Jun 3, 2020, 10:47:31 AM*

**Impact on legume production and consumption: +**

**Impact on the sustainability of eu's agriculture: +**

A better educated supply chain and more enthusiasm from advisors for the benefits and use of legumes, can only improve the situation. I can only comment from my own regional experience, and we do not have a shortage of agronomists and advisors, but their general level engagement with legumes is low. With individuals this is not 100% the case but it also not surprising from the majority, as a crop area of just 3-4% is inevitably going to attract a similar proportion of the interest. Advisors will generally increase their interest with the increased exposure to the crop and demand for advise. Their education will not necessarily in itself drive increased production. Growers preferably need to be able to make money from any crop, or be made / encouraged to grow them for environmental/ sustainability objective reasons. Can the market be trusted to look after the environment? Probably not - which is why policy tools that direct the operation of the 'market' is important.

*Comment date Jun 22, 2020, 7:01:54 PM*

Good point reg advisors and their generally limited engagement with legumes.

*Comment date Jun 3, 2020, 3:00:06 PM*

**Impact on legume production and consumption: +**

**Impact on the sustainability of eu's agriculture: +**

Effective extension services will likely help farmers change towards more legume production. Question remains whether they are financially competitive.

*Comment date Jun 4, 2020, 12:37:32 PM*

**Impact on legume production and consumption: +**

**Impact on the sustainability of eu's agriculture: +**

I share the same concern as previous commenters, about the effectiveness of ext. ser. so far, and the need to rethink them - so, in my reply I imagined that if this policy will also touch upon this, then I definitely see a positive outcome

*Comment date Jun 5, 2020, 5:17:51 PM*

**Impact on legume production and consumption: +**

**Impact on the sustainability of eu's agriculture: +**

No impact for consumption

*Comment date Jun 15, 2020, 1:36:03 PM*

**Impact on legume production and consumption: +**

**Impact on the sustainability of eu's agriculture: +**

Mildly positive effects on both aspects, since sustainability depends on knowledge and many farmers lack adequate knowledge about legume production since they haven't done so within living memory.

*Comment date Jun 18, 2020, 6:57:13 AM*

**Impact on legume production and consumption: +**

**Impact on the sustainability of eu's agriculture: +**

I imagine only a mild overall effect if improvement of extension services is considered in isolation. For most owners a farm must generate income in the first place. Good extension services, however, are crucial for turning regulatory conditions into profitability at farm level and sustainability at landscape scale and beyond.

*Comment date Jul 8, 2020, 12:31:29 PM*

**Impact on legume production and consumption: +**

**Impact on the sustainability of eu's agriculture: +**

This all is very well but it only focuses on the production part, not the consumption. We need at least as much effort to promote the consumption of legumes in our populations.

*Comment date Jun 22, 2020, 7:00:40 PM*

**Impact on legume production and consumption: +/-**

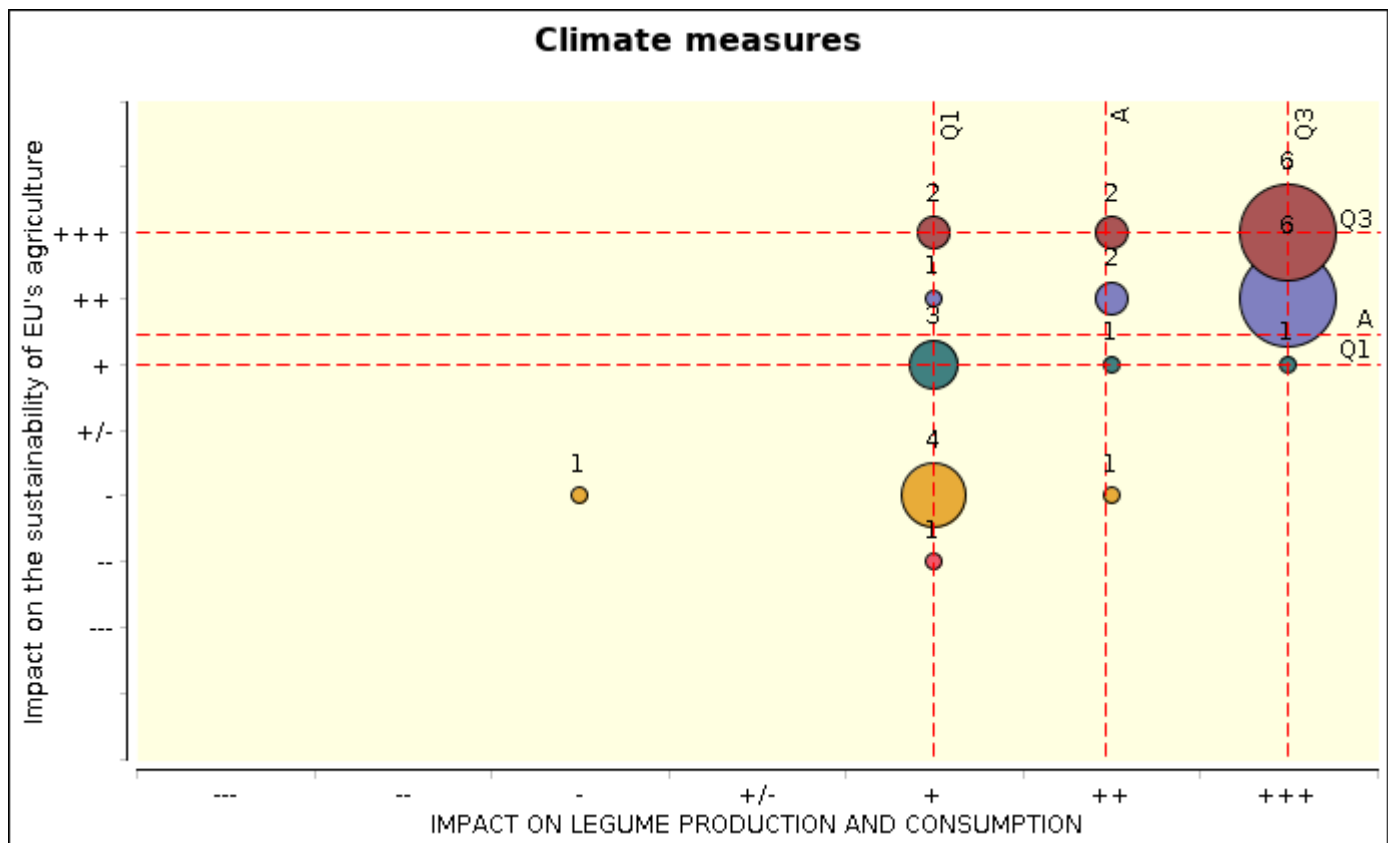
**Impact on the sustainability of eu's agriculture: +/-**

Marginal effect, if at all. Other measures are much more important.

## Climate measures

Imagine that by 2030 there will be public consensus to launch radical climate mitigation measures (e.g. banning meat and dairy consumption or requiring a significant decrease of the carbon footprint caused by food production), and collective political decisions are made towards this direction.

Would such a policy change have a rather negative or a rather positive impact on legume production and/or consumption in Europe? Would such a policy change have a rather negative or positive impact on the sustainability of European agriculture in general? In the box below please elaborate your answer (i.e. what other consequences you envisage for such a policy change?)



## COMMENTS

*Comment date Jun 7, 2020, 10:01:45 PM*

**Impact on legume production and consumption: +++**



**Impact on the sustainability of eu's agriculture: +++**

This would demand a rapid investment in processing capacities for meat and dairy replacements. In this context it is important that these capacities are not developed for only the large-scale processors. There needs to be a mechanism whereby small and craft-scale capacities are available and affordable for those small scales. This is a manufacturing capacity issues, and the realisation of industrial engineering solutions targeted specifically for the small/craft scale user.

*Comment date Jun 19, 2020, 2:47:47 PM*

**Impact on legume production and consumption: +++**

**Impact on the sustainability of eu's agriculture: +++**

Regulatory measurments have the highest impact on both.

*Comment date Jun 3, 2020, 8:52:29 AM*

**Impact on legume production and consumption: +++**

**Impact on the sustainability of eu's agriculture: ++**

Huge benefits for production AND consumption

*Comment date Jun 3, 2020, 9:04:18 AM*

**Impact on legume production and consumption: +++**

**Impact on the sustainability of eu's agriculture: ++**

be careful with the huge increase of biomass production and the requirement to find and to develop new end uses (non food?). 80% of the land is used to feed animals today, so the livestock reduction will offer the opportunity to grow something else: the question is what.

