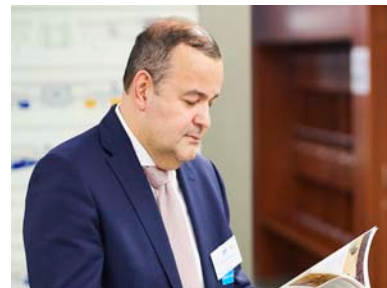




SMART EQUIPMENT FOR SUSTAINABLE AGRICULTURE

*18h00 - 22h00 Roundtable Dinner Debate
Wednesday 20 February 2019*

European Parliament





Phil HOGAN, EUROPEAN COMMISSION, European Commissioner for Agriculture & Rural Development

As Agriculture Commissioner, I sometimes like to remind people that I grew up on a farm in the south-east of Ireland, and I can assure you that there was not much smart equipment involved in my day.

Today, farmers in my home county of Kilkenny are using technology that we could scarcely have imagined even 30 years ago. They have apps on their mobile phones providing real-time information on the health of their livestock and plants. They have on-board computers on their farm machinery which uses satellite data to improve nutrient efficiency. And they are sending Snapchat videos of their work to their friends and neighbours, which helps to keep things lively! These are just some examples of how smart equipment, intelligent machines, and improved digital systems are contributing to the precision agriculture revolution.

I propose to give you an overview of what the EU is currently doing to support the smart farming and precision agriculture agenda, and how we plan to increase our ambition even further in the next decade.

The Commission already supports agri-tech at every stage of the innovation cycle. We support it at the ideas stage. We support it at the project development stage. We support it at the distribution stage. And we support it through access to advisory services.

The twin imperatives driving the agri-tech revolution are economic gain and environmental gain.

The world population is growing and there are more mouths to feed. Farmers and food businesses will rise to this challenge and reap the economic reward as they always have, and rightly so. But the reality of climate change and ecosystem degradation is also pressing. Our surveys show that our citizens expect farmers to do more to help meet the EU's international obligations under the Paris Climate Agreement and the Sustainable Development Goals (SDGs).

In other words, we have to reconcile productivity with environmental sustainability, in a way that is more rewarding for farmers and closer to the expectations of consumers.

The farming systems of tomorrow may have to be more diverse - and therefore more complex - than those of today, from an agronomic point of view. This will seem challenging to many. However, I am confident that, with the use of innovative technologies, we can help to deliver a sustainable, knowledge-based agriculture which rewards our farmers, our consumers and the environment.

The EU as the world's top food producer and trader has to lead the way towards this transition. Our society expects it and is ready to support higher-added value and environmentally friendly products. There is no alternative: if we leave our soils to degrade, we will not be able to produce anything a few decades from now.

And of course there is an economic dividend to leading from the front: if we are the first ones developing and adopting green technologies and practices, the market will reward us. Early adopters reap the biggest benefits of innovation.

Current CAP

Already today, through the current CAP and Horizon 2020 programmes, the EU supports the development and roll-out of agri-tech solutions.



The CAP funds innovative on-farm investments, supports new companies in rural areas, and helps to bring the newest solutions on-farm, through the European Innovation Partnership for Agriculture.

The CAP was the first policy to use aerial imagery and satellite imagery in its operational processes. It was the first community to deploy geographic information systems such as the Land Parcel Identification System at such scale.

Under the EU “Horizon 2020” research and innovation programme, we have started investing in ambitious activities to restore soil health and improve land management in a way that benefits both climate and biodiversity.

We are for example funding jointly with Member States a €90 million Joint Programme on Soils and preparing the ground for broader international cooperation on this topic.

Future CAP

Looking to the future, it is clear that we need to speed things up. The UN Special Climate Report published in October made for sobering reading: it outlined the severity of the situation, and the urgent need for even greater climate action, including in the agri-food sector.

For all these reasons, the EU is taking strong action. We are proposing to double the budget for Research and Innovation in Food and Natural Resources, under the Horizon Europe programme for the period 2021 to 2027. Under this programme, with an unprecedented budget of €10 billion, the EU will keep investing strongly in technology and innovation for the farming sector.

This is also why we have raised our ambitions for climate and environmental sustainability in our proposals for the future CAP. Innovation and digitisation will play a strong role in achieving the 9 specific objectives of the new CAP.

This is why we made “knowledge, innovation and digitalisation of agriculture” a crosscutting objective of the future policy.

New technologies are essential for meeting the 9 key objectives, both for farmers and for the administrative management of the CAP. In future, the use of new technologies will simplify, speed-up and automate many of the administrative procedures. Digital pre-filled applications building on up-to-date reliable information should make it easier and quicker for farmers to apply for support, and easier for the administration to process applications.

Member States will have to show in their future so-called “CAP Strategic Plan” how they will support investments:

- in modernisation, innovation, diversification and the uptake of new technologies and digital-based opportunities in the farm sector
- and in the development of digital infrastructure and human capital - including advisers - to create new opportunities and improve the connectivity and attractiveness of rural areas.

The CAP proposal includes several new standards to respond to climate change and water issues. For instance, we will roll out a Farm Sustainability Tool for Nutrients (FaST), which will bring economic benefits to farmers while contributing to environmental protection, notably water, soil and reduction of greenhouse gas emissions.



Millions of farmers and small rural businesses lack the capacity to follow the latest technological developments. This is particularly true in relation to digitalisation and precision agriculture. These require farmers to upgrade not just their techniques and equipment but also their knowledge base.

To speed things up, Member States will be required to describe in their CAP Strategic Plan how they intend to foster innovation, using the European Innovation Partnership for Agriculture (or "EIP-AGRI"). These are local innovation projects that we call "operational groups".

Around 200 of these operational groups all over Europe are bringing together researchers, advisors and farmers working on precision farming technologies and digital solutions directly applicable in a specific local context.

Through the EIP-AGRI, we not only fund projects but also support networking and knowledge exchange activities. We have been very active in the last two years on digitisation, notably through digital innovation hubs, data sharing and data management.

Digital technologies have also inspired our investments at EU level through the current research and innovation programme Horizon 2020. We are investing over €160 million in this digital transformation.

To reinforce the EU's competitiveness in digital technologies, the "Digitising European Industries" initiative supports both the development of digital industrial platforms and large-scale pilots that provide the digital technology building blocks of the future.

Under Horizon 2020 we will continue to invest in "Agricultural digital integration platforms". These platforms will make data accessible and allow third parties to develop applications based on that data, and connect different users and application to developers. Equipped with appropriate business models, digital agricultural platforms can ultimately be instrumental in the creation of open digital innovation ecosystems.

In April last year, the workshop on '*Data Sharing and how to ensure a fair sharing of digitisation benefits in agriculture*' addressed key issues such as trust and data ownership. This led a coalition of organisations active in the sector to develop a Code of Conduct on agricultural data sharing.

Although this is a private sector initiative, we have been in close contact with the European farmers organisation COPA and CEMA, as well as with the other organisations involved. The code recognises that access to and use of farm data should be determined by the farmer. This is also my conviction.

Horizon Europe

Under Horizon 2020's successor, Horizon Europe, we will work in even closer synergy with other Commission services to accelerate the digital transformation in agriculture. We will maintain our so-called "multi-actor approach", in which scientists, farmers, advisers and businesses work together from idea to implementation stage.

This will help to ensure that applied agricultural research delivers more technical solutions directly applicable to farmers and other end users. We invested two-thirds of our budget in these user-centred innovation processes in the current period, and we intend to continue with this approach under Horizon Europe.

I encourage everyone in this room to study our proposals closely and identify opportunities going forward.



One of our very successful ongoing multi-actor projects is the Internet of Food and Farm 2020. It is one of the largest projects in Horizon 2020 supported by €30 million in EU funding.

Conclusion

In conclusion, ladies and gentlemen, I think we are in agreement that the increased uptake of precision farming technologies is essential if we want to keep the EU agri-food sector competitive, efficient and sustainable.

