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The role of public consultations in decision-making on future agricultural pesticide use: insights from European Union's Farm to Fork Strategy public consultation

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ABSTRACT

This paper considers the role of public consultations in complex agri-environmental policy-making. Through a critical discourse analysis of submissions to the public consultation concerning the European Union's Farm to Fork Strategy, we examine the role of public consultations as a democratic process and the extent to which their non-deliberative nature advances solutions to contentious and complex challenges. We explore different perspectives around the future of agricultural pesticide use and find evidence of polarised submissions. Those in favour of reducing pesticides tend to argue on the grounds of planetary and human health, emphasizing that alternatives already exist and resistance to change results from a lack of political will. Those arguing against setting further restrictions on pesticide use, focus on food security and the lack of viable alternatives. Taking inspiration from Arnstein's (1969) [A ladder of citizen participation. *Journal of the American Institute of Planners*, *35*(4), 216–224] ladder of participation and Fishkin's (2011) [Making deliberative democracy practical. Chapter 4. In *When the people speak: Deliberative democracy and public consultation* (pp. 95–105] questions around what makes deliberative democracy practical, we argue that consultations are not merely 'tokenistic', but do appear to be inadequate where discourses are strongly polarised, as they are not sufficiently inclusive or thoughtful, using scientific findings only where these support pre-existing views. As such, we explore how other deliberative approaches may be more adequate for seeking legitimate solutions to complex challenges.

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1. Introduction

The continued use of agricultural pesticides represents an increasingly contentious and complex systemic challenge. Proponents of pesticides point to beneficial impacts on yields and farm competitiveness (Cooper & Dobson, 2007). Meanwhile, opponents focus on evidence which presents negative impacts on the environment, such as declines in insect populations or soil health (Rani et al., 2021; Geissen et al., 2021; Tang et al., 2021). Several recent studies have also linked pesticide use to various human health conditions (Bhandari et al., 2020; Kalyabina et al., 2021), although research is not typically fully conclusive (Burns & Juberg, 2021). At the same time, the efficacy and cost-effectiveness of pesticides have been questioned (Davis & Frisvold, 2017), and calls have been made for non-chemical approaches for crop protection (Melander et al., 2017).

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Alongside discussions surrounding pesticides, there has been an increasing debate about the quality and legitimacy of representative democracies. Ecological challenges are a persistent focus due to their tendency to transcend temporal, spatial, epistemic, and juridical boundaries (Dryzek & Pickering, 2017; Giddens, 2009). To address these challenges, many social theorists believe institutions need to become reflexive, or sufficiently self-critical to be able to respond to specific goals (Beck, 1992; Giddens, 2009). Recent waves of populist politics, as well as the struggles of liberal democracies to address complex questions, have raised concerns about how and whether deliberative mechanisms might enhance policy debates (Chambers, 2003; Della Porta, 2020). Some have observed that participation is often limited by how citizens' roles are prescribed by discursive arrangements that reflect and perpetuate highly unequal distributions of power (Carvalho et al., 2019).

Questions have been raised directly concerning EU public consultations. Hines et al. (2020) analysed a consultation by the European Medicines Agency and found that respondents believed the consultation was too 'ad hoc', with co-decision prioritised over true consultation. Meanwhile, an exploration into the responses to the 2016 public consultation on Trade in Tobacco products found that that over a fifth (22%) of respondents had links to the industry and were not transparent about these connections (Gallagher et al., 2021).

The recent European Green Deal (EC, 2020) provides a policy arena for shaping discourses around pesticides. The EU's Farm to Fork (F2F) Strategy, published in May 2020 as part of the Green Deal, sets quantitative targets to reduce the use of and risks from pesticides by 50% by 2030. This has far-reaching implications for the regulatory restrictions that frame public and commercial spending (EC, 2020). In preparation of the F2F Strategy, an online public consultation was organised by the EU Commission. Driven by the Juncker Commission's Better Regulation Agenda, such consultations aim to increase transparency, accountability, and evidence-based decision-making (EC, 2019). Ultimately, they aim to enhance the societal legitimacy of EU policies.

This paper examines submissions to the F2F public consultation, exploring perspectives on the future of pesticide use to examine how adequate public consultation is for unpicking complex topics such as this. Critical discourse analysis is used to present different perspectives on the future of pesticides, thus identifying visions that drive political engagement with the sustainability agenda in the EU agri-food system. We reflect on the role of public consultations in advancing narratives surrounding contested issues, by providing an opportunity to share stakeholder views and demonstrate the strength of these views. Beyond examining these perspectives, this paper feeds into wider discussions about the adequacy of consultations within democracies and how complex topics are negotiated. Taking inspiration from Arnstein's (1969) ladder of participation and Fishkin's (2011) questions around what makes deliberative democracy practical, we examine whether consultations are merely 'tokenistic' as claimed by Arnstein. Here, we also critique the extent to which Fishkin's (2011) questions are sufficient for exploring consultation submissions. In agreement with Carvalho et al. (2019), we argue that although consultations are not tokenistic, they are inadequate as a standalone democratic tool as they do not allow for deliberation or debate, both of which are important when grappling with complex topics. This paper begins with an outline of the conceptual framework and our analytical approach, followed by our critical discourse analysis findings, where we focus on the most frequently cited and discursive elements. We conclude by reflecting on the significance of these findings, in particular surrounding the adequacy of public consultations as a democratic tool.