*Comment date Jul 1, 2020, 9:50:16 PM*

**Impact on legume production and consumption: ++**

**Impact on the sustainability of eu's agriculture: +++**

I think legumes are a good protein, energy, fibre and mineral source. But we still lack in good products out of legumes. But where we allready have fantastic products, like some kinds of soy tofu products we will easily change the consumption pattern.

*Comment date Jun 3, 2020, 10:51:41 AM*

**Impact on legume production and consumption: ++**

**Impact on the sustainability of eu's agriculture: ++**

I consider this to be a completely unrealistic scenario. An interest academic consideration but one that will never happen.

*Comment date Jun 15, 2020, 1:39:22 PM*

agreed

*Comment date Jun 22, 2020, 7:06:33 PM*

We will need to asap come to a much more ambitious climate policy that also targets industrial high-input/high-output agricultural production. I do not understand other positions.

*Comment date Jun 4, 2020, 12:40:43 PM*

**Impact on legume production and consumption: ++**

**Impact on the sustainability of eu's agriculture: ++**

IF this happens, then the impact will be definitely positive. The problem is: how likely is that anything so radical will happen? It seems to me times are not ripe yet (which sounds crazy and forces us to question: then what will have the necessary effect?)

*Comment date Jun 15, 2020, 3:54:47 PM*

**Impact on legume production and consumption: ++**

**Impact on the sustainability of eu's agriculture: +**

In such a case there would be a possitive effect on production but a mild effect on sustainability.

*Comment date Jun 4, 2020, 7:36:49 AM*

**Impact on legume production and consumption: ++**

**Impact on the sustainability of eu's agriculture: -**

From a broad sustainability perspective including social and economic dimenstions also outside Europe, such a scenario could likely have negative impacts on other parts of the world and on farmers in Europe itself. Animals are an important part of mixed farming systems and fulfil an important traditional and cultural part for many smallholders. What happens outside Europe if such a scenario came through? Will countries import meat and dairy from outside? What effects is this going to have on smallholders in other countries (increased pressure on land? more pollution of water and deterioration of soil?)

The question should not be whether meat and dairy should be produced or not but rather in which

forms? What kind of production systems can be rated sustainable? Mixed, diverse production systems rate higher in this regard and they are also more resilient. But animals are an important part of such systems.

*Comment date Jun 4, 2020, 11:00:47 PM*

**Impact on legume production and consumption: +**

**Impact on the sustainability of eu's agriculture: +++**

Generally positive, but...some ecosystem services, including those required for legume production, can benefit from non-intensive livestock industries. Without legume-source livestock feed, production would necessarily decrease.

*Comment date Jun 22, 2020, 7:04:00 PM*

**Impact on legume production and consumption: +**

**Impact on the sustainability of eu's agriculture: +**

Somewhat positive impact, but generally stronger dis/incentives are needed with regard to home-grown legumes and their competition with cheap protein imports.

*Comment date Jul 9, 2020, 12:04:15 PM*

**Impact on legume production and consumption: +**

**Impact on the sustainability of eu's agriculture: +**

Again scored on production as the studies undertaken on choice experiments have shown that what consumers say they do and how they behave are very different. Again similar concerns with sustainability metrics as outlined in previous answers.

*Comment date Jun 3, 2020, 11:16:26 AM*

**Impact on legume production and consumption: +**

**Impact on the sustainability of eu's agriculture: -**

Politically this is not feasible. The changes in lifestyle and food production would increase food costs significantly and be unsustainable.

*Comment date Jun 22, 2020, 7:07:23 PM*

There are good studies which show that this is not the case. Externalities, for example, need to be taken into account.

*Comment date Jun 3, 2020, 11:34:34 AM*

**Impact on legume production and consumption: +**

**Impact on the sustainability of eu's agriculture: -**

Consumption would inevitably increase because animal protein sources are missing.  
Production would increase accordingly.

But the sustainability would be negative, because a) it would not be political realistic to reach such restrictions and b) there are too many regions which depend on milk and meat production - also to keep the traditional cultural landscapes with their biodiversity.

*Comment date Jun 15, 2020, 1:41:26 PM*

**Impact on legume production and consumption: +**

**Impact on the sustainability of eu's agriculture: -**

A somewhat ridiculous scenario. Think of all the regions that are too hot, too cold, too dry, too wet, too saline, too something for arable cropping. Think of the carbon sequestration in pastures.

*Comment date Jul 8, 2020, 12:49:47 PM*

**Impact on legume production and consumption: +**

**Impact on the sustainability of eu's agriculture: -**

Banning meat and dairy consumption altogether is not the solution for our environmental problems and might even have a negative impact on sustainability. It is also not realistic either, so I am not in favour of this. We need to consider the whole food system and also population health, how to best fit animal production to plant production and also take into account non-food side-streams that be utilised in animal husbandry to produce high-value protein for humans. Decreasing the consumption of red meat from the current level may do us good but whole nations to move to vegan diets may expose to some serious health risks, particularly in vulnerable groups such as growing children and aged people.

*Comment date Jun 16, 2020, 8:39:56 AM*

**Impact on legume production and consumption: +**

**Impact on the sustainability of eu's agriculture: --**

Let us hope that such a radical measure is not put in place, it sounds like a "religious movement"  
On one hand I still remember when olive oil and sardines were considered bad for health.

On the other hand we need grazing animals to use pastures (we cannot use cellulose) and crops that will not produce in dry years.

We have to be aware that 1.5 Gha are cropland and 3.5 Gha pastures. Animal production plays a role and C sequestration too.

*Comment date Jun 18, 2020, 7:17:37 AM*

**Impact on legume production and consumption: -**

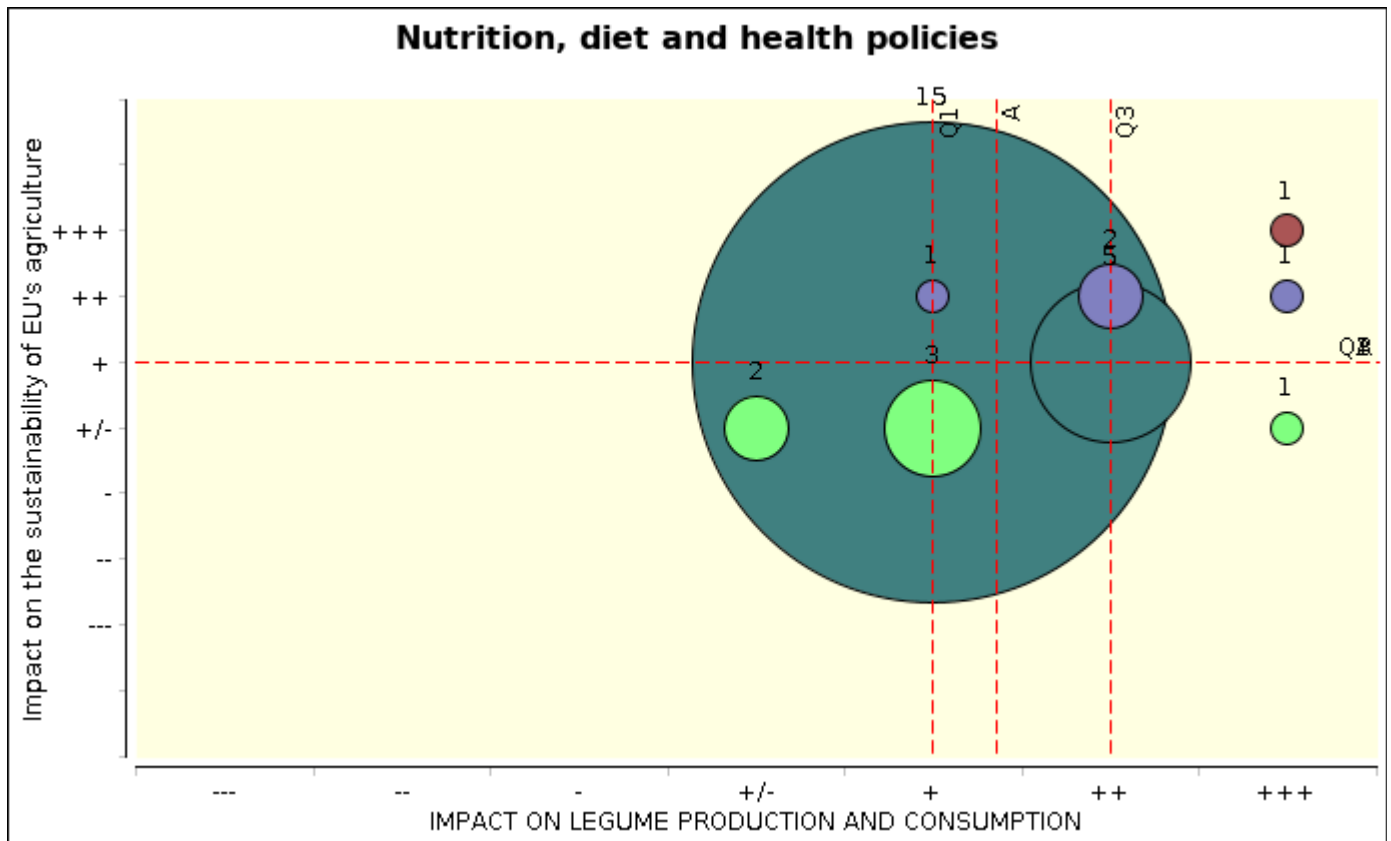
**Impact on the sustainability of eu's agriculture: -**

