

Co-funded by the  
Erasmus+ Programme  
of the European Union

**The agricultural students are preparing for Industry 4.0**  
**2019 – 2022**



## **An overview by Charlie Askew, Coordinator, Easton College**

This Project always had something about it that was different. We have tried and trusted Partners, the subject matter is part of our College's 'DNA'. We have run similar partnership Projects before, very successfully. So why did it feel different?

When we signed up to the Project everything about our College and our Country was in a state of flux. We were to merge with one of three possible College's locally, which turned out to be a group of Colleges led by City College Norwich and including Paston College, North Walsham.

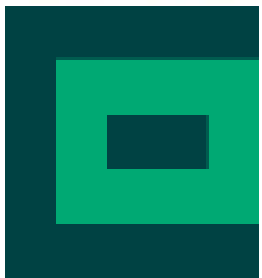
Nationally we were going through a de-merger with the rest of the European Union. Here is not the time or the place to debate the complexities or opinions of the so called 'Brexit' but the important thing to remember is that on both a personal and institutional level, none of these tumultuous changes altered our commitment to the Project and all our Partners. People will always triumph over politics. Most of the Staff involved with the Project at Easton are quite heavily involved in Agriculture, many in a practical and business capacity. The volatile nature of the industry currently and the speed of change in new technologies added to the importance of this Project, that is to equip the new Generation of agri-food technicians and entrepreneurs with the skills and above all confidence to meet the demands of the world's population in the next 50 years.

If all these changes were not enough, the global Covid 19 pandemic then stalled the Project soon after the first meeting at Easton College in the Autumn of 2019. There was much to complete when the Project restarted in early 2022. I wish to express the gratitude of the Students and Staff of Easton College to the Czech National Agency, our Partners from Munkagard, Green Academy Aarhus and especially our lead Partner, Vos a SZeS Benesov and its Coordinator, Monica Brozova. The faith that they put in us to participate in the Project and Monica's drive to complete it are worthy of the highest praise.

A final word of thanks goes to the Employers of many of the students from Easton College who participated in the Project, the majority of whom were full-time Apprentices. The visits often coincided with very busy seasonal work where these Apprentices were valued members of a team engaged in tillage, planting or harvesting. Their employers never lost sight of the bigger picture, the development of skilled operators and potentially, the next generation of Farmers and Managers.



**How we encouraged our students to join the Project?**



Easton  
+ Otley  
College

# ERASMUS PROJECT 2019 - 2021





# WHAT IS THE ERASMUS PROJECT?

- Fully European funded programme for Agricultural and Animal Management students
- There are four countries involved which are UK, Sweden, Denmark and Czech Republic
- The programme runs for two years
- Not impacted by Brexit decisions



Erasmus+



# BENEFITS OF THE PROGRAMME

- You will get to see advanced and new technologies in animal production, soil science, crop production and so on
- Visit farms and agricultural companies across Europe
- Attendance at workshop and excursions
- Learn more about culture of other countries
- Great work experience to support your future career





# ENGAGEMENT

- There are ten spaces available which will be offered out amongst 6 college departments
- This will form part of your study programme and you have the opportunity to mould this project to your interest
- There will be four meetings across the four countries in Autumn 2019, Spring / Autumn 2020 and Spring 2021 (dates tbc)
- The first meeting will be held 21-25 October 2019 in the UK across Norfolk, with the initial meeting being held at Easton
- You will be expected to host on this week which is half term so requires additional commitment
- Your work will be agreed with by your tutor and/or employer





# TRAVEL

- You will travel to the additional 3 countries
- This will require that you have a full British passport
- You will also require a EU health card
- Permission will be required from parents if you are under 18
- The trips will be escorted by 3 members of the Easton staff
- All travel is funded with no cost to yourself





# HOW TO APPLY

If you would like to take up this amazing opportunity please contact your course tutor who will discuss the next steps with you





## **Transnational Learning Activity in the UK in October 2019**

We were pleased to host our visitors in such agreeable weather. Euston Farm Manager, Matthew Hawthorn is a long standing friend and associate of Easton College, offering work experience to many foreign students over the years. His wealth of knowledge and ability to actively engage his visitors in the activities on the farm during the visit challenged them to question his farming methods and offer suggestions as to how to improve his business. Whether he is speaking to degree level students or young children in Primary School, of any nationality, the response is positive and no one leaves Euston without something to think about in the future.