2. Conceptual framework

Public consultations represent one potential approach for democratic participation. According to Arnstein (1969), public consultation is a liberal approach to democracy, giving citizens the option to decide whether to participate and on what terms, thus resulting in an informal overview of public opinion. However, this approach limits the opportunity to develop systemic ideas as there is limited space for social interaction, thus hindering exchange of views, discussions, idea sharing and the generation of imaginative ideas. In public consultations, the public see no assurance of how and the extent to which their ideas will be considered during policymaking (Arnstein, 1969). As a result, decision making is perceived as remaining with those in power (Gaber, 2019). Participation in more deliberative activities or processes, on the other hand, can provide actors

with an opportunity to challenge science, power, and vested interests alongside giving participants a political and socio-cultural voice where they may not have had one before due to previously technocratic and elitist governance (Fischer, 2000).

Given the important role that public consultations are ascribed as a means of increasing legitimacy of EU level decision-making, we looked to examine whether public consultations as a non-deliberative approach provide a successful mechanism for achieving democracy, and as a means of contributing to resolving a complex systemic challenge. To understand the role of public consultations, we undertook critical discourse analysis, framed with the four questions surrounding the practicality of deliberative democracy approaches posed by Fishkin (2011; Table 1).

We use these questions to explore whether public consultations, despite not being deliberative in nature, provide an 'inclusive' and 'thoughtful' approach to democracy.

3. Methods

To carry out the discourse analysis we drew on corpus analytics (Cook et al., 2009) and the associated capabilities of qualitative analytic software (Reed & Keech, 2018) to be both systemic in our understandings and transparently rigorous. Dryzek systematises discourse analysis to be focused on elements, such as the basic entities recognised, assumptions about relationships, agents, and their motivations, as well as key narratives and metaphors. Through this schema, it is possible to show how ontological positions are linked through to metaphors or visual devices, which in combination become stabilised as configurations we recognise as discourses (Dryzek, 1997). Using corpus analytics and software tools, analysts can systematically identify linguistic patterns and constellations of elements and approach a volume of material that would not be readily available otherwise.

The 648 submissions to the F2F consultation are publicly accessible on the consultation website.[1] The analysis of this corpus was conducted using MAXQDA 2020 (MAXQDA, 2021). Submissions which did not refer to pesticides, duplicated submissions from the same organisations, and those not in German or English, the languages spoken by the research team, were excluded (n = 351). All remaining documents (n = 297, 45.8%) were organised according to the type of organisation or authors (Table 1).

Four authors working independently conducted the first coding pass, assigning documents to be 'pro' or 'against' further restrictions on pesticide use, with iterative codes developed under the organising questions of 'Who, How, Why, and What'. Table 2 provides an overview of example topics which were assigned to each of these questions. This coding was underpinned by an auto-coding marking every instance of the word 'pesticide' and synonyms.

Following a detailed discussion of the first pass, a second round of coding was undertaken by the fifth author, who acted as an intercoder to ensure internal consistency and identify wider patterns. Over 10% of the analysed documents (n = 30) were checked, with the results showing 88% similarity between coders. This confirmed relatively consistent coding between researchers. The small differences in some of the coding was attributed to some quotes overlapping several interconnected themes, with some coders placing these under multiple categories, whilst others selected the most relevant. Code mapping and frequency analysis

Table 1. Framing for critical discourse analysis.

Questions for deliberative approaches (Fishkin, 2011)	Framing for critical discourse analysis
How inclusive is it?	Who participated in the consultation?
How thoughtful are submissions?	What did they say in their submissions? How have they constructed their messages? Are submissions detailed and deliberate? Do they refer to evidence? Do they engage with the complexities of the issue? Do they present a clear logical narrative?
What effects does this have?	Are there clear power imbalances? Are the submissions polarised? Is there evidence of groupthink?
Under what social and political conditions can inclusive and thoughtful public consultations be achieved?	To what extent is public consultation, as a non-deliberative approach, able to represent views in a democratic way?

Table 2. Explanation of how coding was conducted.

Organising question	Fishkin's questions addressed	Explanation	Constructs explored
Who	How inclusive?	Who participated in the public consultation (table 1)	Over-representation of certain 'political' actors; power imbalances
What	How thoughtful are submissions?	Overall view towards pesticide use	Liberal (tokenistic) approach to democracy
Why	How thoughtful are submissions? What effect do they have?	Reasons given for holding a particular view surrounding pesticide use; for example, to support planetary and human health	Incremental vs transformative suggestions; power imbalances; liberal (tokenistic) approach to democracy
How	How thoughtful are submissions? What effect do they have?	Suggestions surrounding what should happen in terms of pesticide use going forward; for example, through regulations	Incremental vs transformative suggestions; power imbalances; liberal (tokenistic) approach to democracy

was undertaken to identify overlapping and related codes, and thus distinct themes and discourses within the coded data. Code comparisons were conducted on subsets of submissions (e.g. farmers, NGOs, businesses, consumers) to identify clusters of actors and how submissions varied between these groups.

4. Results

4.1. How inclusive was the consultation?

Table 3 provides an overview of participants that submitted to the F2F consultation, giving an initial indication of how inclusive the approach was. Of the 297 documents analysed, 69% (n = 205) shared a view that was broadly categorised as either in favour of reducing pesticide use, or against further restrictions. Of these responses, 55.6% (n = 114) were for further restrictions on use thus indicating general support for the F2F targets, whilst 44.4% (n = 91) were against further restrictions. Several different organisations submitted identical texts. This implies both coordination between actors and the possibility that the amplification in the corpus may be an artefact of an effort to make an argument seem more common than it may otherwise be.

4.2. How 'thoughtful' were the submissions?

In the following sections, we examine the content of submissions and consider whether they appear 'thoughtful'. Submissions categorised as 'for' or 'against' further restrictions on continued pesticide use were examined separately to explore whether these two groups vary in their degrees of thoughtfulness.

Table 3. Approximate clustering of the participants who submitted responses the F2F public consultation with explicit reference to pesticides.