I am very uncertain about my answer but my feeling is there is going to be a negative effect on legumes and overall sustainability by such a radical move. Sustainability will decrease because biodiversity associated with temporary and permanent grasslands will drastically decrease. I can also imagine that in a more competitive market for cereals and vegetables it may become advantageous to apply cheap mineral fertilizer (produced with cheap excess wind power) rather than introducing unreliable legumes in the crop rotation. If legumes have become a reliable source of income by then, more legumes would be used (maybe also due to a high demand for products replacing meat and dairy). This still leaves a negative impact on biodiversity.

## Nutrition, diet and health policies

Imagine that by 2030 nutrition, diet and health policies build on, and at the same time share with consumers, the best available knowledge on the nutritional value and the health & environmental impacts of different food sources. Nutritional guidance on calories intake is provided to consumers through various means (e.g. consilia with doctors, public food procurement rules, etc.).

Would such a policy change have a rather negative or a rather positive impact on legume production and/or consumption in Europe? Would such a policy change have a rather negative or positive impact on the sustainability of European agriculture in general? In the box below please elaborate your answer (i.e. what other consequences you envisage for such a policy change?)



## COMMENTS

*Comment date Jun 4, 2020, 11:05:38 PM*

**Impact on legume production and consumption: +++**

**Impact on the sustainability of eu's agriculture: +++**

Consumer education and awareness campaigns have already led to increased consumption. As a highly nutritious substitute for animal-source food in the diet, the impact would be positive for both environment and human health. However, this presumes the consumption of whole legumes, and not legumes refined into ultra-processed, convenience foods.

*Comment date Jun 7, 2020, 10:03:40 PM*

**Impact on legume production and consumption: +++**

**Impact on the sustainability of eu's agriculture: ++**

Food is a very personal and cultural thing. It would be important to route legumes and legume-based foods into cultures in forms that were very tasty and in-line with their cultural expectations. To what extent is the capacity of food literacy (i.e. home economics and how to cook (legumes)) still taught in schools. Food and food technology education needs reinvigorated across Europe. The drive to teach too cheaply is creating an educational void. More hands-on-learning is necessary, in kitchens and kitchen laboratories (despite any perceived or actual H&S risk).

*Comment date Jun 3, 2020, 11:21:44 AM*

**Impact on legume production and consumption: +++**

**Impact on the sustainability of eu's agriculture: +/-**

Use of plant proteins especially legumes in human diets will increase significantly over the next 10 years. They will not only be a source of protein but provide healthier forms of carbohydrate, fibre, mineral and vitamins. This will create a new market for quality pulses which will increase demand. However, the need is to undertake research to establish the functionality of pulses for use by the food industry as a food ingredient. It is feasible to replace large amounts of wheat and maize with pulse flours as more healthy food ingredients if the food processors know how they can utilise them. At present this is likely to be supplied by North American producers rather than EU farmers as the R&D is not being undertaken by EU based organisations. Major investment in this area being made in Canada and US by food companies supported by public funds.

*Comment date Jun 22, 2020, 7:10:38 PM*

Good points!

*Comment date Jun 22, 2020, 1:11:20 PM*

**Impact on legume production and consumption: ++**

**Impact on the sustainability of eu's agriculture: +**

These kind of policies effect mostly consumption.

*Comment date Jul 8, 2020, 1:07:24 PM*

**Impact on legume production and consumption: ++**

**Impact on the sustainability of eu's agriculture: +**

I think the measures suggested are important to increase the awareness of the health and environmental benefits related to increased legume food consumption for individuals. However, it is not enough to lead to significant changes in consumption patterns - we need to have a bigger variety of legume foods at market and they need to fit into the local food culture and have favourable sensory properties. From health point of view, I do not think it matters whether they are highly processed or not as far as they still have their fibre part included. Actually I think we need to have some convenience foods made of legumes available if we truly wish to increase the consumption.

*Comment date Jun 3, 2020, 9:07:41 AM*

**Impact on legume production and consumption: +**

**Impact on the sustainability of eu's agriculture: +**

the amount of legumes for food will never be very high, unless EU will export food legumes. Food products based upon plant protein will be cheaper than meat and accessible to everybody.

*Comment date Jun 3, 2020, 10:55:46 AM*

**Impact on legume production and consumption: +**

**Impact on the sustainability of eu's agriculture: +**

Legumes for food in the EU will not be dramatically increased by food labelling and nutritional education alone, alternative foods must be promoted. Primarily however they must be tasty and attractively priced, i.e. desirable. This largely means improvements in processed foods with legumes as increasing proportion of the ingredients and a price that moves people's attention away from animal protein sources.

*Comment date Jun 3, 2020, 11:39:18 AM*

**Impact on legume production and consumption: +**

**Impact on the sustainability of eu's agriculture: +**

Production and consumption of legumes would of course increase, no question, if you have no other choice. Sustainability on the field would be given accordingly - unless the question before: we cannot put legumes on all agricultural areas. But this system would not fit political and in the society.

*Comment date Jun 15, 2020, 1:44:45 PM*

**Impact on legume production and consumption: +**

**Impact on the sustainability of eu's agriculture: +**

To a great extent, this knowledge is already available but doesn't get beyond expert circles. The question is how to get it into consumer hands and then how to get them to use it. Mild positives in both axes as the outcome would be reduced consumption of animal products, with all of its on-costs, and mild increases in plant-protein production.

*Comment date Jun 15, 2020, 3:56:38 PM*

**Impact on legume production and consumption: +**

**Impact on the sustainability of eu's agriculture: +**

Mild effects in this case on production and sustainability.

*Comment date Jun 18, 2020, 7:35:49 AM*

**Impact on legume production and consumption: +**



**Impact on the sustainability of eu's agriculture: +**

The recommendations in the question seems to be legume-neutral. If calories-intake is to be reduced this could mean less meat not necessarily more legumes. Humans like and eat food not only because of its nutritional value but because they enjoy the taste, flavour and texture etc. I think people are more willing to change their diet slightly for a greater environmental benefit than for personal health.

*Comment date Jun 19, 2020, 2:49:29 PM*

**Impact on legume production and consumption: +**

**Impact on the sustainability of eu's agriculture: +**

Dietary guidelines on reduction of meat consumption and increase of pulses have already shown to have impact on consumption and therewith on public health. But the impact will be small.

*Comment date Jun 22, 2020, 7:09:51 PM*

**Impact on legume production and consumption: +**

**Impact on the sustainability of eu's agriculture: +**

Better informed consumption choices, and the related nutrition, diet and health policies, will always have a significant positive impact.

*Comment date Jun 4, 2020, 7:40:10 AM*

**Impact on legume production and consumption: +**

**Impact on the sustainability of eu's agriculture: +/-**

I could imagine that people eat more legumes if they know more about nutrition but if that will significantly change production patterns, I don't know

*Comment date Jun 16, 2020, 8:46:39 AM*

**Impact on legume production and consumption: +**

**Impact on the sustainability of eu's agriculture: +/-**

Under confinement in Spain the increase in the use of grain legumes in the diets has increased significantly: the reason that was given was mainly parents or families had more time for cooking. so the demand is there built in the traditions and also nowadays the gourmet approaches.