The CAP and Horizon 2020 are already providing strong support for the development and roll-out of these technologies across Europe, and with the European Commission's proposals for the future CAP and Horizon Europe, there will be an even stronger emphasis going forward. This will benefit our farmers, our citizens, and our climate and environment.

To that end, I hope you will use your influence to push the co-legislators to make progress on delivering these proposals.

The ambitious programme outlined by the Romanian Presidency of the EU can and must be maintained. Solid progress on an agreement can and must be achieved during the summer months.

This will of course require the appropriate political will and ambition, and I am confident the co-legislators will take these responsibilities seriously.

I believe that farmers need certainty and stability regarding policy and budget. Our co-legislators have a responsibility to deliver for them quickly, particularly when there is so much concern about the future due to developments like Brexit.

I trust that you will support the Commission in this important mission.

Anthony Van Der Ley, LEMKEN GmbH, CEO
CEMA President

I am glad to affirm that as President of the European Agricultural Machinery Industry, I represent an industrial sector that drives innovation and encourages technology uptake in one of the most ancient, diverse and core business of Europe: Farming.

Having a plate of food is an obvious “gift” for all of us, but very often we tend to forget what lies behind it. European farmers from farms of all sizes make great efforts to produce high-quality products, in a sustainable manner at affordable prices. However, challenges in agriculture are immense: climate constrains, prices’ volatility or aging of rural areas range among them.

In this quest, the European Agricultural Machinery Association (CEMA) is committed to providing the best adapted technology solutions that respond to farmers’ needs and help them in tackling those challenges. CEMA represents 4500 companies spread all over Europe, from numerous SMEs to multinationals, and 125,000 direct employees. We produce a variety of 400 machines types that cover any field activity from seeding to harvesting, helps its customers in getting the most out of their land, protecting the environment while bringing economic benefits.





However, for this industry to keep the level of innovation and competitive leadership in global markets, a balanced regulatory framework is crucial. The size of the sector compared to other “vehicles” production in Europe and the great number of specialized machines produced in small volumes requires tailor-made legislation that will support the competitiveness in the years to come.

Looking back, 2018 business had its ups and downs but kept relatively positive during the year. Marked by the entry into force of the “Mother” Regulation, CEMA manufacturers made great efforts to get ready to comply with new safety and functional rules.

Turning now to 2019, a challenging year lies ahead. Diesel engine exhaust emission rules (Stage V) are to be implemented. With this step, EU environmental requirements for agricultural machines are the strictest in the world and make new European equipment the cleanest available on the global market. Yet, it is too soon to assess the uptake by our customers in the European Union, as farmers around the globe don’t face the same constraints.

As regards the EU arena, 2019 leads us to a very exciting time. The uncertainty to reach a Brexit deal before spring has marked already the beginning of the year. Secondly, the Common Agricultural Policy negotiations are still ongoing. The European Parliament, hosting us today, vote on a draft report in April with the hope talks among the three bodies will start before May. Would Precision Farming Technologies receive the place they deserve under the new CAP? Will innovation be boosted through Horizon Europe? These remain open questions for debate.

Thus, EU elections will set the pace for this year. Candidates are getting ready, as does CEMA. With a reinforced CEMA secretariat, this will be the right time to make a reality check and raise constructive but necessary asks to the new EU executive and new elected representatives. Tonight, I already invite you to share your views.

CAN THE EU LEGISLATIVE FRAMEWORK DELIVER FOR ADVANCED AGRICULTURAL MACHINERY AND SOLUTIONS?

Paul Snauwaert, CNH INDUSTRIAL
Vice President, Product Development & Engineering, Agricultural Product Line



How can the EU & EU regulation support European Agricultural Machinery leadership?

- CNH Industrial is a global leader in the capital goods sector that designs, produces and sells agricultural and construction equipment, trucks, commercial vehicles, buses, specialty vehicles and powertrain applications. The total annual revenue is around \$27 billion, we have 63,000 employees, 66 plants and 53 R&D centres globally. The total annual investment in R&D is close to \$1 billion. Products are sold under 12 different brands, such as New Holland, CaseIH and Steyr for agricultural products, Case for Construction Equipment, Iveco for commercial vehicles and FPT for powertrain products.
- As you can see from this overview, the diversity of the products in our portfolio is huge. The products are diverse in many ways: they perform very different and specialized tasks; they are



highly personalized products, which serve different customers; consequently, we face huge differences in the annual sales volumes, production processes and product offering complexity for each of these product lines. In the agricultural machinery sector, we can see a very similar situation, with not only very diverse products, but also a very diverse landscape of big global players, regional players and small and medium enterprises.

- A common challenge for all these companies and products is to comply with regulations, so one might think a high level of commonality in the legislative approach might be beneficial. A recent example is the tractor EU type approval, which is the most mature European file our industry has, and its procedures and requirements are largely derived from cars and trucks. In reality, the level of investment required from our industry to comply with the new legislation did not result in an equivalent increased value for our customers and our society in general. With value, we do not only mean efficiency and productivity of the machine, but also safety for the operator and the environment, low exhaust emissions or sustainability in general.

“Value for Money” should be a key consideration when defining new future legislation.

- The companies in our sector and our customers are willing to work together and contribute in a constructive way to overcome the important future challenges of global warming, more sustainable products and production processes, product safety, reduced environmental impact of farming etc.. However, we always should compare the real value of the new legislation in relation to the investments required. We also need to consider the fact that our companies compete in a global market, with different legislation and a very competitive environment.
- One very positive example was the recent topic of the use of ABS in tractors, where the real impact on product safety was the core driver for a final decision, avoiding adding unnecessary costs to the vehicles with minimal additional impact on product safety.

A lean approach on approval procedures and administration is needed.

- A recent ‘simplification’ of the framework regulation and technical regulations resulted in less legal acts, less administration for Member States, faster run-through time to approve legal acts and more decision power by the Commission. For our industry however, it resulted in additional requirements, tests and much more administration, not aligned with the industry profile and the need for more safety.
- It is key for new vehicles – like the NRMM EU road circulation file – to take into account the lessons learned. It is important to balance the capacity of small companies to deliver administrative templates and do testing with the heavier test procedures of the traditional vehicle type approval system, used by the EU and national authorities.

Lead-time and alignment with an overall strategy for the sector

- A better understanding of the industry’s specificities will devise a more adapted legislation and better services to our customers. The diversity of our industry together with the low volumes, in particular for some specialised machine types such as extra wide potato harvesters or extra heavy forage harvesters, make system change-over slower with a longer time to market.
- New technologies, such as precision agriculture, automation and digitization can be used to further enhance the products and contribute in a positive way to the future challenges of global warming, more sustainable products and production processes, product safety and reduced environmental impact of farming, but this should be part of a common and joint longer-term strategy for the sector.



- In this way, we can maximise the impact and value of new legislation, while optimizing the costs and protecting the competitiveness of the EU agricultural business as a whole. It is our strong believe a close collaboration and an ambitious common longer-term strategy will be key to protect the leading position of the EU agricultural machinery industry and we look forward to continue working together on a process strategy involving the whole sector.



Dr Markus Baldinger, POETTINGER, Chief Technology Officer
Chairman of the Technical Board of CEMA

(Due to Dr Baldinger's indisposition the speech was delivered by Ivo Hostens from CEMA)

What can EU Regulation do to support innovation led by SMEs and other family owned companies?

Need for a reflection of machine specialisation and its diversity in EU legislation.