Cluster	Name of cluster	Description	Examples of participants	Number of submissions
1	Environmental non-governmental organisations (NGOs)	Environmental charities	BirdLife, Friends of the Earth, Greenpeace, Zero Waste Europe	46
2	'Other' NGOs	Charities with primary focus on human health and other 'non-environmental' concerns	Animal Task Force, Beyond GM, EurEau,	60
3	Research	Academic researchers, ThinkTanks and other evidence-led entities	FiBL, Institute for Environmental Policy	16
4	Agri-Industry/Business	Industry, Agrichemical businesses, biocontrol businesses, retail	Europatat, Bayer Crop Science, Biocontrol Switzerland, BASF, CropLife	109
5	Farmers	Individual farmers and farming unions	British Agriculture Bureau, IFOAM, International Confederation of Beet Growers	31
6	Public	Citizens	General public	35

Table 4. Reasons shared for having unfavourable views towards pesticide use. These themes are not mutually exclusive, with submissions providing several reasons. Green = mentioned >5 times, orange = mentioned <5 times.

Reasons for arguing in favour of reducing pesticide use		NGOs	Research
Human health		14	1
Planetary health	Aquatic environment	14	0
	Biodiversity	14	0
	Pollinators	14	0
	Planetary health (total)	26	0
Food security		4	0
Global justice & fighting corporate profiteering		3	0

4.2.1. Reasoning for why pesticide use should be reduced

Non-governmental organisations (NGOs) were the only actors to share reasons for reducing pesticide use (see Table 4). They were typically in agreement about reasons for reductions but emphasised different aspects. Many submissions referred to more than one reason, for example, through presenting the argument that human welfare is inextricably linked to that of nature or ecosystems, e.g.:

> There needs to be a balance between the benefits of PPPs in the development of food to meet society's needs, and the risks potentially posed to humans and the environment. (EurEau)

The most prominent argument for reducing pesticide use related to the need to protect planetary health, with references to environmental sustainability, biodiversity, pollinators, and the aquatic environment (Table 4). Prominent in this narrative is the recognition of ongoing declines in pollinators and wider biodiversity. Most environmental NGOs referred solely to environmental health, suggesting that they focus solely on their respective remits. Submissions referring to human health implications of pesticides did not tend to provide specific evidence of diseases or conditions, implying a lack of consideration in these submissions.

Some actors also referred to sustainability and food security, with pesticides construed as threatening food security. These submissions point out that remediating pesticide pollution will be more expensive than preventing it. This narrative links economics with environmental and social matters:

> A healthy environment and a stable climate are the foundation of food production and must be front and centre in the Strategy. Economic viability cannot be pursued in isolation of environmental (and social) sustainability. (Ecologistas en Acción)

Global justice was another argument invoked to justify pesticide use reductions. Here, pesticides are seen to perpetuate a system in which agrochemical companies' profit through their power monopoly and by locking farmers into dependency:

> An increasing majority of EU crop production heavily relies on monocultures pumped with synthetic pesticides and fertilisers – destabilising ecosystems while locking farmers into a costly relationship with the corporations that sell these seeds and chemicals. (Greenpeace)

Table 5. Reasons given for not further restricting pesticide use. Green = mentioned >5 times, orange = mentioned <5 times.

Reasons for not further restricting use of pesticides	Business/Industry	Farmers	All NGOs*
Food security	34	17	2
Viable alternatives are needed first	11	3	0
Costs and competitiveness	8	3	0
Planetary health	9	0	0
Science = pro-pesticide	1	0	0
Reductions should happen elsewhere	0	1	0
Tillage issue	0	1	0
Impact on developing country producers	1	0	2

* = combined as the single document set did not result in enough data to conduct code maps.

4.2.2 Reasoning against further restrictions on pesticide use

Table 5 provides an overview of the themes which arose amongst those who argue against further restrictions on the use of pesticides. The dominant arguments in favour of pesticide use related to food security were given mostly by business/industry and farmer representatives.

Food security, which includes availability and affordability was the dominant reason used to argue against further restrictions in pesticide use. The European Crop Care Association states that the aim of the F2F strategy should be: '*securing a sustainable production of healthy food, available to the entire European population at prices they can all afford*'. Given market competition, demanding consumers, resource scarcity and climate impacts, the argument is that hunger can only be prevented if farmers can produce food as efficiently as possible.

This vision is counterposed to organic farming principles, which are dismissed by some of these submissions as inefficient; several business/industry participants (n = 14) who broadly support continued pesticide use shared anti-organic views. Several business sector and farming stakeholders also suggested that the negative consequences of pesticides are unproven. They put a strong emphasis on science, as opposed to 'irrational' or 'emotional' decision making:

> Regulation should be based on sound evidence to support the work of farmers and meet environmental challenges and the needs of consumers. (British Agriculture Bureau)

In this reasoning, the burden of proof lies with those looking to restrict pesticides. Impact assessments should produce scientific proof that reducing pesticide use will have positive outcomes, reinforcing the advantages of using pesticides. Therefore, science and assessments serve to delay the process in one direction, if there is no scientific proof against pesticides, action should be postponed:

> Good legislation is legislation which is properly scrutinised, in advance of being introduced. Any measures proposed as part of a Farm to Fork Strategy must include a detailed Regulatory Impact Assessment (RIA) before any political or regulatory decisions are taken. (Irish Farmers' Association)

Several submissions (n = 14) also claimed that a lack of 'viable' alternatives justifies the continued use of pesticides. A key theme here is a real or perceived lack of 'science', including science-based risk assessments and research into alternatives, and a lack of innovation. The narrative is that farmers and businesses are doing their best to find affordable alternatives. Many of these narratives also shift responsibility for research and identifying alternatives onto the public sector. There is an implication that finding these alternatives lies with further research and innovation rather than with technology users:

> Research and innovation will play a central role in ensuring an effective transition to environmental sustainability, by identifying and optimising solutions that can be rapidly scalable, testing new ones, and improving and optimising existing ones that have already led to tangible results in the efficient management of natural resources. (Copa Cogeca)

A further narrative focuses on costs and competing in a global marketplace. The argument is that producers' fair wages and affordable food can only be achieved with pesticides. With the climate crisis and a competitive world market already putting pressure on farmers, banning pesticides is seen as inappropriate. Stricter regulation would disadvantage European farmers in a global market, leading to production moving to less regulated places:

> A reduction in European farmers' production capacity will lead not only to the increase in imports from third countries, but also to further changes in land use in order to satisfy the demand. (Federchimica)

Some submissions argue that pesticides support planetary health; this narrative acknowledges that pesticides may have negative environmental and health consequences if applied inappropriately. But applied appropriately, they increase sustainability through efficiency:

> For every kilogram of CO2 equivalent invested in the manufacture and use of plant protection products, at least 10 kilograms of the gas is removed from the atmosphere thanks to yield increase (BASF)

Several submissions, mostly from business/industry, appear well planned in terms of wording, but often lacked detail and evidence to back up their claims. This indicates that those in support of continued pesticide use are thoughtful in terms of constructing their submissions, but less so in terms of considering the complexity of pesticide use and the need to acknowledge evidence that conflicts with their views.

4.2.3 Identifying connections between viewpoints towards the need to reduce pesticide use

Although some submissions revealed commonalities, code mapping along a continuum revealed the areas of greatest disagreement (see Figure 1). The theme furthest away from the reasoning held by those who supported continued pesticide use relates to environmental protection, including biodiversity/wildlife and water quality. This illustrates how far participant clusters are from the agreement and suggests that there are limited areas where dialogue could occur without deliberative participation. This figure demonstrates how public consultation has allowed stakeholders to deliberate or engage with one another; instead, they

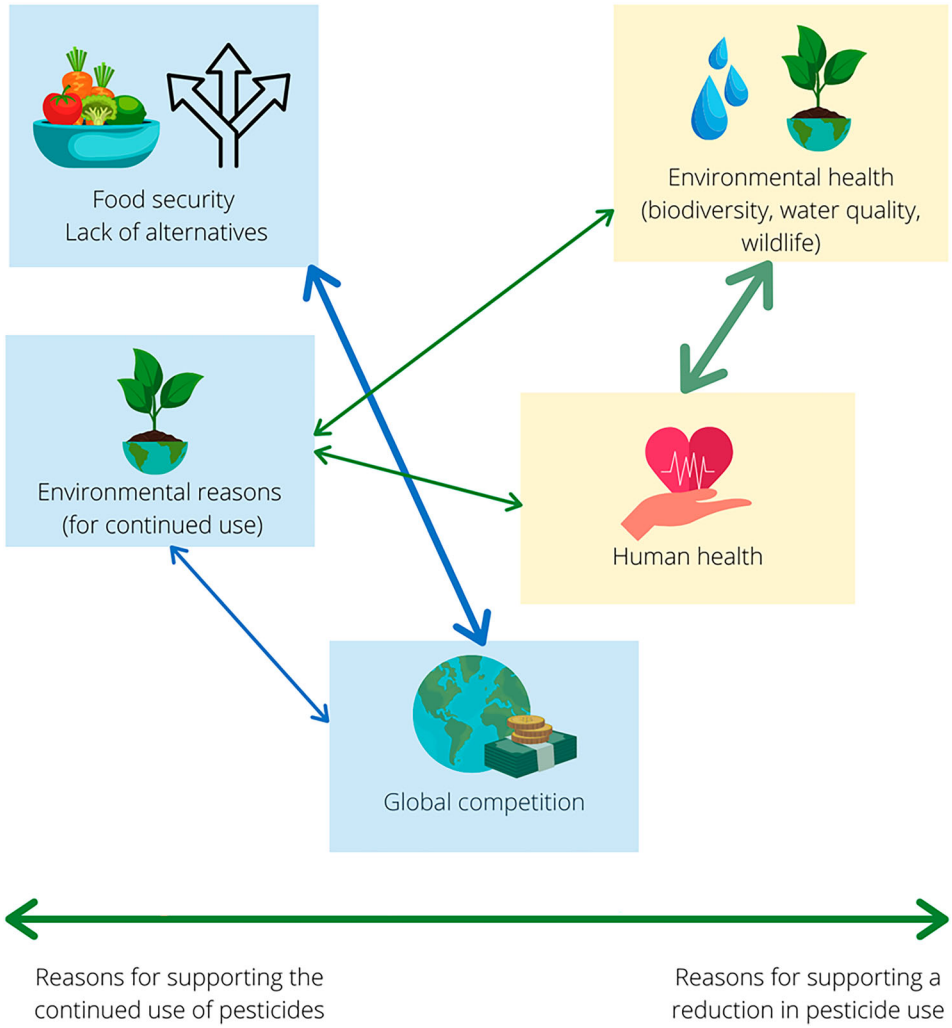

Figure 1. Schematic illustration of simplified themes identified during code mapping. Links between themes are illustrated with arrows. Dark blue arrows represent the extent to which those in support of pesticide use referred to multiple themes within their submissions. Green arrows illustrate the same for submissions that gave reasons for reducing pesticide use. Arrow thickness illustrates how frequently these connections existed within submissions.

tend to talk past each other, focusing on different arguments. Given the opportunity to debate, however, they may have found some common ground.