*Comment date Jul 9, 2020, 12:06:28 PM*

**Impact on legume production and consumption: +**

**Impact on the sustainability of eu's agriculture: +/-**

Consumption drivers will always be largely a matter of price although I would expect education to have a marginal impact on demand. Not entirely sure how this will drive production as it implies a moral consideration rather than a market based driver for what is produced. Same issues with sustainability as previous answer

*Comment date Jun 3, 2020, 10:51:13 AM*

**Impact on legume production and consumption: +/-**

**Impact on the sustainability of eu's agriculture: +/-**

Not sure I see this as having any direct effects for EU agriculture or legume production

*Comment date Jun 4, 2020, 12:44:23 PM*

**Impact on legume production and consumption: +/-**

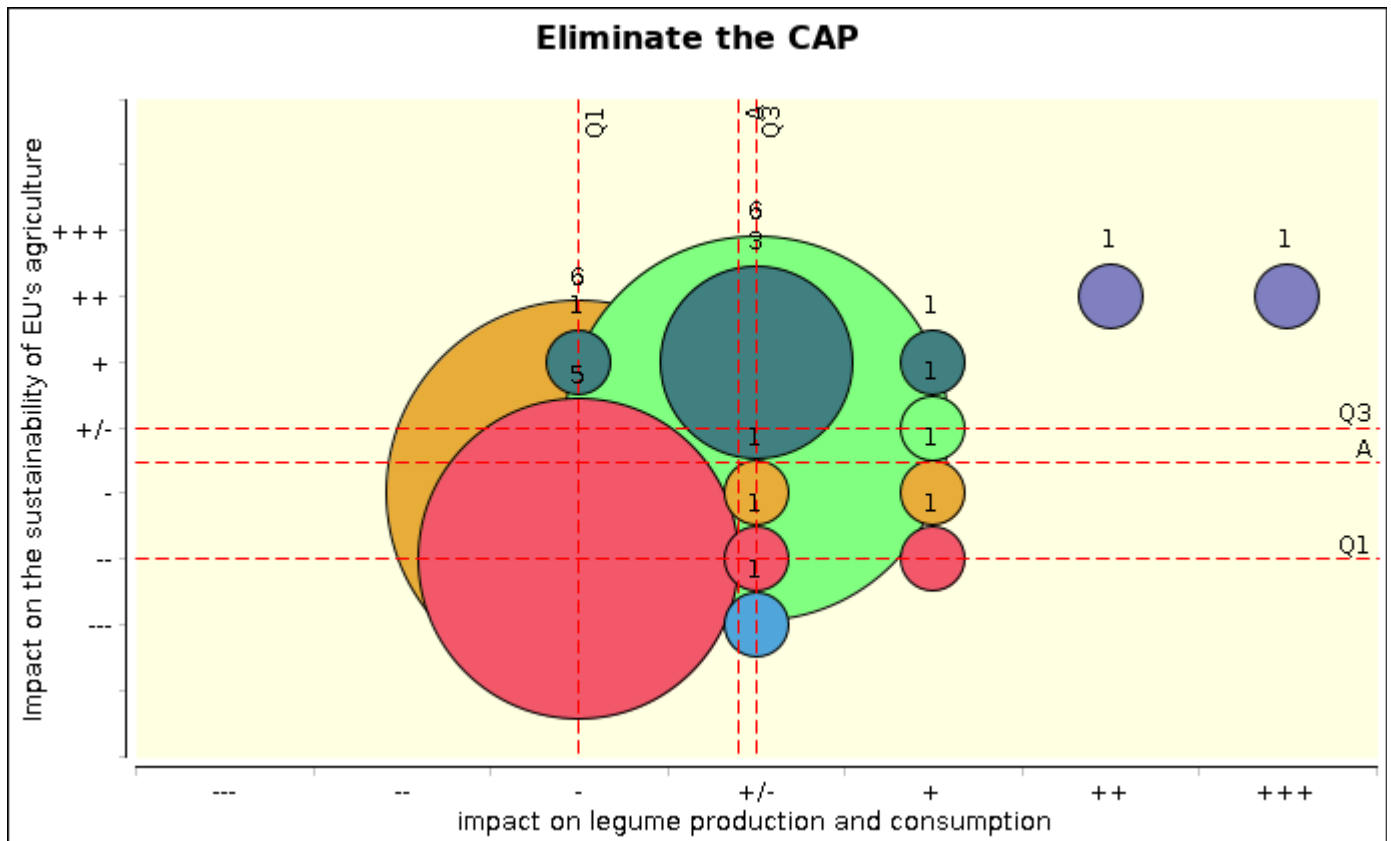
**Impact on the sustainability of eu's agriculture: +/-**

definitely support consumption together with a deeper education (that is: not just information available but a whole support-program, such as directions for cooking, taste lab, taste experiences, etc), not sure how much it will affect production

## Eliminate the CAP

What if in Europe we eliminate the subsidies to agriculture? Imagine that by 2030 a radical policy shift happens and therefore the EU stops all agricultural subsidies through the CAP.

Would such a policy change have a rather negative or positive impact on legume production and/or consumption in Europe? Would such a policy change have a rather negative or positive impact on the sustainability of European agriculture in general? In the box below please elaborate your answer (i.e. what other consequences you envisage for such a policy change?)



## COMMENTS

*Comment date Jun 7, 2020, 10:04:29 PM*

**Impact on legume production and consumption: +++**

**Impact on the sustainability of eu's agriculture: ++**

Comment already made - this may need means tested somehow. On a country/region and/or farmer by farmer basis.

*Comment date Jun 3, 2020, 10:58:54 AM*

**Impact on legume production and consumption: ++**

**Impact on the sustainability of eu's agriculture: ++**

Elimination of subsidy would have a massive effect on all of agriculture and would force those that remain in production to adopt least cost production methods, which would involve the much greater use of legumes to provide N and improve soil fertility. The shock would be huge, right along the supply chain.

*Comment date Jun 3, 2020, 9:24:20 AM*

**Impact on legume production and consumption: +**

**Impact on the sustainability of eu's agriculture: +**

no option unless other solutions arise. its already not easy to run a farm in europe. add the climate change with more crop failures. you will probably rule out farming. point is retail focus is still profit driven. and cash to share holders. if there is no money to the farm why would you farm at all.

*Comment date Jun 3, 2020, 9:13:01 AM*

**Impact on legume production and consumption: +/-**

**Impact on the sustainability of eu's agriculture: +**

Use of legumes only for food, so we produce already enough legumes, and sustainability might be improved because the cost production have to be reduced

*Comment date Jun 16, 2020, 8:51:51 AM*

**Impact on legume production and consumption: +/-**

**Impact on the sustainability of eu's agriculture: +**

The most diverse cropping systems that I know of are in Asia and Australia, the least in the maize-soybean cropping systems in Argentina, all with no subsidies. This may be a too simplistic comment. Farmers may look for lower even more thair production costs (lower their N input usually in excess in wet areas areas) better cropping practices and many will not be part time farmers.

*Comment date Jun 3, 2020, 11:27:33 AM*

**Impact on legume production and consumption: +/-**

**Impact on the sustainability of eu's agriculture: +/-**

The massive cost of Covd19 will have a major impact on EU economies over the next 10 years. Political pressure will be to reduce public expenditure and farm subsidies will be questioned. There will not be the funds available to support agriculture as in the past. The impact on EU legume production and farm sustainability may not be great but the impact on farming will be enormous.

*Comment date Jun 4, 2020, 12:51:03 PM*

**Impact on legume production and consumption: +/-**

**Impact on the sustainability of eu's agriculture: +/-**

interesting experiment for thought! not sure about the direct influence on legumes, but a huge agri-food turnoil is to be expected. A I commented below, the example of New Zealand should give us such ideas about the general possibilities for the agri-food sector (and also about the EU structural organization for what matters), but would not tell us much about the immediate reactions (NZ is a country of less than 6 million people at the antipodes, the EU is very different...)

*Comment date Jul 1, 2020, 9:56:24 PM*

**Impact on legume production and consumption: +/-**

**Impact on the sustainability of eu's agriculture: +/-**

That could be an interesting option. However, I cannot estimate exactly what that would mean. And what measures still have to be taken to grow more legumes.

*Comment date Jul 8, 2020, 1:19:01 PM*

**Impact on legume production and consumption: +/-**

**Impact on the sustainability of eu's agriculture: +/-**

This is a radical suggestion and I am unable to assess the impact. However, I think global food prices are not determined by the true costs of production but nearly every nation subsidizes food production somewhat. This is not to say that we shouldn't think about making changes to subsidies.

*Comment date Jun 15, 2020, 1:46:52 PM*

**Impact on legume production and consumption: +/-**

**Impact on the sustainability of eu's agriculture: -**

I think that this is about as likely as banning meat or pigs learning to fly. CAP is complicated, but it does have some positive effects on sustainability. So far, it has had a little positive effect on legume production after the 2013 reforms that followed decades of negative effects whether intended or not.