- Thank you very much for giving me the opportunity to speak here in front of you about the diversity and specialisation of our machinery and therefore let me give you a reflection on the EU legislation we are confronted with as SMEs and family-owned companies.
- PÖTTINGER is an Austrian family-owned company that contributes to a sustainable increase in effectiveness, efficiency and quality of the agricultural production and that acts as a partner on whom its customers can rely. In the last financial year we achieved a total annual revenue of €354 million, we have 1,775 employees from 29 nationalities. We have three production plants (in Europe) and although we are an Austrian company, I always speak of an European company as we sell more than 70% of our sales in the EU.
- We as Pöttinger are specialists in grassland, tillage and seed drill technology. We create advantages with mounted implement and trailed machinery. Farmers, large farms, contractors, machinery rings and cooperatives in all different agricultural regions and climate zones of the world - they are all our customers. Our wide range of products enables us to match the specifications of the different life styles and working conditions of our customers, from small mountain farms in the Alps, to huge operations on the plains in Ukraine or Canada.
- So manufacturers like our company, specialised in towed machines, are often SMEs or other family owned companies and they produce many types of machines in low volumes (for example loader wagons, mounted/towed sprayers, ploughs, mounted seeders and so on) – in the segment of loader wagons we produce more than 35 different types of machines and there is only a total world market of round about 2,500 units per year.
- So from these points of view, a common challenge for all the SMEs is that they struggle with the competition and the scale disadvantage of increasing EU bureaucracy. Therefore, they need to be the reference point when drafting legislation e.g. involvement in the process by consultations or meetings.
- This brings us to the main question: is EU type approval, as it stands today, fit for purpose for these manufacturers?



For large and small companies Digital Farming is the next phase

- Pöttinger had started linking our machines with tractors long before industry 4.0 was coming up. In the beginning of the 21st century we showed the first tractor implement combinations that allowed message exchange – in other words, we are among the pioneers of industry 4.0 (which came up about in 2010).
- This pioneer role together with the specialised machines mentioned before led us to the further development of precision farming and ultimately led to digital and smart farming. Smart precision technologies connected to the cloud and embedded into autonomous agricultural vehicles is the future to serve farms of all sizes.
- Digital farming is not a goal on itself. Our customers have to secure their income by using our machines, and digital farming can and will make a major contribution to this. Digital farming must provide flexibility for farmers to change strategy quickly if requested by the situation and optimise the management of the farm.
- And last but not least it must result in an increase in comfort and living standard. All statistics show a decline in farm owners worldwide and digital farming can at least reduce this downward trend. This is only possible with increased investments within a clear strategic vision for a sustainable future of the sector.

SMEs will need a lower financial burden on compliance in order to increase their investment capacity in innovation.

- In order to be successful, especially as SME or family owned company, you have to bring new imaginative products to the market and set themselves apart from the competition. It is also important to continuously increase your own performance. Since almost all agricultural engineering companies produce for the world market, this thesis (differentiation in product development) is even more important. “So, every minute, every euro we spend on homologation, we don’t use it to invest in future machines”.
- In this way, more flexibility in the approval procedures and self-declaration of many requirements are the basic ingredients of the EU legislation. This includes as well less involvement of testing stations doing all the official tests and reports because this is a high cost for SMEs. It is our strong believe that innovation is the basic requirement for top performance.



Daniel Azevedo, COPA-COGECA, European Farmers & European Agri-Cooperatives, Director Commodities & Trade

Coming from a farming family, it is privilege to be the voice of farmers and agri-cooperatives in the EU. Together, they ensure that EU agriculture is sustainable, innovative and competitive, guaranteeing food security to half a billion people throughout Europe. Copa represents over 22 million farmers and their family members whilst Cogeca represents the interests of 22,000 agricultural cooperatives. They have almost 70 member organisations from the EU member states.



The EU agri-food chain, is a driver of the EU economy, delivering 44 million jobs in the EU, representing 3.7% of EU GDP. It is also world's number one exporter of agricultural and food products amounting to €130 billion. Agricultural production provides incomes, employment and food at affordable prices as well as commodities for the processing industry and from exports. Creating a sustainable agricultural development path means improving the quality of life in rural areas, ensuring enough food for present and future generations, while also generating sufficient incomes for farmers all around the world.

Machinery has been always an important part of any farm and cooperative. Today new opportunities in the agriculture sector rise. Modern machinery, big data, precision, drones and robots are part of farming vocabulary and are a reality for many farms and cooperatives across Europe and the world. In September we will meet our colleagues from North America in Copenhagen and modern machinery and technologies will be on the agenda.

We are also happy to see that at political level, as underlined by Commissioner Hogan and many of the MEPs, the uptake of new technologies by the farming community is a priority for the European Institutions.

Modern machinery and other technologies, such as NBTs, satellite, ICT, are tools that must deliver concrete solutions to help all farmers to respond to dynamic markets, improving the life conditions of farmers and their families. Always in line with our tradition of delivering high quality European produce, produced under high standards that we are proud of and committed to. Modern machinery and Digitisation might be key to empower farmers and help them to access growing markets outside the EU and to go from price “takers” to price “setters”.

But modern farm equipment incur high investments for farmers who look for long life machines, which are durable and reliable. Investments in modern machines, latest technology or digital farming tools are for farmers part of a strategic vision of their business, in order to compete in dynamic markets and respond to consumer demands. Without a clear benefit on improving farm production systems, working conditions or added-value for the products, farmers will not invest, especially in times where financial resources are limited.

Farms and farmers are diverse, but have one thing in common: they will not spend their money on machines or features that do not bring added value to their business. Machinery needs to provide the tools to tackle our key challenges, to improve working conditions and adapted to the diversity of farming, farms sizes, landscape and climatic conditions.

But how ensure that this vision materializes? First we need a strong CAP with an adequate funding.

We also need a coherent strategy that enables all farmers to connect. All EU policies (e.g. investment, research, CAP, digital) must align their efforts towards creating the right conditions to allow all farmers to uptake technologies.

Understanding the direction for future regulatory developments is important for the European industry, and agriculture businesses, when it comes to making decisions on further investments. Therefore it is vital to ensure that the full potential of using modern machinery and new technologies in agriculture are not limited by unnecessary regulatory burdens. Research and development of modern machinery must be used to develop the tools we need, to increase our tool box. We need to keep the leading agricultural research in Europe adapted to the European conditions.



Furthermore, the new data-supply chain places informed farmers in a new context and redefines their role in the supply chain, which will enable transformative agricultural business models to develop, leading to more transparency, as well as safer and better produce. We need to have the right balance that ensures that the farmer gets a proper return from his data and, at the same time, guaranteeing that the farming community has access to the relevant data.

Together with CEMA, CEJA, ECPA, CEETTAR, Fertilizers Europe and other organisations of the agri-food sector we have developed a Code of Conduct for data sharing by contractual arrangement.

To maximize the potential of data sharing from farm to farm products within the agri-food chain, this process must be conducted under fair and transparent rules, ensuring data is handled in an appropriate and secure manner. This will guarantee that all relevant partners have the necessary access to data encouraging and accelerating data driven business models. To create trust is fundamental.

To build up trust and encourage data-sharing within the agro-food chain, all parties need to engage in a dialogue on the opportunities and challenges arising from data sharing.

Farmers must remain at the centre of this process and get benefits out of it, playing a central role on controlling and using the data.

Ivan JAKOVČIĆ MEP, (ALDE, Croatia), Agriculture & Rural Development Committee
(absent due to illness, request for inclusion of paper)



Technology is a powerful tool. We are living in a time where technology has become a primary resource for communication, world updates, education, transportation and so much more. Unmanned aerial vehicles, commonly known as drones, are going to revolutionize agriculture.

Drones are transforming agricultural fields as they are having a large impact on crop growth as well as farmer life. Instead of using satellites, manned planes and walking the field, farmers will be able to monitor their crops with drones. Drones are presently able to display live video of their flight route, but they can be further enhanced with infrared cameras and sensors. Installing thermal sensors on a drone will give it the ability to identify early physical characteristics of plant stress. After the suffering crops are detected, a farmer can begin analysing them and find a solution before it is too late.

