Definitions matter

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Science for Sustainable Agriculture

EU risk and science communications specialist David Zaruk (aka The Risk-Monger) explores the definitions used in agriculture and food research, who controls those definitions, and - irrespective of what the science says – how they influence the way different farming systems and practices are perceived and regulated. He urges all actors in the value chain to take back the definitions: define the benefits of modern agriculture, its sustainability, and how the next generation of technologies will support a wave of sustainable intensification, not only ensuring food production keeps pace with global population and affluence growth, but also providing more space for nature.

Reality is perceived by the definitions we give; the black and white lines we draw upon a grey canvas. So, in communications, the message is controlled by the wordsmither – the one framing the language that guides our social discourse.

Who is controlling the definitions of the concepts we are using in agriculture and food research?

This might seem obvious, but many food/agriculture issues are problematic because of poor lexicons. Definitions matter because they frame our policy discussions, regulations and emotional responses. Regulators start their work with definitions and tend to use this to limit problems or to reach solutions to sticky problems.

Opportunists come in and define words or concepts to their advantage, tack on adjectives and create dichotomies to manage perceptions. A noun like “chemical” carries a negative connotation which environmental lobbyists can deteriorate with adjectives like “toxic”, “industrial” or “synthetic”. An organic food is then defined with adjectives such as “natural”, “traditional” and “environmental” and we can see how the perception of reality can easily be abused and distorted.

Define sustainability?
“Sustainable” has become a value-laden concept – a virtue. More than three decades ago, sustainable development meant that we should not take resources from future generations for today’s processes or production (and people started to measure progress by their ecological footprints). Today it is identified with the fight to stop climate change and restore biodiversity. Neither of these issues can be precisely measured which then allows

interested parties to define "sustainability" creatively. So fossil fuels are not sustainable nor are plastics or complex global value chains. Banks, airlines, data centres … the list is unlimited.

It is rather interesting how the term "sustainable" has become defined in a political/social justice manner. Capitalism became the enemy of sustainable development with pundits like Naomi Klein saying you can either have capitalism or fight climate change, but not both. Groups like Extinction Rebellion morphed from a climate action group into a social justice organisation. Now it seems the lawyers and activists behind the agroecology movement have suddenly become agricultural consultants promoting smallholder/peasant models to farming.

Define sustainable farming?
Activists define sustainable farming as the antithesis to conventional (industrial) farming. But is organic farming more sustainable if its production yields average 40% less? Agri-technologies (led most often by industry) have allowed food production increases to keep up with a growing population. The next wave of technologies (precision farming, accelerated seed breeding, conservation/regenerative agriculture methods…) are setting the scene for a wave of sustainable intensification where not only will yields keep up with global population and affluence growth, but we will also be able to re-wild less productive land. Agroecologists can only dream that their social justice definition of sustainable farming could achieve these numbers. Seriously, how could you effectively farm no-till with multi-species cover crops without herbicides? Their ideology promises a better world, but their reality gives them Sri Lanka.

One of the challenges to accepting the role of agri-technology in sustainable farming is the definition and value of the term "natural". Is farming part of nature? Nature is an emotional concept, often juxtaposed to what conventional farmers are doing. It doesn't help that nature is defined differently according to the region. In Canada, nature is perceived as: *me, a canoe and a bear*. In such a situation, we are far away from any farmland. In Belgium, nature is promoted and celebrated in urban areas and farmland is borrowing from nature. The relationship of farming and nature is wide open for interpretation.

What is a pesticide?
In Uganda, pesticides are called medicines for plants. This makes sense. In the West, pesticides carry an essence of evil baggage; it is taboo. So, the industry attempted to use the kinder, gentler term: *crop protection*. When some blogger referred to a Dirty Dozen of toxic pesticides approved for organic farming, the organic food lobby had to resort to making the claim: "We don't use any *synthetic* pesticides!". These activists cleverly avoid associating organic farming with pesticides; some still want us to believe their produce is "pesticide-free".

But now there is a new term making the rounds: "biologicals" - creating an impression that this is nature fighting nature in a very benign, sustainable manner. The pesticide industry is beginning to focus on research in biologicals. But that raises another question…

Do some not trust agricultural innovation and technology because of the science or because it is industry-based? Can industry be allowed to do sustainable research in biologicals or have our definitions limited the public's capacity to perceive reality? I regret to say that a good part of the attack on conventional agricultural tools are an attack on the crop protection industry.

How to insult farmers
Definitions are community-based – tribal. Scientists define terms like "toxic" or "sustainable" in different terms from the general public. Too often, activists spread fear-driven vocabulary to manipulate perceptions, the media pick that up and regulators react. So wordsmithed phrases like "industrial food drenched in toxic chemicals" will force a skittish regulator to act, regardless what the scientists are saying.

The EU has re-defined agricultural policy within their Green Deal and climate debate via the Farm2Fork strategy. This defines conventional agriculture as a main environmental problem (claiming food systems account for 30% of greenhouse gas emissions) and proposes to limit agricultural technologies: 50% decrease in pesticide use; 20% reduction in fertilisers and a 25% increase in organic production. (One potential good news: the European Commission looks likely to be reconsidering its definition of new plant breeding techniques – no longer classifying it under the stifling 2001 GMO Directive).

These definitions need to be countered; their solutions need to be questioned.

As a final insult to agriculture, the European Commission has been applying a very strict definition of the precautionary principle to guide its agriculture policy decisions known as the "reversal of the burden of proof". This interpretation states that a substance, product or process can only remain on the market if it can be proven with certainty to be safe. How do you define "certain" or "safe" within a risk management context? Reality: you cannot. A scientist is continually trying to develop safer solutions and challenging the presuppositions – the opposite of what the Commission's definition of the precautionary principle aims to do.

Take back the definitions
This definition of precaution needs to be questioned – I have been calling for a White Paper on Risk Management to properly define and delineate the guidelines for using the precautionary principle within the context of a larger risk management process (rather than in place of risk management).

So what all actors in the value chain need to do is take back the definitions: define the benefits of modern crop production, its sustainability, the safe use of crop protection and seed breeding practices.

It is symptomatic of the activist opportunism described above that the term 'intensive', while viewed extremely positively in a medical context (eg intensive care), appears to carry such negative connotations when used to describe agriculture. And yet modern farming practices, in which digital applications and precision engineering techniques increasingly allow farmers to monitor and maintain crop and livestock health, treating only when and where necessary, are actually a mirror-image of the human healthcare equivalent. At a time when we need to develop tools for a sustainable intensification of agriculture, activists attack the word 'intensive' while claiming there are no risks to global food security. Farmers need to reclaim that definition.

One last point. We are defined by events, and the present food and energy crises are dramatically influencing how policy decisions are being made (less idealism and more Realpolitik).

Half the world has rice as their main food staple, and with Asian smallholders unable to afford fertiliser costs, fewer crops at lower yields will spell disaster for large vulnerable populations. Farmers of staple carbohydrates such as wheat and potatoes are well-positioned to be a short-term solution to the coming global food security crisis. The more efficiently and intensively those calories are produced, the better. That message needs to be more clearly defined, and more effectively communicated.

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