*Comment date Jun 4, 2020, 7:43:58 AM*

**Impact on legume production and consumption: +/-**

**Impact on the sustainability of eu's agriculture: --**

such a radical shift would drive many European farmers out of business and would have an impact on food supply within Europe. that would have negative impacts on overall sustainability. whether legumes would profit from that? Difficult to say.

*Comment date Jun 3, 2020, 8:58:36 AM*

**Impact on legume production and consumption: +/-**

**Impact on the sustainability of eu's agriculture: ---**

This is not a viable option

*Comment date Jun 22, 2020, 7:13:27 PM*

**Impact on legume production and consumption: -**

**Impact on the sustainability of eu's agriculture: +**

There are too many influences linked with that. Hard to say anything about impact. Parts of the current CAP have positive impacts (e.g. AE funding), other parts are totally counterproductive in many ways (e.g. subsidies without a clear social or environmental benefit).

*Comment date Jun 15, 2020, 4:00:48 PM*

**Impact on legume production and consumption: -**

**Impact on the sustainability of eu's agriculture: -**

The fact that European land resources are substantially lower than those of other continents and the unfair commerce practises, would make the abandonment of subsidies to threat of EU agriculture sustainability.

*Comment date Jun 19, 2020, 2:50:53 PM*

**Impact on legume production and consumption: -**

**Impact on the sustainability of eu's agriculture: -**

Not shure about the impact.

*Comment date Jun 21, 2020, 10:13:29 AM*

**Impact on legume production and consumption: -**

**Impact on the sustainability of eu's agriculture: -**

Stopping subsidies without making prices say the truth as well for local as for externally produced feed and food will most likely reduce the sustainability, i.e. the ability to survive for most agriculture as it is cheaper to produce outside Europe. The question is how to make prices say the truth AND at the same time make sure that production will be massively reduced. However, climate change may work in our favour as other regions will suffer even more from climate change than central Europe and then it may be realistic to make the prices say the truth.

*Comment date Jun 22, 2020, 1:12:39 PM*

**Impact on legume production and consumption: -**

**Impact on the sustainability of eu's agriculture: -**

Then production would be driven only by the market, which is not good for sustainability.

*Comment date Jun 3, 2020, 10:56:40 AM*

**Impact on legume production and consumption: -**

**Impact on the sustainability of eu's agriculture: --**

Cannot envisage the complete elimination of subsidies but they do have to be entirely refocused around sustainability concerns. The experience of New Zealand should give pause for thought about eliminating subsidies, but their careful deployment can be vital for ecological regeneration.

*Comment date Jun 3, 2020, 11:43:18 AM*

**Impact on legume production and consumption: -**

**Impact on the sustainability of eu's agriculture: --**

If ALL subsidies would be cut, we would get a revolution. There would be no essential impact on legume production.

It would be of danger for the small farmers, because the big ones have enough resources for the beginning and enough political influence to get any public money.

*Comment date Jun 18, 2020, 7:54:25 AM*

**Impact on legume production and consumption: -**

**Impact on the sustainability of eu's agriculture: --**

Oh my. So environmental standards would still be in effect but farmers are not compensated? I think this would lead to economically efficient large-scale agriculture with little regard to biodiversity. I do not think it would be the end of agriculture in Europe. What would be more profitable to replace agriculture on the available land?

*Comment date Jul 9, 2020, 12:08:40 PM*

**Impact on legume production and consumption: -**

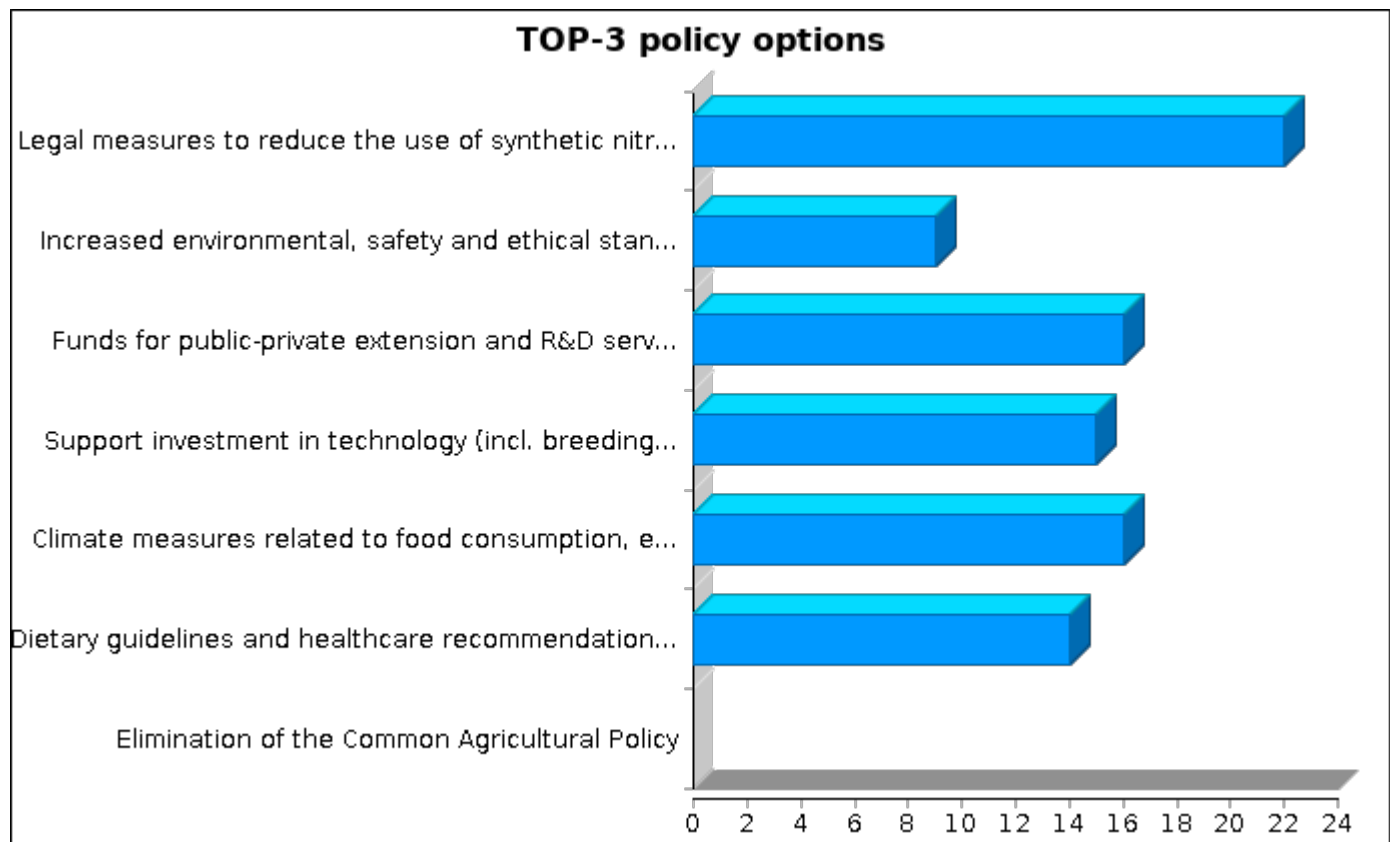
**Impact on the sustainability of eu's agriculture: --**

If this were the case the market will drive production which would mean that the cheapest supply chains will drive the majority of production and as a consequence consumption

TOP-3 policy options

What are the three most important policy instruments that could forge pathways towards legume-based, sustainable food and feed systems in Europe?

The first round of the Delphi survey suggested that no single policy is able to make a transformative change in European agro-food and feed chains to increase the proportion of legumes. Taken into account your ratings in the previous pages, please read again the policy options below, and **select ONLY three which you think would have a considerable impact together**, as a policy mix.



## COMMENTS

*Comment date Jun 3, 2020, 11:15:52 AM*

What is not considered in this survey is the opportunity for policy makers to encourage legume production through positive stimulation. Most of the measures act negatively against other parts of the sector.

Whilst I believe the CAP should be abolished, I believe this is extremely unlikely and it is curiously a unique vehicle that can be used to significantly influence legumes positively.