The drones are capable of doing soil and field analysis as they help farmers oversee hundreds of acres of land. They are saving farmers big money by managing crop spraying and monitoring. The drone can detect what areas of the land are dry, ensuring an even hydration of the crops. In addition, seeing a bird's-eye image of the crops, farmers can identify areas of disease and save large areas of their crop land before plant disease spreads.

Drones can be instrumental at the start of the crop cycle. They produce precise 3-D maps for early soil analysis, useful in planning seed planting patterns. After planting, drone-driven soil analysis provides data for irrigation and nitrogen-level management.

One single drone can cover eighty acres of land an hour. Drones are going to revolutionize the agricultural industry as they help produce, contain and tend to hundreds of acres of land. Agriculture consumption is predicted to increase by nearly 70% in the next 30 years due to a



large expected population growth. With high demand of agricultural crops, farmers need a way to increase productivity so that they can meet the needs of consumers.

Drones are starting to be used all over the world for agricultural purposes: Canada, Australia, Japan and Brazil. Not only are these devices the future, but agricultural production is only going to gain importance as world population increases and productivity and efficiency become key factors of success.

While technology in agriculture is bringing more efficiency, at the same time it must also bring more safety of food.

Agricultural producers must embrace revolutionary strategies for producing food, increasing productivity, and making sustainability a priority. Drones are part of the solution, along with closer collaboration between governments, technology leaders, and industry.



Frank BOGOVIČ MEP (EPP, Slovenia), Agriculture & Rural Development Committee

Our machines need to communicate with each other and freely exchange data.

When I decided to politically invest into, what has come to be known as, the 'Smart Villages Initiative', precision farming or precision agriculture, as many call it, had to be the starting point.

Precision agriculture (PA) or precision farming, is a modern farming management concept using digital techniques to monitor and optimise agricultural production processes. Rather than applying the same amount of fertilisers over an entire agricultural field, or feeding a large animal population with equal amounts of feed, PA will measure variations in conditions within a field and adapt its fertilising or harvesting strategy accordingly.

Likewise, it will assess the needs and conditions of individual animals in larger herds and optimise feeding on a per-animal basis. PA methods promise to increase the quantity and quality of agricultural output while using less input (water, energy, fertilisers, pesticides, etc.). The aim is to save costs, reduce environmental impact and produce more and better food. The methods of PA rely mainly upon a combination of new sensor technologies, satellite navigation and positioning technology, and the Internet of Things.

PA has been making its way into farms across Europe and is increasingly assisting farmers in their work in three ways:

1. Precision agriculture can make a significant contribution to food security and safety:
 - PA already offers technology solutions for producing more with less; and
 - PA will enhance food safety and plant health.
2. Precision agriculture can promote more sustainable ways of farming:
 - key PA technologies are already in use with positive impacts on the environment; and
 - PA will generate sustainable productivity gains with the help of
 - drones, for weeding
 - robots for milking and feeding



- the use of satellite networks (Galileo, Copernicus)
 - precision spraying and fertilising
3. Precision agriculture will trigger wider societal changes:
- PA technologies are already widely available and affordable
 - PA is influencing work practices and life conditions on farmland; and
 - new farming business models are on the rise;

The wide diversity of agriculture throughout the EU, particularly regarding farm size, types of farming, farming practices, output and employment, presents a particular challenge for European policymakers, like myself. European policy measures should therefore take into account that opportunities and concerns around PA can vary greatly from one Member State to another.

Recently I met a Slovenian producer of large scale weeding machines. He is mainly delivering into the Russian market and he explained his business model, which came as a total surprise to me. He was making more money with the data his weeding machines collect during their, mostly robotic, work than from the price of these quite costly machines. Everyone who has ever received a free meal or cinema ticket for giving away his email-address must inherently understand that data has a value and that it is not solely a threat, but also a potential blessing and PA has beautifully proven, how the interlinkage of modern technologies with each other, has the ability to save a sector of our economy (and society) many declared dead already decades ago.

The more intelligent our machines become and the more they start communicating with each other, the more we can achieve affects linked to the success story we already know from PA.

To date rural areas mainly suffer from the decreasing availability of services: education, medical care, transport and leisure activities. Online platforms and smart technologies can easily change that. By using resources at an at least 90% optimum, we can offer inhabitants of rural areas all services urbanites are used to and thereby increase their life quality above those of city dwellers, due to missing congestion and better air, safety and social life quality. In turn this will attract increasing amounts of people back into rural areas, thereby reversing the current negative trend of rural depopulation and thereby also help de-congest overloaded city infrastructures. All profit.

The key to making this vision a reality is naturally a good and stable broadband connection in rural areas. Even rich, developed rural areas, in Bavaria for example, are having huge problems to have full standard internet coverage, let alone fast up- and download rates.

The data harvested by our smart machines needs to be accessible and free of charge. It cannot remain in the ownership of the producers of such equipment. Secondly the data needs to be secure. This is a concern in nearly all innovative areas of today face. As Europeans, concerned with data privacy and with that the privacy of our citizens, we need to continue investing into this security, otherwise we remain frightened vulnerable to cyber-attacks from our enemies, giving them access to our farms, power plants, health records, etc. Blockchain technology seems to be the beginning of a possible solution in this area. It is common sense that you protect yourself from theft by disseminating your valuables as much as possible, instead of hoarding them all in one place.



Molly SCOTT CATO MEP (GREENS/EFA, UK), Agriculture & Rural Development Committee

Introduction

- Precision agriculture and Compliance, Safety, Accountability (CSA) is not the way to save our soils- agroecology/organic recognises soils as an ecosystem, and is aimed at protecting that ecosystem
- We should be collecting data on soils, definitely, but independent researchers with peer reviewed science and (organic) practitioners can do this- we do not need big data!



What is efficient farming?

- New 'smart' equipment increases farmer input dependency on agribusinesses - so not financially efficient
- Small farmers feed 70% of the world. by your standards, they are 'inefficient', but the idea that we *need* smart agriculture is a lie
- Satellites and phone apps allow farmers to monitor soil and climate conditions down to the square-meter - this should be welcomed when it can reduce the use of pesticides and therefore also costs for farmers

What is what Schumacher would have called 'appropriate technology'?

- Human scale and to serve human objectives, not bigger and more technological for its own sake or the sake of profit.
- Why would we want to remove people from the land? Will this ensure rural livelihoods and prosperity? The knock-on effect is increased urban population, which is heavily contributing to climate change.
- Will lead to bigger agriculture and more land grabbing: a question of power.
- Research indicates that farmers are already wary of on-farm data collection. A survey conducted by the American Farm Bureau Federation in 2016 found that 77% of farmers had concerns about who could access their farm data, and 60% didn't know whether their farm data was being used by farm input companies to market products to them.

Risk of enhancing corporate power

- In 2013, Monsanto spent \$1 billion to buy the Climate Corporation. Climate Corporation is the world's leading global, digital agriculture platform with paid-for use on 35 million acres in the United States. [FoE US, 2017]
- UK government spends £450million a year on agricultural research, much of which goes towards biotechnology and other hi-tech projects whilst as little as 1% of this goes to practical on the field-scale projects lead by organic farmers



- The industry is growing quickly, and the market for digital-based agricultural services is expected to reach \$4.55 billion by 2020
- Bayer-Monsanto will be major player in agricultural Big Data, leading a pack that also includes other agrochemical giants like Dow-DuPont and Syngenta
- Technologies will be primed to combine its data businesses with its seeds, traits, and chemicals to create a new platform
- For Bayer-Monsanto, this platform will be a way to leverage the sale of one product into another, even if that other product is lower quality or more expensive.

What are the real problems facing farming?

- Soil as carbon sink: rich earth and the need for organic, carbon-rich soils
- 'Insectageddon' - loss of 2.5% of insects per year so potentially half gone by the middle of the decade
- In the first decade of this century we lost more than 50% of butterflies and moths
- WWF: Earth has lost half its wildlife in the past 40 years
- Set the human objectives first and if the technology helps to support them then welcome it
- Do not be driven by the technology or the profit motive.