In addition, many submissions on both sides of the debate appear to rely only on scientific evidence that supports their existing views. For example, the excerpt below from CropLife focuses on research which supports continued pesticide use and rejects other scientific findings as being unrealistic due to their vision of food security issues that would arise should these results be followed:

> The absence of modern pesticides will invariably result in reduced agricultural output, rising prices for commodities, and use of untested or unsafe practices in the fields. While the population of the planet continues to rise, we cannot afford to go back to agricultural systems that rely on untested practices or inhumane labor practices only to satisfy populist claims and anti-technology movements. The benefits of crop protection go well beyond agricultural productivity: as many others, researchers from the Natural Resources Institute of the University of Greenwich have concluded that among the numerous other benefits, pesticides contribute to improved nutrition and health, higher quality of life and life expectancy, food safety and security, biodiversity conservation, natural habitat protection, reduced soil erosion. […] Society should not be misled into rejecting the tremendous advances achieved by crop science over the last few decades. – CropLife

4.2.4 Were submissions thoughtful in terms of 'how' to reduce pesticide use?

Beyond views on the need to reduce future pesticide use, submissions included narratives around the question of 'how' the F2F strategy should reduce pesticide use. Tables 6 and 7 shows how each cluster suggested different mechanisms for change. This demonstrates the importance of understanding which sectors dominate certain views in their submissions if power imbalances are to be avoided. Those representing farmers, industry or business generally appear more satisfied with the status quo, whereas NGOs identified more mechanisms for change (145 and 251 options respectively).

The presence of overlaps and disjuncture indicates that a deliberative approach may result in more innovative ideas or consensus building. We unpack the most frequently adopted themes below.

A need for government levers. Government levers were the most frequently mentioned route for moving away from pesticide use. Several NGOs stated that alternatives to pesticides already exist, making reducing reliance a question of political will and systemic change. NGOs saw a need for more enforcement as the problem. To varying degrees, NGOs called for stricter legislation, using incentives, sanctions, and non-voluntary schemes. The only participant cluster to refer to IPM (integrated pest management) for reducing pesticide reliance was farmer organisations (cluster 5).

Those arguing for pesticide use restrictions focused on legislative targets and specific timeframes as a way of incrementally reducing use, pointing to specific percentages of reduction and deadlines by which to achieve the reduction:

> Reducing mineral fertilizers, pesticides, and antibiotics use by 50% and the level of the Harmonised Risk Indicator by at least 30% by 2030 (from a 2020 baseline). (Deutsche Umwelthilfe (environmental NGO)), also stated by European Environmental Bureau.

Table 6. Pesticide reduction options according to the participants who broadly supported the continued pesticide use. Green = mentioned >5 times, orange = mentioned <5 times.

Suggestions by pro-pesticide actors	Business / Industry	Farmers	Retail	Research
Policies	19	9		
Innovation	16	4		
Genomics/plant breeding	15	9	1	1
Biocontrol/biostimulants	13			
Science (not policy) based decisions	9	1		
Increased monitoring/risk assessments	9	1		
Research	8	10	1	
IPM	7	2	1	
Financial incentives	4			
Demand side	2			
Digital technology	1	1		1

Table 7. An overview of themes for 'how' pesticide reliance could be reduced in responses broadly arguing for the need to reduce pesticide use. Green = frequently mentioned (= or >5 times), orange = infrequently mentioned (<5), blank = not mentioned.

Mechanism for reducing pesticide reliance	Environmental NGOs	'Other' NGOs	Research	Industry/Business	Farmers
Government levers	41	24		7	6
Organic agriculture/agroecology	42	16		1	
Risk assessments/monitoring	15	3	2	2	4
Policy coherence	15	29		1	1
Need for 'Non-pesticide areas'	15				
Research	2	2	1		
Supporting farmers	8	5			
Alternatives	1			1	
Use of IPM	1			1	5

Promotion of organic agriculture/agroecology and system change. NGOs focused on organic agriculture or agroecology as alternatives, focusing more on agronomy techniques, rather than products or specific technologies. They see immediate policy action as necessary to avoid a tipping point of no return, arguing that the availability of workable alternatives to pesticide use bolsters this urgency. The perspective of ecological systems implies a need to think beyond agricultural markets.

Reliance on impact assessments. Several business sectors and farming stakeholders suggest the negative consequences of pesticides are unproven, emphasizing science, as opposed to 'irrational' or 'emotional' decision-making:

> Regulation should be based on sound evidence to support the work of farmers and meet environmental challenges and the needs of consumers. (British Agriculture Bureau)

In this reasoning, the burden of proof lies with those looking to restrict pesticides. Impact assessments should produce scientific proof that reducing pesticide use will have positive outcomes overall which reinforces the advantages of using pesticides. Therefore, science and assessments serve to delay the process in one direction, if there is no scientific proof against pesticides, action should be postponed:

> Good legislation is legislation which is properly scrutinised, in advance of being introduced. Any measures proposed as part of a Farm to Fork Strategy must include a detailed Regulatory Impact Assessment (RIA) before any political or regulatory decisions are taken. (Irish Farmers' Association)

Reliance on innovation and technology. Several submissions (n = 14) claimed that the lack of 'viable' alternatives justifies the continued use of pesticides. A key theme here was a lack of 'science' and specifically science-based risk assessments, research into alternatives, and lack of innovation. There is an implication that finding these alternatives lies with further research and innovation rather than with technology users (see also section 4.2.2). Some narratives also shifted responsibility for research and identifying alternatives onto the public sector, indicating a lack of willingness from industry to seek solutions themselves:

> Given the disruption that the Farm to Fork regulatory framework can trigger on European food business' commercial activities, the European Commission should help and invest in the find of pragmatic and effective solutions to the challenges that the agri-food sector will inevitably encounter along the coming years. In this sense, Europatat is pleased to see that the Commission aims to stimulate research and innovation to provide solutions for sustainable food systems and market opportunities. (European Potato Trade Association - Europatat)