Positive discrimination in respect of legume production either by positive carbon credits or environmental points systems do work. This was seen with the modest favouritism shown by the 2014/5 permissions to produce legumes in EFA's ( before the ban on the use of Agrochemicals was later introduced) and the 3 crop rules of greening measures.) More dramatic favouritism in similar measures offer the opportunity for massive impact. A sensible rotation for grain legumes would be 1 in 6 years. This is 16-17% of the crop area. Supposing the CAP demanded that for subsidies to be paid? The huge uplift in production would drive consumption in new markets and old ( substitution of imports would take place) and whilst it would put a base in the market place and perhaps restrict the upside value of the commodity this is what subsidies do already. It would be dramatic. There would be the opportunity for others to say what about the reduction in other crops but the reality is they are already reducing as yields stagnate. This would put legumes at the centre for the rotation for the



benefit of the rotation and the environment and rather than reduce the production of other crops might, despite a modest reduction in their area increase their production and reliability.

*Comment date Jun 3, 2020, 11:34:10 AM*

The most important way of increasing legume production and consumption is to increase their use as food ingredients. With a knowledge of the functionality of pulses, pulse flour and their extractions the food industry will use them as more healthy ingredients. The pump priming funding to achieve this is relatively small but will have a major impact on consumption. This needs to be supported by on farm research and development/extension support to improve yields and their reliability.

*Comment date Jun 4, 2020, 7:46:44 AM*

In addition to measures for synthetic nitrogen fertilizer, pesticide use should also be taxed higher.

*Comment date Jun 22, 2020, 7:16:28 PM*

Good point.

*Comment date Jun 7, 2020, 10:11:06 PM*

Comment already made - this may need means tested somehow. On a country/region and/or farmer by farmer basis. Getting rid of CAP is a good thing ` (but not chosen here due to other priorities – and the possibility that the CAP could evolve into one of the other options presented. E.g. C-tax, could be a penalty or reward depending on the farms C-balance How will farmers profitability be guaranteed with CAP in place? CAP has been used by the larger retailers to drive farm-gate prices to a level that farmers need the CAP to remain profitable. That said, with minimum use of agrichemicals such as fertiliser and pesticides, gross margins could be improved. Nevertheless, the profitability of farmers should not be over-exploited by the larger retailers, and a guaranteed minimum income needs set. Sure, food prices might increase but I would expect that food waste, i.e. respect for food also increase and waste (a major issue) would decrease. Over-consumption may also be alleviated. Get rid of CAP, or evolve it. Currently it is not fit for purpose.

*Comment date Jun 15, 2020, 11:49:33 AM*

Policy mix is a key point for legume future in EU. A link between environment and health would definively promote the production and uses of legumes.

*Comment date Jun 22, 2020, 7:16:44 PM*

Yes!

*Comment date Jun 16, 2020, 8:53:47 AM*

Some of these measures could be vetoed (ban on red meat!!)

*Comment date Jun 18, 2020, 8:02:29 AM*

I think a Common Agricultural Policy is valuable for the EU but not necessarily in the current form.

*Comment date Jun 19, 2020, 2:52:47 PM*

A mix of legal measurements and stimulation of consumption and production by incentives is the best policy.

*Comment date Jun 21, 2020, 10:20:56 AM*

What is missing is the measure to let the prices say the truth and to incorporate external costs of agriculture. Also not clear what is meant with a tax on meat. As we have little to control how others make their production, a tax might work better but it might also backfire making meat production in other places even worse to be competitive despite the taxes. It will all remain patchwork if we do not act globally but we have no choice but to start.

There should be rules a bit like in Switzerland that imports will only start once own production is consumed at the same time own production standards must be raised and supported to make own production attractive in a good way (and not to produce dumping price meat with dumping and inhuman and animal abusive methods just for export, there is no need for this).

*Comment date Jun 22, 2020, 1:18:41 PM*

As it regards CAP elimination I don't think this would help at all.

*Comment date Jun 22, 2020, 7:16:00 PM*

Critically important is that the different measures complement each other. The reasons for these three measures are clear from my responses to earlier questions.

*Comment date Jul 8, 2020, 1:35:10 PM*

Many of the suggestions are negative in nature - what about using more a carrot than a stick? I think there is too little attention paid to increasing legume consumption by European populations. It does not necessarily help to ban meat, it will not automatically lead to increased use of legumes.

*Comment date Jul 9, 2020, 12:56:06 PM*

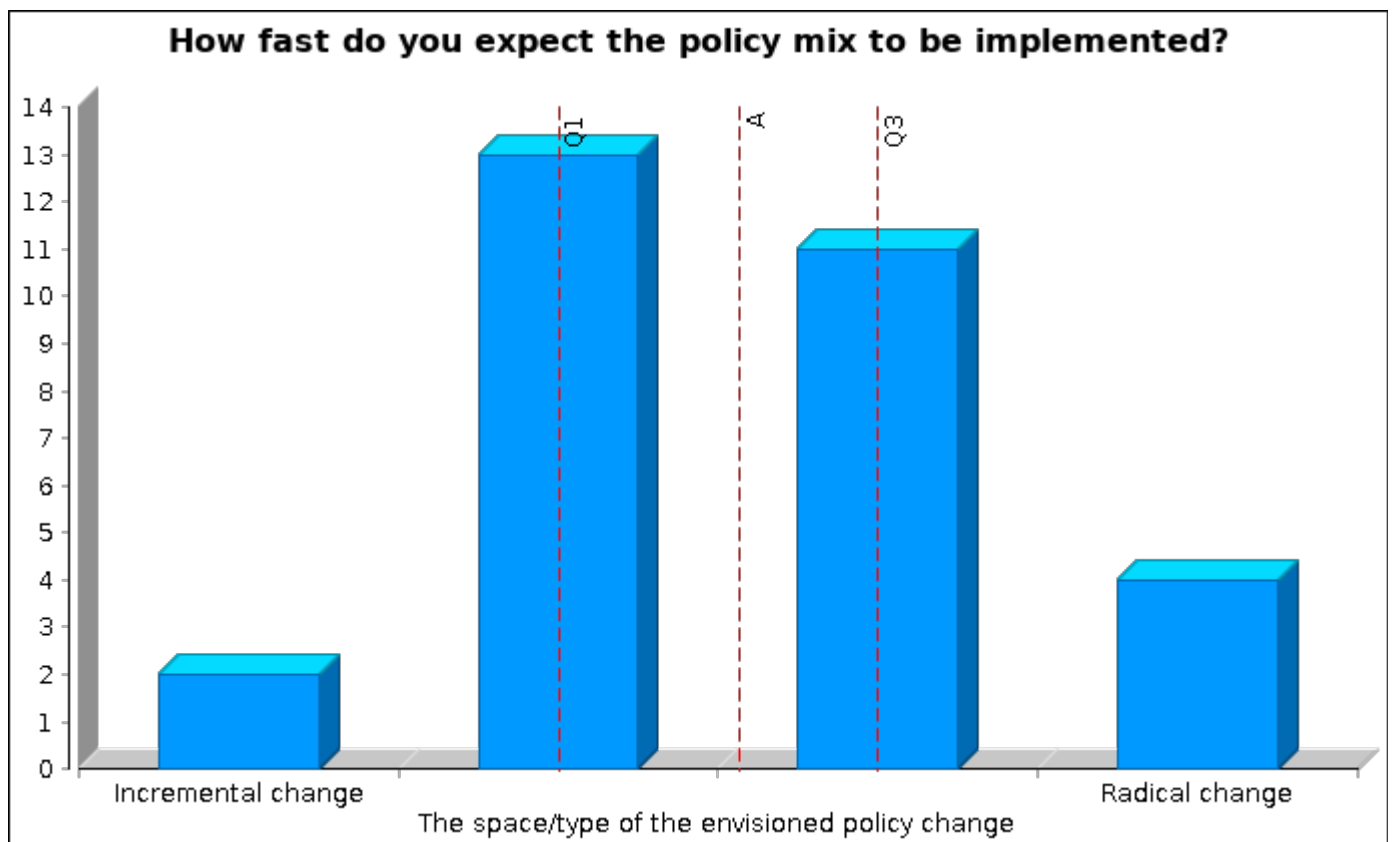
The majority of these are only likely to have a measurable impact on production in terms of competency, capability and market accessibility. To influence consumption from a dietary

perspective as opposed to consumption from an animal feed perspective, positive levers could involve domestic procurement levers and market access limitations into the grocery supply chains

## How fast do you expect the policy mix to be implemented?

Is it an incremental policy change, or rather a radical shift in policy, which could lead to the implementation of the policy mix you envisaged?

Please consider the policy instruments you selected as part of the policy mix in the previous question, and think about how fast such a policy change could be implemented. Would it follow a rather incremental process of policy change (i.e. a step-by-step process, always building on previous policy advancements, taking longer time)? Or on the contrary, would it require a radical change in current policies (i.e. launching novel policy instruments abruptly, following a visionary thinking)?