Another long standing associate of the College, Herd Manager Andy Marsh of the Binham Herd, gave an insight into how the use of technology in monitoring herd performance on an individual cow basis, in conjunction with business diversification in a popular tourist area, has allowed a relatively small herd to flourish. In an industry where the drive for economies of scale in a commodity driven market has caused small to medium sized farms to give up dairying and merge into partnerships with other farms, Abbey Farm continues to thrive. The message to students, size is not everything. Assess your own situation and use local resources to your advantage.

The visit to the John Innes Institute was very much a privilege for us, it is not often we get to see the cutting edge of plant technology at such close quarters. Our hosts gave us clear and concise descriptions of their work, everything from GM experimentation to controlled environment horticulture and the development of so-called 'vertical farming'. Three years later we were to see this for ourselves on the outskirts of Prague.

### **Brief Survey Results – Easton Students comment on October 19 Project meeting**

#### **Agriculture in the future**

##### **Abbey Farm Dairy**

- **Suggestions for the future for more efficient farming**
  - Develop a more organic farming operation
  - Robotic farm; feed pusher, floor scraper, automatic milking.
  - Automatic feeding system that makes sure the individual cows gets the feed it needs to maximize potential milk yields.
  - Less attention on the fieldwork and more focus in the cattle shed and other milking facilities.
  - More surveillance could make it easier to find problems and make the operation more effective.
  - Open the farm to the public, so the public can see that the animals are healthy and in good conditions. This could help change public perception and illuminate negative stigmas surrounding the dairy industry, which will bring more consumers and the farmer could earn more money.

##### **Euston Estate**

- **Suggestions for the future for more efficient farming**
  - Use more drone technology, if the government makes it legal. This will make it a lot easier for them to watch the crops and the fields. Also, with technology that can

spot weeds or different kinds of diseases that the drone will be able to spray with a lot higher accuracy than a normal sprayer.

- Find ways to use organic nitrogen oxides and how to save as much residue as possible.
- Find alternatives for a biogas plant, so that they don't use that much land for energy and then use it for food production instead.

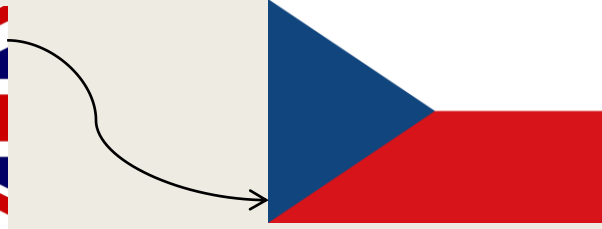
### **Easton and Otley College**

- **Suggestions for the future for more efficient farming**
  - Increase the capacity of machinery, to add more practical training, so that the students can go out and try it for themselves.
  - Improve the funding, so that the school can get more out of the facilities with animals. Also bringing back the dairy farm, so they can educate the students more and opens for more opportunities for the students.
  - Increase the pig production, as it is a good enterprise for the college. This will make the budget go up, so that the college can improve its facilities.



### **Transnational Learning Activity in the Czech Republic in April 2022**

Our student group Leader, Ellamae Hinsley has compiled a Powerpoint of our visit to Benesov.



# Czech Republic

## 2022

Team UK



**EASTON  
COLLEGE**





# Introduction

Who are we?