Background

- Today, tractors and other farming equipment are often equipped with sensors, mobile connectivity and GPS.
- Drones equipped with infrared cameras and GPS patrol the air reporting on field conditions.
- Data can dictate the how many seeds farmers plant in each micro-area of their land.

[Source for all of the above unless otherwise stated: FoE report 'Bayer-Monsanto Merger: Big Data, Big Agriculture, Big Problems' (2017)]

Statistics

- Small farmers feed 70% of the world
- UK Government invested £90 million in 2013



SUPPORTING INNOVATION IN FARMING TECHNOLOGIES AND FACILITATING UPTAKE



Thomas Böck, CLAAS, Group President & Chief Technology Officer

CLAAS (www.claas-gruppe.com) is a family business founded in 1913 and is one of the world's leading manufacturers of agricultural engineering equipment. The company, with corporate headquarters in Harsewinkel, Westphalia, is the European market leader in combine harvesters. CLAAS is the world leader in another large product group, self-propelled forage harvesters. CLAAS is also a top performer in worldwide agricultural engineering with tractors, agricultural balers and green harvesting machinery. The CLAAS product portfolio also includes state-of-the-art farming information technology. CLAAS employs more than 11,000 people worldwide, and posted sales of 3.8 billion euros in the 2018 financial year.

As a premium manufacturer and technology leader, CLAAS is investing extensively in research and development. The CLAAS R & D investments rose continuously to €233.4 million, around 6% of turnover, in last fiscal year. Investments in exhaust emission improvements (Stage IV/V) and electronics architecture for machine control and connectivity, as well as in the digitalization of agricultural processes also continue to account for a significant share of the CLAAS Group's total research and development costs. What distinguishes CLAAS as a family business is the long breath with development projects. Numbers do not drive the company in the first place. This leads to most sustainable decisions.

Improving resource efficiency and sustainability along the entire process chain is a major task for farmers and for CLAAS. Digital transformation offers the chance to improve farming standards and put them on a safer level. The key technologies are machine guidance and control, variable rate application, recording and mapping of soil, plants and yields, reactive sensors and farm management Information Systems (FMIS). A highly efficient CLAAS combine harvester can only utilize its full potential in the field, when the entire harvesting process chain is capable to process the harvested amount of grain, efficiently. EKOtech targets on the minimization of CO₂-emissions in this process chain, by optimizing the machines, process efficiency and machine operation, as well as assessing alternative sources of energy.

But where does the digitization of agriculture stand and what will be the detailed benefits? CEMA, DG Agri, COPA-COGECA, Joint Research Centre and Eurostat & European Environment Agency developed a survey to assess the economic, environmental and social performance the usage of Precision Farming Technologies can have in European farms. The collected data is intended to bring facts & figures that can provide a real picture of the situation of precision agricultural technologies adoption by EU farmers and a better orientation under the Common Agricultural Policy, digital or research policies to foster its uptake.

The CAP can set the impetus to make smart technology in farming the future standard. This will lead to high sustainable farms that work more efficient and environmentally friendly – no matter if they are small, big, organic or conventional. This will sustainably secure the European food supply and the farmers income. European machinery manufacturers are able to deliver the technology for these future standards. For CLAAS the will of the farmers to invest into high spec machinery and smart technology is crucial.

For the practical use of smart technologies in farming, there are software and hardware changes necessary to ensure the protection of knowledge and traceability of data streams. Farmers must



be able to modernize their machinery fleets, no matter what brand mix they use. Besides buying new machinery, they should also be able to retrofit older equipment with smart technologies. A complete coverage of mobile networks in rural areas is essential for linking old and new machines with the Farm Management Information Systems [FMIS].

Future solutions allow a free choice of machinery, platforms and partners for the farmer with perfect data control. Therefore, standardization of data exchange between machines and FMIS must be pursued further. Data security and data protection are essential – for the farmer and for the machinery manufacturer. The farmer must have full control and overview about his data and the accessibility to it. Machine-bound intellectual property has to be protected. In addition, safety and security of the vehicles and cybersecurity in connectivity are issues. A high involvement of vehicle and machine manufacturers is indispensable. Agricultural machinery is so far the only industry sector with a harmonized communication standard between tractors and implements of different manufacturers.

For a successful implementation of smart technology, it is necessary to enhance the knowledge of farmers, machinery dealers and service technicians. With its academy concept, CLAAS has the ability to directly teach sales and service but also customers. A good example are seminars for drivers. When they understand the machine, they can use it most efficient and sustainable. CLAAS is also investing in knowledge transfer with schools and universities by providing modern machines for education. At our headquarters in Harsewinkel, high school students have lessons directly in our digitalization facilities. It has shown that an early transfer of knowledge of both farming and machinery is essential for the best understanding of the links and interfaces. CLAAS and other manufacturers promote this knowledge transfer strongly. Schools, universities and ministries must recognize this. There is potential to optimize the cooperation.

A few practical examples now on how the future of farming looks. The FMIS, like 365FarmNet, is becoming more and more the major decision support system on a farm. Fully connected sensors deliver the information online directly into the system. For example, this can lead to a more sustainable use of fertilizers. In the future, the usage of artificial intelligence with self-learning algorithms will increase in the farming sector, in order to improve efficiency. Already today, CLAAS enables the farmer to use ESA Sentinel data for fertilizer application. The satellite based IR-data gives a differentiated picture of the biomass on the field. Fertilizer application is then automatically controlled to fit the exact needs of the plants. No nutrients are going into the groundwater and the full yield potential can be used. Also best machinery construction can deliver solutions for sustainable farming. CLAAS has developed the crawler track system TERRA TRAC for combine harvesters, forage harvesters and tractors. It spreads the machines weight over a large contact area. Soil compaction is prevented and the yield potential stays on a high level.

Summary: Improving efficiency and sustainability of farming systems is a major task for farmers and for CLAAS. Key technologies are machine guidance and control, variable rate application, recording and mapping of soil, plants and yields, reactive sensors and farm management Information Systems (FMIS). This will lead to high sustainable farms that work more efficient and environmentally friendly. Smart farming solutions allow a free choice of machinery, platforms and partners for the farmer with perfect data control. For a successful implementation of smart technology, it is necessary to enhance the knowledge of farmers, machinery dealers and service technicians.



Gilles Dryancour, JOHN DEERE, Vice President Public Affairs Europe

How could the Common Agricultural Policy support the uptake of precision farming technologies? It is not an easy topic. Let us try to make it as simple as possible by answering three simple questions:

Why is it important for EU farmers to acquire precision farming technologies?

What are the obstacles?

What kind of solutions could be promoted by the Common Agriculture Policy?



1. Why is it important for EU farmers to acquire precision farming technologies?

Among the many reasons why EU farmers need to access P.A. technologies, we will highlight two key areas:

- remaining globally competitive
- building a sustainable agriculture.

1.1 Remaining globally competitive

EU farmers are not cut off from the rest of the world. They live and produce in a global market. EU farmers do quite well by the way. In 2017, trade in agricultural (AG) products between the EU and non-member countries accounted for 7.4% of total EU international trade. Since 2013, the EU trade balance for AG products is almost in balance (Imports: €138 billion - Exports: €137 billion). As everybody knows competition on the international markets is tough and digitalization/innovation plays a major role to build one's own competitive advantage.

In this respect, it should be known that less than 25% of EU farmers have an access to only one component of precision agricultural technologies, i.e. GPS or auto-steered equipment.

According to a survey published in 2017 about precision agriculture (P.A.) in Canada, 98% of Canadian farmers use GPS guidance on their farm, 79% have auto steer equipment and 83% have yield monitoring on their combines. Almost 50% use satellite or drones images of their fields and 30% the near infrared technology for assessing their yields. Also 75% of these farmers plan to invest more in P.A.