4.2.5 Identifying commonalities around positions on how to act moving forward

Code mapping was carried out by importing all MAXQDA codes into VOSviewer (2022). This resulted in the identification of five ways in which pesticide use could be changed (Figure 2). These groupings consist of participants who clearly argued for reductions in use and those who argued against further restrictions. The need to support farmers arose consistently and links to all topics. This demonstrates the importance of ensuring that those responsible for implementing policies are provided with advice and information, regardless of what the policy entails. Another key finding of this code map is that organic farming appears to be particularly reliant

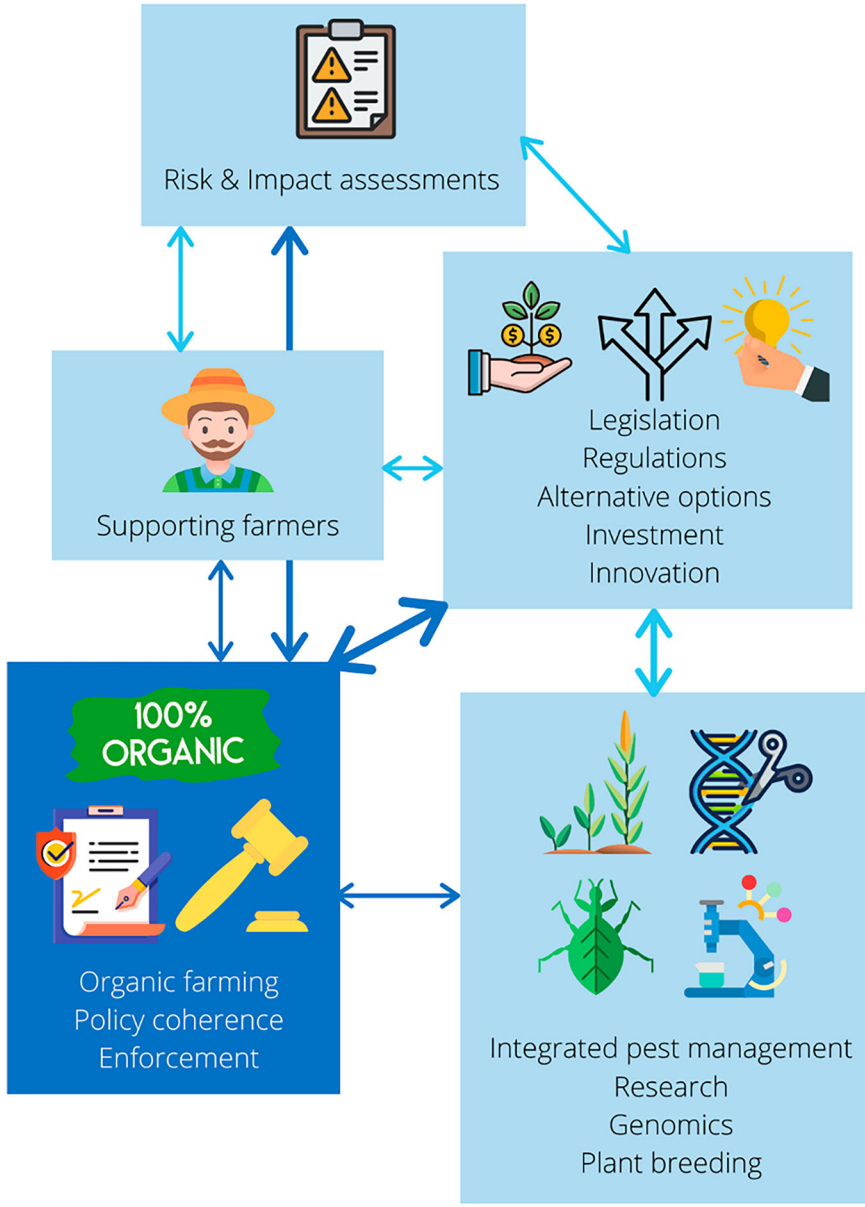

Figure 2. Schematic diagram illustrating the major code groupings identified during MAXQDA analysis concerning how pesticide use could be reduced. The dark blue box shows narratives used by participants who clearly favoured a reduction in pesticide reliance, whilst light blue boxes represent those against further restrictions on pesticide use. The arrows represent connections between narrative groupings – again, dark blue arrows refer to submissions that broadly supported a reduction in pesticide reliance, whilst light blue arrows refer to those who argue against further restrictions. Thicker arrows reflect more frequent connections.

on coherent policy and enforcement, likely due to the complexities associated with gaining organic certification.

Whilst carrying out code mapping, it became clear through the differences between 'pro' and 'anti' pesticide submissions that there is greater cohesion in the arguments against the continued use of pesticides and in favour of organic farming, legislation to create change, and greater enforcement of existing regulations.

Other arguments and discursive elements are more loosely gathered, and more widely distributed. Almost all parties agree about the central importance of legislation, regulation, alternatives, innovation, and investments. Such agreement places the debate about the future of pesticides within the remit of public policy and intervention.

5. Discussion

The study has examined stakeholders' perspectives on future pesticide use in the EU whilst reflecting on the role of public consultations in advancing narratives surrounding contested issues. We found Fishkin's four questions useful for framing the analysis. The following sections explore the findings of the consultation itself before examining the utility of consultations themselves.