# Monday

Dairy farm

Biogas



# Tuesday

Official Welcome

Team CZ and team DK presentations

Team Sweden and team UK presentations

School tour

Drone demonstration and visit to school farm



# Wednesday

Company Pöttinger

Company Eurofarms



# Thursday

Farm Miller

Visit to Prague (tour de Prague)





# Farm Miller



FARM MILLER WAS A FULLY AUTOMATED DAIRY FARM.

HERE ARE SOME VIDEOS OF THE AUTOMATIC FEEDING MACHINES AND SCRATCHING MACHINES.

# Friday

Dairy Farm tour

Discions with students and teachers at Benesov school

Konopiste Castle



During the visit we had the opportunity to see drones demonstrated and it was fascinating to compare how the main obstacles to their use were from restrictive legislation rather than practicality. The UK certainly appeared to be creating a more restrictive environment in which to operate.

We visited the Pottinger factory where we saw a wide range of tillage equipment being manufactured and heard about the potential impacts on world food production from the developing conflict in Ukraine.

### **Miller Family Farm Visit**

#### **Notes from Mel Newton, Easton College**

Miller family likely originally from England.

Few km from centre of Prague

This year is 30th anniversary of the farm, studied at university

25 acres of land owned

Contracts / Rented approx 800 hectares of land given back after communism

Total 900 hectares of land

In the last 30 yrs developing the farm to what it is today

3 partners, 3 children

Oldest daughter married farmer and work nearby - work cooperatively together fruit juice and alcohol.

Export to Belgium Russia

Produce alcohol – plum (Slivovice)

Centre of the farm, offices stores, 80% of whole crop

Stables for cattle and milk farm

Son and Mr Miller responsible for plant production working 900 hectares

Use newest modern machinery, to be able to farm large areas

The land is split into 9 different parts each 10 hectares

Most important crop is wheat - 330 hectares

Barley 180 hectares

Rapeseed

Sugar beet

Corn and Lucerne for the rest to feed the cows 60 hectares

350 cows, Holstein and Jersey

Sell the milk to a family farm for processing,

8 movable shops to sell the milk

4000 litres of milk per day sell 200-300 litres from the farm front vending machine

Dairy companies buy milk and produce cheese - sells raw milk but need to advertise is raw. Also pasteurise.

Vending machine /litre 40kr

30 Czk from the vans

The vans regularly visit spots on a timetable

E-shop to buy different products from farm and family

Main produce feta cheese, but it stopped being cost effective because of supermarkets that pushed the prices to being too expensive

Online delivery of food and produce follows the high quality of the system, fresh unpasteurised need consuming within 3-5 days

Colleague farmer has free range hens, sells the eggs

Honey sold directly not through supermarket

Cooperate with 12 different farmers specialising in different products, meat, eggs and honey - local produce family production

Hard to employ workers to maintain the business and keep customers who are price orientated. All about the quality!

To get license to sell raw milk, have to go through same health and safety process as in the UK

Use robotic milking system to help with hygiene, vet inspections support with accreditation worth doing because people want the raw milk.

Construction company because of the finances to support the farm

Arable land 20kr 20 years ago, now 50kr

Building land fetches 7000kr

EU support about 5400/hectare need to pay rent of 6000 kr/hectare

Use newest technology, John Deere, SAT NAV to bring farming into modern technology

## MECHANISATION

Farm has been built from nothing, the goal is to be able to work the farm with minimum employees, use cameras and machinery to do jobs of people  
phones can coordinate machines.

Mr Miller will be retiring and handing over to younger generation

The visit to the Miller family farm on the outskirts of Prague was certainly one of the most fascinating farm visits I have ever been on anywhere in the world. Anything that could be automated had been automated. The cows and youngstock were well cared for and the focus was not pushing for maximum yield or growth rate but more for work/life balance and quality of the working environment. The Miller company were close enough to Prague to be able to sell a quantity of their output directly to the public and to local stores. They had many other enterprises including constructing houses which led me to ask whether the dairy operation was subsidised by these operations. The bottom line was for about the annual salary of one worker, the dairy operation could operate in this way, it was the genuine interest of the owner and I very much admired him for that. Profit must be made and cash is king for sure, but we are only here on earth once so it makes sense to make life as desirable as it can be. Food for thought for both students and staff alike.