As we can see, if we want to put EU farmers on the same footing as North American farmers they have to invest more in precision agriculture.

1.2 Building a sustainable agriculture

It is about producing more with less. Technology can deliver a lot. I will give a few examples here.

- John Deere HarvestLab 3000 NIR technology aims at providing farmers and rural or agricultural contractors with a complete new technology for managing the nutrient cycle more sustainably and to improve the efficiency of the use of manure fertiliser. The objective of John Deere Manure Sensing is to enable farmers to precisely control the amount of nitrogen and phosphorus applied when spreading manure. This technology leads to no or much less eutrophication and soil pollution.
- Precision spraying combined with artificial intelligence and plant recognition could drastically help to cut the volumes of pesticides being sprayed (up to 90%).



- Mechanical weeding with robots also combined with AI: could lead to 0 pesticide.
- Precision seeding makes new types of polyculture possible (critical to stimulate biodiversity, noticeably for pollinators).
- Auto-steered equipment allow 5% to 15% fuel consumption savings.
- Precision irrigation: from 10 to 90% less water withdrawals.

2. Obstacles to the uptake of P.A. technologies

2.1 The scale factor

Smallholder agriculture still dominates the European rural economy, with 86% of EU farms holding an area below 20ha. Advanced agricultural machinery solutions can help farm holdings – regardless of their size – to operate in a profitable, competitive and sustainable manner.

The importance of this ‘scale factor’ has also been evident in the uptake of PA technologies. At the beginning, only larger farms were able to buy, for instance, guidance devices and amortize them in a profitable manner. By today, these PA technologies have started to spread across the 100ha farm holdings segment.

With 16.1 ha average farm area EU farmers compete with much larger farmers eg. in the US and New Zealand where the average farm area is above 250 ha.

2.2 The income factor

There still is a clear bottleneck for the farm segment below 100ha with an income below €25,000. For these farms, it is still difficult to access certain PA technologies in a profitable way, unless they operate in a niche production.

The average agricultural income in the EU is €17,846 (it is about half of the EU average income per capita). In the US the median farmer’s income is almost €70,000, while the US average income is €55,000.

3. What can the CAP do?

It cannot make the EU farms bigger. From what Commissioner Hogan has said, we understood that the high ambitions for environmental and climate action set up by his reform proposal will eventually boost the use of P.A. technologies. Without a doubt, it goes in the right direction as does the *sustainability tool for nutrients on farms* also proposed by Commissioner Hogan.

During the dialogue which will take place between the EU Commission and the Member States on their national strategic plans, our industry would like the smaller farms to be taken well into account. For farms below 50ha they should be eligible to a dedicated subsidy to invest in basic PA technologies like smart phones, tablets, computers with agricultural applications. With an annual investment of €500-750, they should be able to cover their specific needs. Alternatively they should get an allowance for using contractual services based on P.A.

Regarding farms between 50 and 100ha, we estimate that a dedicated subsidy ranging between €6,500–7,000 would be suitable to cover the basic PA needs farmers of this size category. As for smaller farms they should also be able to use cooperative’s or contractors’ services if they would



not be able to invest. So we propose Member States should issue a smart technologies voucher to the farmer to be released by the contractor.

Jannes Maes, CEJA - European Council of Young Farmers, President

Young Farmer vs Digital Farming: Needs, Challenges and Reality
Farming is a traditional but not old-fashioned business.

Farming is usually a traditional activity. I work on my farm with my family, which is not far from Brussels, but on a daily basis I use digital farming technologies in heat detection systems in the animals to identify upcoming fever, for example. I use a GPS system and cameras as well to monitor the animals. On a more general level, I also use online banking in the management of the farm.



The Three Dimensions Young Farmers See in the Uptake of Digital Farming Tools.

1) Increasing efficiency

Young farmers react to the uptake of new technologies generally very positively. It is not always about producing more with less. Digital technologies help farmers to improve food production by increasing efficiency. So very often the question is about how to produce the same amount of food in a more efficient way and therefore “producing with less”.

2) The economic benefit

Digital farming technologies are key to collecting and sharing data on farms. Having access to information is essential for farmers to make the right decisions on their business. As an example, farmers could decide which crops they should grow according to international market demand. This said, farmers need trust when sharing their data. They need to remain at the centre of this process, their business data needs to be secured as well as to take advantage of the digital revolution. Otherwise, technology uptake in agriculture will be hindered.

3) Social leverage

Farming technologies might be a good argument to convince younger generations to stay and work in rural areas. New technologies do help in improving daily tasks and reducing monotonous activities. They can lead to work which is not as physically trying, but also in the improvement of the work-life balance because technology allows certain tasks to be performed more quickly and efficiently.

Young people do not want to live in remote areas isolated from what is happening in other parts of the world. For that, reliable broadband all over Europe is key.

Digital Skills & Innovation

It is clear that the younger generations of farmers are easily taking technologies on board. In terms of training it might not be the EU that plays a huge role as this is more or a Member State competency. Young farmers have other key issues to solve where the EU should set up the right framework: investment capacity, access to land or credit.

As regards innovation, the EU has already done a lot. Providing access to satellite information, investment in broadband deployment or providing guidance in the exchange of agricultural data are some of the examples. Nonetheless, from the young farmers’ perspective we would like to encourage the EU to focus more on the implementation that arises from European research.



Thomas WAITZ MEP, (GREENS/EFA, Austria),
Agriculture & Rural Development Committee (*notes taken from his presentation*)

- Organic farmers are usually in opposition
- Machinery interest in organic agriculture, therefore uses more
- How to use innovation to be more environmentally friendly is discussed in the European Parliament Agriculture Committee
- Technology tools are not a mindset
- Replace pesticides with green fertilisers
- In forestry - perma culture can work with big harvesters
- Need to develop technology for SMEs



Richard ASHWORTH MEP (EPP, UK), Agriculture & Rural Development Committee

I am a farmer from the United Kingdom and, in my lifetime, I have seen horses replaced by tractors, pitchforks by hydraulics and hand hoes by chemistry. Within the space of one generation, farming has seen greater change than at any time ever in history before.

Now it is about to go through another, even greater, transformation.

The reason is climate change, world population growth and the spread of prosperity will demand that the world's agri-food systems double output by 2050.

However, there are two problems. The first is land. Arable land accounts for just 4% of the world's surface; and water availability and soil degradation mean that area is in decline. However, the quality of soil, climate and expertise in Europe means that one hectare of European land equates to four hectares in other parts of the world. There are both moral and economic imperatives to maximise productivity of European agriculture.

And productivity is the second problem. Whereas the leading farm sectors in the world are increasing productivity at or around 2% per annum, many parts of Europe are falling behind. Today, UK farm output is rising at just 0.8% per annum, and productivity has plateaued out since the 1990s. That means, for Britain's farmers, the price received for agricultural goods has continued to decline, costs have continued to rise and farm output has failed to keep up. To meet this problem British farmers have expanded their businesses. What they have not done is raise productivity. That is now an urgent priority.

Technology, and specifically data management, will be the key to unlocking that productivity. Technologies will bring us the ability to measure virtually every facet of the business. Once we can measure it, we can manage it and then we can monitor it.

Using satellites, drones, combine yield monitors and sensors on quad bikes, we will be able to accurately record and map crop yield, fertility status, water availability, pollinator and predator activity and production costs right down to the very smallest area of land.



Armed with that knowledge, we then need new generation inputs and machinery that will give us the ability to micro manage fields and crops.

For example, the new generation sprayers that already have the ability to put precisely the right micro droplets of chemical on precisely the right part of the plant. No spray drift, no run off and no overlapping.

One of the first conclusions we will draw from accurate measuring will be the effect that soil management has on crop performance. Currently, we pay lip service to the need to manage soil... but we do not yet have the technology to measure structure, organic matter, worms and soil microorganisms. Not only will technology will make that possible, technology will enable us to rethink the ways we manage crops and soil.