5.1 How inclusive were submissions?

A broad range of actors submitted responses to the consultation. The most represented category was the agri-industry and business community, including private companies and industry associations (see Table 3). At least in some cases, the same voices appear twice, once through their contributions and once through their association, thus amplifying their voices. NGOs were also well represented if only looking at the numbers of submissions compared to agri-industry and business communities. Farmers and researchers included few submissions, whereas citizens and retailers are hardly represented. Meanwhile, only a few retailers made submissions; further research would be interesting to investigate why this occurred: a lack of awareness of the consultation or perceived value in contributing to consultations? This indicates that the consultation submissions are not fully balanced or inclusive despite at least some submissions from across the spectrum of different stakeholder categories.

5.2 How thoughtful were submissions?

Many submissions included several interconnected narratives, which indicates that these actors are adopting systems thinking, a process which requires substantive thought.

5.2.1 The use of science to support views

Science and research frequently arose across submissions, with actors often using evidence selectively to support their pre-existing views. Submissions supporting continued pesticide use often referred to a lack of scientific evidence proving the efficacy of pesticide alternatives, a tactic often used against science due to its vulnerability as an inherently uncertain field (see Oreskes & Conway, 2010; Oreskes, 2004). Some submissions appear to use science as a mechanism for manufacturing doubt, a commonly used tactic to obscure or deny the harmful impacts of a product, including among pesticide manufacturers (Goldberg & Vandenburg, 2019). The finding offers further evidence of this that many of these submissions did not refer to environmental health, despite a sustained stream of scientific evidence.

For those who dispute continued pesticide use, science is mobilised to provide evidence of their negative impacts, with attention given to understanding broader interactions and the complexity of natural systems. Meanwhile, they do not refer to studies that cite other sources of compounds that can contribute to health risks, such as household biocides. Again, this supports the notion that submissions used science as a tool to support their views.

5.2.2 Competing notions of time

Our analysis identified clear differences in timescales across submissions. Pesticide manufacturers, e.g. Bayer, BASF, seek long time scales to allow ample time to develop alternative products and technologies. They call for opponents to prove their case against pesticides, again likely using the vulnerability of science as a tool. These findings align closely with those of Clapp (2021), who found that those who support pesticide use appear to use

delay tactics and long timeframes, whilst those campaigning for a move away from pesticide use seek rapid change, which often requires substantial action.

Similarly, emphasis on intermediate approaches, such as IPM, implies a slower reduction in pesticide use. Some present genomic technologies in plant breeding as a suitable replacement technology, with submissions suggesting that fewer pesticides will be used but not eliminated.

At times there is a disjuncture between the rhetoric of urgency and the pragmatism of policy prescriptions, with percentage reductions slowing down the apparent urgency of shifts away from pesticide use. This may be due to these actors attempting to offer options that steer towards their goals whilst providing realistic approaches for policymakers, who cannot implement policies that require dramatic, immediate shifts such as complete removal of pesticides. This potentially reflects a recognition that policy change, which consists of incremental modifications to the existing policy, is often more likely than full reform (Cerna, 2013).

5.2.3. Agreement on the importance of public policy and public goods

The analysis identified one topic of relative alignment: submissions from both sides of the debate appear to believe that public policy is critical, referring to regulations, legislation, investment, and innovation. As all parties are invested in and accept the importance of public policy, innovative ways of arriving at legitimate positions may yet have traction in progressing this debate, particularly as policymakers are more likely to come close to reaching consensus than science is (Oreskes, 2004).

5.3 What are the effects of the consultation?

There are some indications of power imbalances in submissions. Agri-business and industry as a category of stakeholders submitted the highest number of submissions, reflecting the capacity to respond to consultation. There is limited evidence of groupthink, when looking at the number of nearly identical submissions. However, the overall polarisation may reflect some groupthink and coordination among different groups.

The results indicate that there is polarisation among different perspectives. This is not polarisation with a set of narratives strictly in one or the other camp. Nonetheless, clear tendencies can be noted. NGO stakeholders are much more clearly focused on arguments around the need to reduce the use of pesticides with a variety of mechanisms focused more on governmental levers and systemic changes. With industry and farmer groups focusing more on arguments for why reductions are not feasible or should not be undertaken, engaging arguments around food security and the potential role of technologies. Whereas those supporting continued use suggested incremental changes, those who argue for further restrictions were more likely to suggest transformative, or systemic changes. That there were some overlaps in overarching ideas suggests that space for deliberation may offer an opportunity for consensus building.

We can note that the polarised views towards the future of pesticides continue to permeate policy discussions also following the adoption of the F2F Strategy, both in terms of contestations of its quantitative targets (such as a 50% reduction in use and risks of pesticides) and in implementation of specific actions (such as the proposal for Sustainable Use Regulation which proposes to establish quantitative targets as legally binding). Arguments against quantitative reduction targets focus on negative economic impacts and food security (see e.g. Copa-Cogeca, 2021; Euractiv, 2021). Pesticide opponents reiterate the environmental impacts, and adherence to quantitative reduction targets and emphasize the need for systemic transitions towards agroecology (see e.g. EEB, 2022).

5.4 A need for deliberative democratic approaches

5.4.1 Legitimacy of public consultations

Our analysis has shown that the F2F consultation contained polarised submissions with little overlap in views. Moreover, it appears that such a written public consultation may further entrench the views of stakeholders who are selective in the evidence they present to support their case. In addition, the frequency of identical submissions from multiple actors suggests that little thought was given to offering individual submissions. This implies that these actors either did not deem the consultation worthy of taking the time to reflect and

deliberate or were limited in the ability to provide individual submissions, perhaps due to consultation fatigue or insufficient capacity, thus limiting the legitimacy of the approach.

