European Parliament **Committee on Agriculture and Rural Development**

Hearing on:

'Sustainable Plant Protection – Opportunities and Challenges for the Agricultural Sector'
Monday 20th March 2017, 15.00 – 17.30, Brussels, Room PHS 2C050

Mr John Chinn – Chairman of the Centre for Applied Crop Science, UK

'The need for Plant Protection Products and the impact on biodiversity'

Good afternoon Ladies and Gentlemen.
My name is John Chinn and I am a partner in a family farm in the UK where we grow asparagus, blueberries, green beans, potatoes, wheat, oilseed rape, rhubarb and a small vineyard.
I am here this afternoon in my role as Chairman of the Centre for Applied Crop Science. The Centre seeks to understand the problems associated with crop health and protection which are challenging agricultural production and then engage with Research Scientists to find solutions. Appropriate and innovative use of Plant Protection Products is central to our work.

The world population of 7.5 billion people is forecast to increase to 10 billion by 2050. The great challenge of the 21st century is to produce more agricultural goods from the same area whilst protecting biodiversity.

25% of the European landscape is used for the production of permanent and arable crops, providing a livelihood for 12 million farmers and workers and helping to feed the EU population of 510 million people. We must eat, therefore we must farm.

The UN Food & Agriculture Organisation states that 'without crop protection tools farmers could lose as much as 80% of their harvests to damaging insects, weeds and plant diseases'.

Plant Protection Products combat plant pests which can be animals, plants or pathogens (such as fungi, bacteria or viruses) that have the potential to compete with human interests by inhibiting the cultivation of food and feed. Weeds may be poisonous to humans and animals and pathogens such as Fusarium moulds, which are the cause of some of the most severe fungal diseases in European crops, produce toxic secondary metabolites called mycotoxins. These mycotoxins can cause chronic and sometimes fatal effects on animals and humans. The relatively stable molecular structure of mycotoxins allows them to survive the transition from field to fork. The use of Plant Protection Products to control injurious plant pests can bring a direct benefit to human and animal health.

Agricultural biodiversity includes farmed crops, livestock and all organisms that live within or pass through the agricultural environment, notably including pollinators and soil organisms. Soil is home to one of the richest, most complex biological communities on Earth and is vital for maintaining balanced ecosystems, healthy soils, climate control and agricultural production. The main alternative to chemical weed control involves ploughing or some other form of tillage to bury weeds. Such disturbance of the soil damages the ecosystem and degrades the soil structure. It also introduces large quantities of atmospheric oxygen into the soil; this oxygen combines with organic matter in the soil to release the greenhouse gases, carbon dioxide and nitrous oxide while, at the same time, reducing the organic matter content of the soil. The Centre for Applied Crop Science has industry leading facilities at Cranfield University which will improve our understanding of soil ecosystems but for now we need to protect soil ecosystems by encouraging minimum tillage farming; such farming is dependent on Plant Protection Products, especially glyphosate.

The EU approval process for Plant Protection Products is one of the most stringent in the world. It currently takes over eleven years, requires an average of 200 scientific studies and costs in excess of 220 million euros to bring a product to the EU market. Rigorous testing and application protocols ensure that products are safe for human health and the environment. There is, however, a challenging shortage of active ingredients for use on minor crops such as fruit and vegetables. A plant protection product is expected to meet the requirement of having 'no unacceptable effects on the environment' this includes consideration of 'its impact on biodiversity and the ecosystem'. To help this process The Centre for Applied Crop Science is preparing to build a mesocosm near York in the UK. The mesocosm is an outdoor experimental system that examines the natural environment under controlled conditions. In this way mesocosm studies provide a link between field surveys and highly controlled laboratory experiments. The proposed mesocosm includes controlled watercourses and other features to record impact on field edges.

The EU process of plant protection registration assesses toxicity, hazard and risk. Toxicity is the degree to which a substance can damage a living organism, which is an intrinsic property of any compound. If the dose is large enough, any compound can be toxic to humans or the environment. It is notable that sodium chloride (table salt) has double the toxicity of glyphosate and copper sulphate (used as a fungicide in organic farming) has a toxicity nearly 200 times greater than glyphosate.

As a potato farmer, I am acutely aware of the threat to our industry from Potato Cyst Nematodes (abbreviated to PCN). 48% of potato growing land in the UK is infected with PCN which can reduce yields by up to 80%, costing the industry in the UK 32 million euros a year. PCN cysts can survive in the soil for 20 years making it a particularly challenging pathogen to control. The EU approval for the only remaining nematacides to control PCN is up for renewal by 2020. The nematicides are toxic chemicals but because they are applied direct into the soil and incorporated, there is negligible exposure. Risk equals hazard X exposure. The hazard is high but the exposure negligible so the risk from using these nematicides is low. Our research scientists are working on the development of naturally occurring biofumigants which do give useful control of PCN, however the development work needs more time as the process currently only achieves 45 to 70% control.

Under the Precautionary Principle, the European Commission may ban the use of a Plant Protection Product, if the risk associated with its use cannot be determined with sufficient certainty, as identified by a scientific and objective evaluation. However, the Precautionary Principle may cause more harm than good. As an example, there is a group of chemicals called neonicotinoids. They give selective control of insect pests, yet have very low toxicity to mammals and other non-target organisms. Between 2010 and 2013 there was growing concern that sub-lethal doses of neonicotinoids present in the pollen and nectar of treated crops could affect insect pollinators, especially bees. An EU investigation concluded: 'Studies do not provide unequivocal evidence that sub-lethal effects will have serious implications for bee colonies' but under the Precautionary Principle, in December 2013, the EU imposed restrictions on the use of neonicotinoids, perhaps not giving sufficient consideration to the benefits of continued use. Without neonicotinoids, farmers resorted to using multiple sprays of pyrethroid insecticide only to discover widespread resistance in the flea beetles that they needed to control but causing damaging effects on the beneficial insects that might have exerted a measure of control. There continues to be a huge problem with flea beetle damage in crops not treated with neonicotinoids, which is significantly reducing yields and will result in farmers not growing oilseed rape, which in turn will affect bee populations negatively, as it is an important source of springtime nectar and pollen.

The collection of data about pesticides (on exposures, effects, distributions or persistence) will not answer the concerns of many about their use. Better data do not necessarily resolve issues especially when their interpretation by 'scientists' has become suspect, as Science itself is seen by some to be of problematic benefit to Mankind. As Max Weber noted in the 1930s, non-rational myths may force social and political changes. Since scepticism about received truths has long been a common attitude in opinion formers we must attempt to persuade them that the benefit to all of us, greatly outweighs the hazards which some

relate to pesticide use. Simply pointing out that infected or infested crops may contain dangerous toxins or levels of natural pesticides is an uncomfortable surprise to many.

Maintaining an appropriate population of weed species to support farmland wildlife is a challenge. It may be achieved by concentrating crop production on the central, most fertile parts of fields and providing conservation areas on field headlands and other less productive areas. We anticipate the development of much more selective herbicides and more selective application techniques using technologies such as video cameras, lasers and satellite navigation. These new technologies are developing rapidly but the agricultural industry needs the understanding of the environmental lobby; by working together we can achieve the twin goals of increased agricultural production and an enhanced environment. In England between 1978 and 1990, plant diversity on arable land was declining; but between 1998 and 2007, plant diversity in main plots increased by 36%. This was due to increases in the area of set-aside or fallow land, driven by agri-environment schemes.

If we are to produce more food at affordable prices, whilst maintaining our ecosystems and the services that they provide, we must collectively embrace innovation and construct our policies accordingly.

Thank you.