Until now, the man on the tractor seat has been the most expensive part of the system. Therefore, as engine power increased, the size and capability of farm machinery increased hugely. What if technology enabled lightweight, electric powered, driverless tractor and precision applicators to work the land?

And we will need new generation plant breeding technology. Rather than transferring genes between species, as is the case with GM, Gene editing, manipulating the plants own genes, will be the way forward.

Perhaps the biggest influence of all will be climate change. Mankind lives on this earth on a 'full repairing lease', and we are the first generation in the history of mankind who will leave our children a world in a worse state than we inherited it.

Moreover, it is not a good story for farming. Scientific evidence shows that agriculture is a major source of greenhouse gases (GHGs), and is, therefore, part of the problem. That is something farmers have been reluctant to accept. The sooner they do, the sooner they will realise that climate change, presents an excellent opportunity for farming to present its self as part of the solution, not part of the problem

To make that future possible there are four objectives we need to set.

- 1) Changing attitudes. To get farmers to turn a problem into an opportunity.
- 2) Research and development. We cannot leave it to public funding; we have to find innovative new ways to fund R&D.
- 3) Knowledge transfer. The only way we will improve performance of the whole of the industry, not just the upper quartile.
- 4) Legislative approach and acceptance of technology. We need scientific evidence based decision making... not emotion.

Davor ŠKRLEC MEP (GREENS/EFA, Croatia), Industry, Research & Energy Committee

European Union is implementing various rural development programs through its common agricultural policy.

In the context of finances, the largest allocations within the EU multiannual financial framework are those for the agriculture. However, despite such a generous amount of public money that is allocated for this purpose, all member





states are facing the problem of depopulation of the rural areas. Long-term demographic forecasts indicate that this trend tend to continue in the future if we do not begin to apply active measures together with public policies.

By analysing the situation in the European Union, we can say that we recognize two groups of member states – the EU15, as a group of old member states and the EU13, as a group of the new ones, those entering the Union after 2004. Depopulation of the rural areas is more noticeable in the EU13 group- the fact that indicates a major demographic problem, especially considering the great outflow of EU13 population into the EU15 group.

Although they all face very similar problems, there are significant regional and local differences, therefore solutions cannot be copy-pasted without respecting local specificities, even within the territory of the same member state.

Recognizing all these problems and specifics, the European Commission has presented in April 2017 the concept of “Smart Villages”. The name was chosen so that public policy can be recognizable to everyone because of the already existing concepts that were established earlier, such as “Smart Houses”, “Smart Islands”, “Smart Cities”.

I must point out that although the technology, especially digital technology, is the basis of the “smart villages” concept, the latter can be only seen as a tool that will enable the implementation, because the focus of the implementation of public policies should be people and addressing their needs. That is why I give priority to social innovations, followed by digital innovations, bioeconomics and competitive green economy of the villages, energy and mobility.

The concept of “smart villages” is an excellent opportunity for member states to change their way of stimulating and implementing agricultural policies. This concept does not threaten the traditional lifestyle and food production. On the contrary, it offers a completely new dimension, and what is more important for younger generations and entrepreneurs – technology enables traditional production (but in a more competitive way) and successful product placement on the market.

Social innovations in smart villages are extremely important, but their successful implementation depends solely on the quality and strength of the local community. The great variety of the services that were previously available, the state has now abolished because of high costs, such as medical care, post service, shops, palliative care and public transport.

For all these categories, there are successful examples of implementation across the EU and some of them can be adapted and further implemented in every other member state. The most important element of the successful development of “smart villages” concept is that member states recognize this concept when defining the next operational program and in national legislation. Furthermore, involvement of the regional and local authorities is essential because it is the only way to remove local obstacles and stimulate the development of projects.

I believe that the development and implementation of this concept should take advantage of the existing resources and potential that represent Local Action Groups (LAG), Agencies for Regional Development and Regional Energy Agencies. Every project needs funding, therefore European Parliament has proposed financing through the pilot project worth €3.3 euros. The pilot project is currently being implemented in 10 member states and those practical experiences will serve to better planning in the next programming period of 2021-2027. Significant amounts have also been proposed for the same financial period in the European Agricultural Fund for Rural Development, European Regional Development Fund and Cohesion Fund.



Anthea McINTYRE MEP, (ECR, UK), Agriculture & Rural Development Committee

Supporting Innovation in Farming Technologies and Facilitating Uptake

Farming faces a future of continuous challenge: population growth, climate change and the scarcity of natural resources. All these threaten food security.

Climate change will mean increased temperatures, altered patterns of rainfall, more frequent drought, new plant pests and diseases. These threats to our food security require us to continually adapt our food production systems.

Innovation and technology are crucial for this adaptation. Farmers and growers are great innovators and experimenters – even if they do not always realise it!

However, it is not just more technology, but more effective, more accessible and more affordable technology.

So whether we are talking about large farms or small farms, organic or conventional, arable, livestock or horticulture, technology has the potential to move us closer to a more sustainable development path for agriculture and food.

Agri-tech can be a great leveller, creating decent, more diverse jobs, helping us to overcome resource constraints and lessening the physical requirements in agriculture. Using more brain power and less muscle power makes agriculture a much easier career choice for women.

Agri-technology is a topic I have always championed in the European Parliament. Many of my constituents are at the cutting edge and I really believe this is the future for farming across Europe.

It is not just “innovative kit” that is needed but also optimum practices and management, tailored to the particular system.

Equally, while funding for fundamental research is important, there must also be sufficient investment in applied research and knowledge exchange if science is to have genuine impact on the ground. Knowledge exchange – not just knowledge transfer is critical. I fear that sometimes there are technological solutions looking for a problem to solve, while involving farmers from the start would mean that solutions would be tailored to their needs.

In 2016, I took an Own Initiative Report in the Agriculture Committee, on “Technological Solutions for Sustainable Agriculture”. I have always believed in consulting those with real experience and knowledge so I held a conference at Harper Adams University, where farmers, scientists, academics, environmentalists, industry bodies and government representatives were all invited to contribute ideas.

The Report pointed out several facts:

- The global population is estimated to reach 9.6 billion by 2050, meaning there will be around 2.4 billion more people than today.
- At least one third of food produced is wasted, and nearly half in some sectors.



- There is a pressing demand to produce more food which is safe, healthy and nutritious for EU and global citizens in order to deal with malnutrition, obesity, cardiovascular disease and other health problems.
- Availability of land for farming is under pressure as competition mounts from alternative land uses such as urbanisation, industry, tourism and recreation.

If we are to feed millions more every year in a way that is ecologically and economically sustainable, we need to square the circle that puts farming efficiency at odds with the environment, public health and biodiversity.

Again last year, I organised another expert round-table to discuss the practical measures for harnessing cutting-edge technology on farms.

A number of recommendations came out of this conference which I will be publishing in a second report on Technological Solutions for Sustainable Agriculture.

We have come a very long way since the first tractor came out of a factory.

Technology and the single market have facilitated more complex supply chains and produced more sophisticated products. And when we look ahead to the industrial reality of tomorrow, the digital single market will be as important to that future as the single market has been over the last thirty years.

The farming industry, like all other sectors of the economy, is undergoing a process of change. Modern farming was made possible only by the acceptance of scientific and technological progress, digital advances likewise offer the possibility of further development in the farming sector.

Precision farming is one of the very exciting areas where technology has already showed its potential. For example, laser weedkilling systems, a smart phone app for nitrogen recommendations and second-generation drones, capable of undertaking field tasks rather than simply capturing images.

A very interesting example of this agri-tech future can be seen in the “Hands Free Hectare” project led by Harper Adams University and Precision Decisions - whose researchers have successfully grown a crop which was seeded, sprayed, monitored and harvested autonomously using off-the-shelf technology and open source software - this is the future for farmers.