As Liu (2016) found, a few actors often contribute a disproportionate share of submissions to public consultations. In addition, unlike debates encouraging deliberation and a reconciliation of views, consultations do not explore how viewpoints were formed. Instead, they offer an opportunity for actors to present their differing perspectives and selective evidence, potentially leading to further polarisation and entrenched views. Based on existing literature and our results, we argue that consultations are inadequate for fully understanding complex topics, and thus should not be used as a standalone tool for feeding into policy. We do not, however, see them as tokenistic, as Arnstein (1969) argued. Public consultations can help identify the interested actors' main views and areas of potential consensus. However, given the polarisation of viewpoints, our findings support Arnstein's argument that consultations should be combined with other modes of participation, especially for complex issues, such as pesticide use. We suggest that public consultations should be viewed as the first step in a participatory process by identifying the different actor viewpoints and any areas of overlap or conflict. The second step should include a more deliberative approach to democracy, facilitating discourses and consensus-building on the key viewpoints identified in the public consultation.

Figure 3 provides an overview of how consultations are inadequate, evidencing a need to seek alternative, deliberative approaches to democracy.

5.4.2 Deliberative approaches for participatory democracy

An issue such as pesticide use, which can be regarded as a 'wicked' problem, due to its social, environmental, and economic complexity, would benefit from a deliberative policy analysis, a form of post-positivist inquiry (Hajer & Wagenaar, 2003). Such an analysis combines public deliberation, such as citizen juries (Crosby, 1995; Carvalho et al., 2019), consensus conferences (Einsiedel et al., 2001) and public tribunals (Busscher et al., 2019) with facilitated consensus-building. To improve the efficacy of such deliberative approaches, incorporating discussions relating to social implications as well as science can prevent science-related discourses from being the 'centre of authority and the sole target for opposition' (Wynne, 2010).

Public consultations, such as the Farm to Fork public consultation, serve a useful knowledge acquisition purpose in identifying key actors, their plurality of values and areas of potential overlap and conflict. This knowledge can provide a useful framework for designing the next step in deliberative approaches that encourage actors to narrow their divergence and try to reach a consensus or at least accommodate differences to find acceptable pathways to reduce the use and risk of pesticides. As we found in our results, there are some areas of overlap across the debate. If these were the focus of initial discussions, the conversations that follow surrounding more polarised topics might be more productive as participants begin to recognise some common concerns in their views. In the case of pesticides, this would include a wider societal discussion about the food security and health implications of pesticide use.

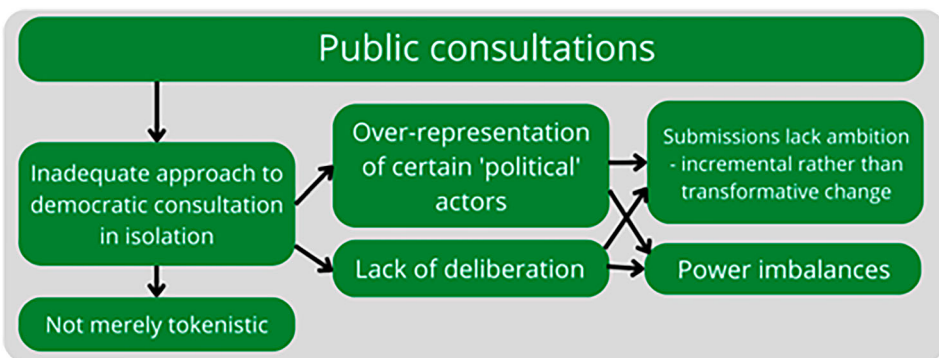

Figure 3. Schematic illustration of how public consultations are inadequate due to the risk of over-representing certain actors and a lack of deliberation.

5.5 Limitations of the study

There are several limitations to the study. Firstly, the nature of the consultation with remote digital submission meant stakeholders could not convey body language or intonation, thus there was some risk that nuanced views would be misinterpreted. Secondly, the first language of the stakeholders was often not English, thus there was some risk that subtle messaging could have been lost during translation. We could also not analyse submissions in languages not spoken by the research team, though these submissions were generally very short. These limitations were overcome by ensuring that a researcher uninvolved in initial coding inspected the findings to ensure all researchers interpreted the submissions in a similar manner.

6. Conclusion

This paper has reflected on the role of public consultations in advancing debate on controversial and contested issues. The submissions to the F2F public consultation revealed the complexity and diversity of the competing discourses on the future of pesticides. The analysis points to the themes where competing discourses agree or are locked into fine-grained but significant disagreements.

Continued pesticide use is framed as a necessary precondition for food security, enabling high-quality, safe and easily affordable food in a global market. In contrast, pesticide opponents emphasise the negative impacts of pesticides on human and environmental health, undermining food security, and social justice concerns. They use the rhetoric of urgency and see public policy as an enabler, with citizens in need of support and protection.

Our analysis finds that whilst consultations are not merely 'tokenistic' as posited by Arnstein (1969), they do play a limited role in resolving contentious issues since they mostly provide space for actors to present selective evidence to support their case, potentially leading to increased entrenchment of polarised views. However, we suggest that as a form of knowledge acquisition, public consultations offer useful insights for designing more deliberative approaches to discuss contentious issues and support transformation pathways towards improved sustainability in agri-food systems. Thus, we would support Arnstein's argument that consultations should be combined with other forms of participation to advance democratic decision-making. In the case of pesticide use this might involve a citizen jury comprised of the main actors identified in the public consultation that can offer diverse perspectives. Deliberation and consensus building would include a discussion of the areas of overlaps identified in the public consultation, such as the need for government levers, alternatives to pesticide use and support for innovation and investments, with an overarching discussion of the wider societal issues around food security and the health implications of pesticide use.

Note

1. Consultation was open from February to March 2020. Submissions are available at: https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12183-Sustainable-food-farm-to-fork-strategy_en.

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Competing interest

The authors report no competing interests to declare.

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