A -0.433  
n 30  
Md (0)  
min Incremental change (-2)  
max Radical change (1)  
stdDev0.803

## COMMENTS

*Comment date Jun 4, 2020, 11:12:40 PM*

**The space/type of the envisioned policy change:** Radical change

I don't expect a radical change, but a radical change is necessary. For years now, and from everywhere -- UN system, ministries of agriculture and environment, civil society and even private sector -- a radical transformation of agriculture is and has been the urgent message. Europe needs sustainable food systems and sustainable diets.

*Comment date Jun 3, 2020, 11:02:23 AM*

**The space/type of the envisioned policy change:**

The question is also how willing the EU might be willing to learn from the COVID experience as a way of shrinking our dependence on global supply chains and working to build more resilient food systems.

*Comment date Jun 3, 2020, 11:27:10 AM*

**The space/type of the envisioned policy change:**

I believe what is required is radical change.

However I also believe that there is no chance of radical change- nothing within the EU is ever really radical. Powerful vested interests fight change tooth and nail against anything that might upset the status quo and as a result quosh progress.

I again refer to the modest CAP requirements that gave legumes a slight advantage within the Greening measures by offering farmers a simple means of compliance. These were fought over by lobbyists and later rescinded by the imposition of the rules against the use of Agrochemicals and the reduction in their environmental benefit ratio. The initial boost to legume production and the potential of environmental improvement were almost immediately lost again as effective legume production from crops in EFA's was essentially prevented.

Policy intervention needs to be dramatic and positive and implemented with purpose and belief by policy makers.

*Comment date Jun 4, 2020, 1:00:04 PM*

**The space/type of the envisioned policy change:**

I agree with many commenters: personally I do believe in radical change at this time in history, also coming from the experience of COVID19, but when it comes to masses and lobbyists I guess that incremental change, albeit at fast pace, will be necessary

*Comment date Jun 18, 2020, 8:07:28 AM*

**The space/type of the envisioned policy change:**

I think a radical change in policy based on societal expectations and economic and environmental requirements with a long (25-35 years) and predictable transition period would be most helpful.

*Comment date Jun 21, 2020, 10:23:44 AM*

**The space/type of the envisioned policy change:**

The vote bar does not allow for a vote, while I agree that it will have to be more towards the radical and not only incremental I was forced to use the yellow. But COVID will help for the radical I hope.

*Comment date Jun 22, 2020, 7:20:03 PM*

**The space/type of the envisioned policy change:**

I am afraid that more radical shifts in (agricultural, environmental, climate, health, etc) policy frameworks are unavoidable if humanity is to survive. The increasing number and severity of droughts across Europe supports this view. Droughts are a massive problem already for 20 years in some other parts of the world, e.g. the Horn of Africa and the Sahel zone.

*Comment date Jul 9, 2020, 1:01:26 PM*

**The space/type of the envisioned policy change:**

In order to implement sustainable change, I would recommend incremental direct change (i.e. R&D, advisory support) leading into a radical policy change (i.e. import ban). The market needs to be ready to respond to the radical change. If the underpinning systems aren't in place the market will not be able to respond in a sustainable manner

*Comment date Jun 3, 2020, 9:20:34 AM*

**The space/type of the envisioned policy change:**

Lock ins are still in place and lobbying system will not disappear

*Comment date Jun 3, 2020, 11:48:26 AM*

**The space/type of the envisioned policy change:**

within the EU countries there will be not quick change. Incremental changes seem to be more sustainable

*Comment date Jun 4, 2020, 7:49:21 AM*

**The space/type of the envisioned policy change:**

as such processes are always lengthy negotiations, I don't think that a radical shift is feasible unless some unpredictable and unforeseeable things happen (black swan type events).

*Comment date Jun 7, 2020, 10:13:36 PM*

**The space/type of the envisioned policy change:**

removing CAP is a radical change - and suspect in some parts of Europe would destabilise them greatly. Great care needs exercised here, and the CAP has generated a great dependency for the farmer. It may also be argued that it has allowed food to be as inexpensive as it has ever been and i would agree with that. However, it is about time the price of food reflected the levels of environmental and personal health damage that it causes.

*Comment date Jun 19, 2020, 2:54:20 PM*

**The space/type of the envisioned policy change:**

With the Farm to Fork strategy there are possibilities on the short term, but those will not be radical.

*Comment date Jun 22, 2020, 1:20:43 PM*

**The space/type of the envisioned policy change:**

Incremental changes are more willing to be understood by civil society and therefore accepted.

*Comment date Jun 3, 2020, 11:37:55 AM*

**The space/type of the envisioned policy change:** Incremental change

Radical change will cause costly disruption - no one's benefit.

*Comment date Jun 16, 2020, 8:57:37 AM*

**The space/type of the envisioned policy change:** Incremental change

Incremental approach: farmers need to be supported in their transition toward more diverse cropping systems (the new CAP is moving towards this scenario). In parallel more legume consumption in European diets has to increase and animal feed supply to animal production has to be enhanced.

What could be the role of various institutions to induce policy change?

**PUBLIC AND STATE INSTITUTIONS**

Vital

**BUSINESSES (SMALL AND BIG)**

SMEs: important; but we need to prevent Big Food corps dominating & ensuring BAU

### **BOTTOM-UP CIVIC INITIATIVES**

Utterly critical: the food system needs to be reshaped from the bottom up.

### **PUBLIC AND STATE INSTITUTIONS**

aware of the need of change but linked to the current system organisation

### **BUSINESSES (SMALL AND BIG)**

more and more open to change as they face to technological lock-ins and ask for new markets

### **BOTTOM-UP CIVIC INITIATIVES**

High but dependent on the level of democracy

### **PUBLIC AND STATE INSTITUTIONS**

Leading

### **BUSINESSES (SMALL AND BIG)**

Supporting

### **BOTTOM-UP CIVIC INITIATIVES**

Driving

### **PUBLIC AND STATE INSTITUTIONS**

none

### **BUSINESSES (SMALL AND BIG)**

none

### **BOTTOM-UP CIVIC INITIATIVES**

home grown could have worked when 30-40 yrs ago. when it was more common to grow your own food. doubt this to take off at current times. where in large cities it is out of question. mankind need to follow its bath and create new solutions. times are changing continiously .

### **PUBLIC AND STATE INSTITUTIONS**

EU must make very clear how regulations are to be implemented.

Local implementation must be adhered to.

There are a myriad of benefits to legumes and these must be promoted at local level in public messages/ education. Whilst no individual benefit will drive the production or consumption on it's own the uniqueness of this plant family needs to be promoted if the complexity of the benefits are to be understood and valued.

State institutions should offer breaks for investment in legume processing operations and R&D in processing and development.

State sponsored breeding or subsidised breeding and production research is essential as legumes start at a comparative disadvantage after years of under investment by industry. These investments are not necessarily endless but essentially filling a gap where in this case the market has failed. They could be later commercialised to allow public funds to be pulled out as the market becomes more profitable and commercially self sustaining.

### **BUSINESSES (SMALL AND BIG)**

Businesses will by and large operate within the rules laid down by legislators. The market will work out how to make money within the defined rules of engagement. Policy direction needs to be clear if the desired result is to be achieved.

### **BOTTOM-UP CIVIC INITIATIVES**

Local encouragement of short supply chains in local food production should be encouraged with the opportunity to give tax breaks or grants to companies wishing to invest in legumes and in food processing.

### **PUBLIC AND STATE INSTITUTIONS**

R&D funds to support improved legume crop productivity and use as food ingredients.  
Governmental promotion of legumes to encourage wide industry involvement in their production and consumption.

**BUSINESSES (SMALL AND BIG)**

Production - Working to improve legume crop productivity on farm.  
Food industry new product development to seek ways of improving food nutritional value by using pulses and pulse products as food ingredients.

**BOTTOM-UP CIVIC INITIATIVES**

Improve understanding of the health benefits of increasing legumes/pulses in peoples diets.

**PUBLIC AND STATE INSTITUTIONS**

responsible for the laws and regulations and their implementation. Collaboration with the civil society.