The starting point for future policies has to be targeted investment in applied and translational research - not enough research is commercialised, so farmers are unable to take advantage of the opportunities that new technology and innovation provides.

It is essential that governments, academia, industry, breeders, the agro-chemicals sector, growers and food manufacturers all work together to improve the translation of research into practice.

Farmers and growers are the end users of production and management technologies and those developing these technologies must tap into their practical experiences. Also, where farmers and growers encounter a particular challenge, they should be able to directly access scientists and academics and make use of research to help find solutions.

We must ensure that the benefits of technological innovation are available to all our farmers and growers - no matter their size, what they produce or where.

There is now the possibility of using drones and robotic tools that can highly target PPPs, there really is scope for matching the way they are applied to the quantities and to the process for



authorising them. We should be developing new chemistry which works with new technology to reduce the effect on the environment.

Recent advancements in gene discovery, biotechnology and New Breeding Techniques (NBTs), should be championed. Precision breeding provides an enormous opportunity for benefiting agriculture, the environment and consumers. NBTs can deliver characteristics that all plant breeders aim for - disease and pest resistant plants, increased nutritional content, improved yields and a tolerance to volatile climatic conditions.

The full potential of modern biotechnology for the genetic improvement of plants and animals has to be harnessed faster.

Governments have a role to play in investing in this and to provide SMEs with an easier route into this industry. SMEs are the backbone of the economy and they should be given the opportunity and incentive to use and develop NBTs to make them accessible for everyone.

While funding is useful, a permissive regulatory environment is of more importance in enabling applied research.

A brilliant example of genome editing can be seen in the success of a flagship project at the Rothamsted Research led by Johnathan Napier. His team has developed Camelina plants that accumulate Omega-3 long chain polyunsaturate fatty acids in their seeds, providing a novel method of making a terrestrial source of this essential oil utilising existing farming practice and machinery.

At a time when our natural sources of nutritious Omega-3 in oily fish are depleting, this may even be a necessity for the future to ensure alternative, sustainable plant substitutes are widely available.

Policy and institutional reforms will be needed to align researcher, producer and consumer incentives.

We must have a regulatory environment which is more innovation-friendly and ensuring that regulations do not act as barriers to innovation. Without a supportive regulatory regime, European industry will relocate to more dynamic markets.

To support innovation in farming technologies, future policy needs to be tailored to address regional and site-specific barriers. A one-size-fits all policy would be detrimental to all involved in the food supply chain as it does not account for the diversity of land across a country, let alone across the EU. It just creates burdensome red tape where there needs to be flexibility for our farmers to thrive.

So, I am hoping that with the right regulation and political will we will all be winners – the producers, the environment, large farmers, small farmers and consumers alike.

Achim IRIMESCU, Permanent Representation of Romania to the EU, Minister Plenipotentiary

- I am an engineer by background and worked at the Institute for Agricultural Machineries in Bucharest, Romania





- There is currently no clear picture regarding CAP because of the European Parliament elections and changing of the Commission College in October.
- Romanian Presidency hopes to adopt the Partial General Approach (Council position) in June at the formal Council; the informal Council at the beginning of June will debate innovation, research and bio-economy
- The Presidency would like industry to come up with the best solutions in order to help farmers to manage to do more, for environment and climate, with less money, as the Commission proposes by the CAP reform
- How to make big farms more competitive – by cutting funding through capping it will be an opposite result!
- In January the 28 Member States were supportive of looking for a Protein Plan (one of the Romanian Presidency priorities) in order to reduce EU dependence on imports - mainly soybean meals – more than 35 M tones/year, mostly GMO
- €10 billion being reserved for innovation and implementation – involving DG Research
- There were many discussions related to definitions (young farmers, conditions relating to the skills of young farmers, genuine farmers), indicators, new green architecture etc. in the Strategic Plan Regulation
- All issues related to the budget are within ‘square brackets’ and included in the Nego-box for the Multiannual Financial Framework (MFF) and cannot be touched as they are, but RO Presidency discussed within Agri Council the principals behind the issue within MFF in order to help the Summit with the decision when MFF will be adopted (in autumn most probably)
- Hence, some issues could be put in the Nebo – box (MFF) because they are not linked to the EU budget, as is the case for capping, where money should be cut from big farms and redistributed to smaller farms
- The Czechs, Slovaks and Germans are also not happy with the CAP reform proposal on capping because they have also big farms which will be affected and lose competitiveness.
- The big majority of the Member States opposed to the capping due to the bureaucracy it is introducing; the proposal to add to the threshold of € 100,000 the paid salaries and taxes is not sufficient because big farmers do not own the land, they rent it and they have additional important costs (€160 per hectare).
- Clarity is needed on all these issues and progress could not be made without clarifying the sensitive ones.
- There was a fight with the Council Secretariat to provide clarification; Member States were also concerned because the proposed reform is introducing new red tape for their administrations (Annually Performance Reports) and farmers.



Issues needing clarification included:

- Capping
- Convergence
- Voluntary coupled support
- Rural development – co-financing rate - Austrian Presidency wanted a decrease from 70% to 40% public money, whilst Romania wanted an increase to 75% in order to help farmers to invest in modern technologies and machineries.
- During the March Council the 3 Regulations would be revised in time in order to prepare for the June Council adoption of the partial general approach.



Jérôme Bandry, CEMA, Secretary General

A lot has been said already so my task is quite easy. Let me very briefly recap a couple of key points:

- 1) Firstly, we need a framework that is supportive of our industry. Manufacturers of agricultural machinery in Europe already produce the cleanest tractors in the world – complying with the most stringent legislation – and our industrial excellence is widely acknowledged across the planet. But let us not be complacent about it. Our market in Europe is stable, which is a nice way to say that most of the growth and new machinery is happening on other markets, with other requirements. So we always have to ask ourselves: is the legislative framework fit for purpose? Is it efficient? Is it proportionate? Europe registers some 15 million cars per year. Europe registers 1.5 million commercial vehicles per year. Europe registers just over 150,000 agricultural tractors per year. We need a framework that is fit for our industry, not a copy-paste.
- 2) Second, we need to continue to create value for the user, the farmer, the contractor. However we turn this, the basic equation remains the same. We have more and more people to feed, less and less people that want to do so as a living, more and more pressure on the tool box available, and maybe less common understanding / agreement of what it takes to grow things. We will not claim to have the answer, especially as there are many diverse farms in size, in practices, in geographies. But for sure technology is part of all the solutions. As we have heard tonight, there is great potential for precision farming, smart farming technologies, digitalisation, robotics... as long as we create value. The industry is committed to continue to leverage the voluntary Code of conduct on data, established with our partners and stakeholders.
- 3) Third, we need for Europe to deliver on the initiatives that are key for the uptake of technology solid & strong CAP stands out from all fronts, supporting farmers and helping them in investing in technology and skills while reinforcing competitiveness in new markets at global level. But we also need to deliver on Horizon Europe, which is also key to boost research and innovation for the agro-food chain, including machinery and solutions, and including large corporates, mid-caps and SMEs.



Ladies and gentlemen, 2019 will be full of events and developments, with elections, a new Parliament, a new Commission ... and no shortage of challenges. If we get it right, delivering on the three points I highlighted, the years to come are also full of opportunities. And our industry stands ready to advance agricultural machinery and solutions for sustainable farming.

Antony FELL, European Forum for Manufacturing, Secretary General

He announced that the next meeting of the European Forum for Manufacturing will take place in the Parliament on Wednesday 6 March 18h30 -22h00. It will focus on 'An Industry Vision for a Renewed Europe'.

The keynote speaker will be European Commission Vice President Katainen.

It will consist of a Roundtable on embracing the transformation driven by digital innovation, and a Dinner Debate on transforming societal challenges like energy and climate targets into future drivers of prosperity.

He thanked the CEMA and EFM teams for their excellent preparation of the meeting.