**BUSINESSES (SMALL AND BIG)**

listen to the consumers voice, following of the laws and regulations

**BOTTOM-UP CIVIC INITIATIVES**

promote the use of legumes, recepies, cooking events, information campains

**PUBLIC AND STATE INSTITUTIONS**

should propose initiatives and set a general direction towards sustainability

**BUSINESSES (SMALL AND BIG)**

should engage much more in topics of sustainability and take up their responsibility in being an important part of the picture

**BOTTOM-UP CIVIC INITIATIVES**

have huge importance for pushing politics into certain directions. if enough citizens push for something, politics cannot ignore.  
furthermore citizens also have to take up their responsibility and act accordingly in their consumption patterns

**PUBLIC AND STATE INSTITUTIONS**

Research, extension innovations to support farmer capacity, design better policies and inform policy makers, other actors

**BUSINESSES (SMALL AND BIG)**

Innovations in plant based substitutes

**BOTTOM-UP CIVIC INITIATIVES**

Health and climate change activism, education

**PUBLIC AND STATE INSTITUTIONS**

investments, regulations and public support

**BUSINESSES (SMALL AND BIG)**

indeed the middle step in this chain: adequate production, organize distribution and help consumption supporting the bottom up civic initiatives. I guess business people as well have a vision and values about this planet, about food, about lifestyles

**BOTTOM-UP CIVIC INITIATIVES**

grassroot initiatives, consumers and activists (ie vegan groups) actions for demonstrating use of legumes, recipes, lifestyles without any judgement or moralization intent

**PUBLIC AND STATE INSTITUTIONS**

Environmental legislation.



### **BUSINESSES (SMALL AND BIG)**

Economic sustainability decisions based on consumer demand and legislation.

### **BOTTOM-UP CIVIC INITIATIVES**

Awareness raising, consumer representation.

### **PUBLIC AND STATE INSTITUTIONS**

Multisectoral and multidisciplinary decision-making. The topic requires at least three sectors: agriculture, environment, and health.

### **PUBLIC AND STATE INSTITUTIONS**

Education in food literacy - all ages.

The existence and function of legumes needs mainstreamed alongside the importance of stable geochemical cycles.

Tax environmental damage through GHG / reactive-nitrogen misuse.

### **BUSINESSES (SMALL AND BIG)**

Exemplary businesses who market on their products on provenance, plus ethical and environmental credentials will win here. To pressure regional authorities to support more industrial capacities at craft scales.

### **BOTTOM-UP CIVIC INITIATIVES**

To expose poor values where they occur and aim to encourage the highest standards of customer treatment.

To support consumer to be able to make more-sustainable food consumption choices - for themselves and the environment. Consumers cannot remain passive recipients of commercial (only) market forces.

### **PUBLIC AND STATE INSTITUTIONS**

Regulations, clear policy and education/ campaigns.

### **BUSINESSES (SMALL AND BIG)**

Put policy into practice. Innovation.

### **BOTTOM-UP CIVIC INITIATIVES**

New concepts and support for the transition.

### **PUBLIC AND STATE INSTITUTIONS**

Research into agro-food technologies, i.e. how to retrieve proteins out of legumes for novel food types

Health recommendations towards more plant-based meals

Tax system promoting legumes and plants and with higher tax on animal based food

Public canteens/hospitals/institutions that focus on more plant based diets

Campaigns

### **BUSINESSES (SMALL AND BIG)**

Breeding of legumes with higher production and higher resistance towards pests and diseases

Companies specialised in biorefining for extracting proteins from legumes

Food entrepreneurs to develop novel food types

Food entrepreneurs to develop novel recipes containing legumes

### **BOTTOM-UP CIVIC INITIATIVES**

NGOs such as organisations that promote plant based food (e.g. vegans or vegetarians)

### **PUBLIC AND STATE INSTITUTIONS**

Providing unbiased KNOWLEDGE to the policy-makers (but will they listen?)

### **BUSINESSES (SMALL AND BIG)**

"Corporate social responsibility", if it truly exists, could be fact-based instead of opinion-biased. Profits aren't going to do it and if the marketing campaigns of some members of the organic sector are anything to go by ("This product is made without science": I'm not kidding, I saw this on supermarket yogurt shelves in the UK 15 years ago), following facts other than the bottom line is too hard for most businesses.

#### **BOTTOM-UP CIVIC INITIATIVES**

Since these are usually based on opinion rather than knowledge, I hope not.

#### **PUBLIC AND STATE INSTITUTIONS**

Very important

#### **BUSINESSES (SMALL AND BIG)**

Mild

#### **BOTTOM-UP CIVIC INITIATIVES**

Very important

#### **PUBLIC AND STATE INSTITUTIONS**

Institutions should back legume breeding and the improvement of cropping systems with legumes (grain and forage legumes). Also include landscape management (time and spatial approach) as next step.

#### **BUSINESSES (SMALL AND BIG)**

Food sector to explore or expand use of legumes in flour, pasta, etc.

#### **BOTTOM-UP CIVIC INITIATIVES**

I am worried about some radical views in civic initiatives: anti-vaccine, anti-meat, anti-genetic editing, anti-science, etc.

I would rely more on farmers associations, farmers cooperatives (production and food processing), i.e. participatory approach to induce policy changes while addressing a transition to more sustainable, environmental friendly, better diets "scenarios".

#### **PUBLIC AND STATE INSTITUTIONS**

drivers for change; e.g public food and service sector and plant protein ratio requirements

#### **BUSINESSES (SMALL AND BIG)**

direct sale and shorter value chains; local business models

#### **BOTTOM-UP CIVIC INITIATIVES**

farmer knowledge exchange, cooperative business models

#### **PUBLIC AND STATE INSTITUTIONS**

Inform about options or scenarios, their conditions and effects on and beyond agriculture based on best scientific evaluation.

#### **BUSINESSES (SMALL AND BIG)**

Take up challenges and find competitive niches.

#### **BOTTOM-UP CIVIC INITIATIVES**

Voice concerns, understand economic and environmental relations and impacts of political demands on environment, economy and society.

#### **PUBLIC AND STATE INSTITUTIONS**

Very important in generating knowledge and teaching

#### **BUSINESSES (SMALL AND BIG)**

Very important in implementation

#### **BOTTOM-UP CIVIC INITIATIVES**

Very important in reinforcement and allowing businesses and public and state institutions to believe that change is possible.

### **PUBLIC AND STATE INSTITUTIONS**

Awareness raising campaigns

### **BUSINESSES (SMALL AND BIG)**

Be the first to change (Corporate social responsibility)

### **BOTTOM-UP CIVIC INITIATIVES**

They work only if in coordination with public institutions.

### **PUBLIC AND STATE INSTITUTIONS**

Provide a level playing field for sustainable production systems.

### **BUSINESSES (SMALL AND BIG)**

Focus more on sustainable and future-oriented technologies, innovations, goods and services.

### **BOTTOM-UP CIVIC INITIATIVES**

Continue demonstrating the potential of bottom-up initiatives and illustrating how sustainable and future-oriented technologies and innovations can look like. Put pressure on policymakers, demanding more action against lobbyism.

### **PUBLIC AND STATE INSTITUTIONS**

demonstration, teaching, advising, policy making

### **BUSINESSES (SMALL AND BIG)**

new innovative products

### **BOTTOM-UP CIVIC INITIATIVES**

observe the process and demand changes for more sustainability, to bring new ideas into the process

### **PUBLIC AND STATE INSTITUTIONS**

influencing all state-funded facilities where food is distributed, informing citizens

### **BUSINESSES (SMALL AND BIG)**

food producers: use of respective health and nutritional claims on foods, information about increased sustainability in the consumption of legume based foods, improvement of the tolerance and digestibility of leguminous products through the use of innovative food processing technologies

### **BOTTOM-UP CIVIC INITIATIVES**

organisation of well-placed information events and public opinion polls to increase the public awareness of the issue

### **PUBLIC AND STATE INSTITUTIONS**

State institutions: making policy decisions/regulations that promote legume production and use, giving dietary guidelines

Research institutions: providing new, science based knowledge regarding legumes as part of crop rotation, breeding of legumes, processing legumes to palatable foods, studying the health effects of legume foods.

### **BUSINESSES (SMALL AND BIG)**

- Breeding of new legume varieties
- Processing legumes to palatable foods that fit to our dietary practices
- Particularly food services have a need for easy-to-prepare legume foods

### **BOTTOM-UP CIVIC INITIATIVES**

- I am not sure how much can be done here, depends on the country

**PUBLIC AND STATE INSTITUTIONS**

Creation, imposition and implementation of policy levers with funding support

**BUSINESSES (SMALL AND BIG)**

Inform implementation, feedback from on the ground consumer and producer experience

**BOTTOM-UP CIVIC INITIATIVES**

Limited unless supported by exclusionary policies

**PUBLIC AND STATE INSTITUTIONS**

Not just imposing restrictions but also providing with technical advice and incentives to the producers.