To complete the trip we visited Konopiste Castle, a trip that captivated this UK group of students as much as any group I have experienced in almost 20 years of visiting Benesov.

### **Sweden Trip 16 – 20 May 2022**

#### **A diary by Leo Leadley, Easton College Crop Technician**

Today was the first day of the Swedish trip and we left Easton college at 1 in the morning and travelled to Heathrow Airport via taxi. We then met up with all the other trip participants. We boarded the flight to Stockholm and then another flight from Stockholm to Gothenburg where we met up with the participants from the Czech Republic. We then got on a coach and travelled to Vaderstad where we stayed in a Hostel where we met up with the Swedish and Danish students. We visited together a local dairy farm where they had their own biogas plant on the farm. They feed the plant manure and maize and use the energy on the farm and the bio fuel is used in the farmers car and tractor. It is a big investment and the farmer believes he will start to see a return on his investment in around 10 years time. It was interesting to see the setup and all the equipment which is involved. After that we went to a local town and had an evening meal of pork and Potatoes. We then went back to the hostel where we played cards with the Czechs. It was a long day.

Today was the second day of the Sweden trip. We woke up at the hostel, had breakfast and got all our luggage together and loaded up the coach. We then travelled to the Vaderstad factory for our tour and demonstration of machines. We began with learning about the history of vaderstad and they were founded in 1962 by Rune Stark as he couldn't afford to buy a cultivator so he built a rigid tine harrow out of scrap metal. We then learnt about the current business and how many different disc and tines they currently make. After that we had a walk around the current new machines they were making as well as a proto type drill which was a precision drill for cereals. We then went into the demonstration field where we saw demonstrations with a Vaderstad carrier and topdown cultivators. We also saw a Vaderstad rapid 600s drill working. I was very impressed in how well the topdown incorporated the previous crop but on the negative side it needed 80 horsepower per metre to pull it and I did think it didn't leave it completely level. After the field demonstration we had another look round the machines they currently make and then had a look around the shop. We then got back on the bus and we travelled to the school to see their school farm and experimental fields. We saw gardens/ nursery's, and the animal care unit. We had a look around their machinery they use at the college as well as looking at some of their livestock and fields. It was much more modern than Easton college and was obvious they receive more funding. The college also has much more land and more machinery. After that we travelled to Varberg where we were staying in some beach houses. They were two bedroom bungalows with a kitchen, shower and living room along with a nice decking where we spent the evening socialising.

Today in Sweden we woke up early to go and have breakfast at the Munkagard college which is the agricultural college in Sweden. After breakfast we went into one of their lecture halls where we were going to be doing prepared presentations about our colleges and what we study as well as talking about where we work and what we do on the farm. There were presentations from the Czechs, the Swedes and the Danish. It was very interesting to hear what everyone does back home especially the

Danish as they all worked for big farms and contractors. We then had lunch and got on a bus to go visit a local arable farm. On this farm they use a Claydon direct drill and they demonstrated against ploughed land how much better the drainage was with the direct drilled. This was on some fairly heavy land but back on their sandy soil they used a topdown and traditional Vaderstad disc drill. They also gave us a tour of the farm yard which was very interesting to see all there different bits of kit. After that we visited Berte mill which was founded hundreds years ago but now is very modern and produces high quality flour. We then travelled into the town of Varberg where we went to a Chinese buffet restaurant. The food was excellent and we then finished the night in a sports bar watching football. It was a very busy but very informative day.

Today was the last full day visiting Sweden. We started the day with breakfast at the Munkagard college before they took us on a tour of their college. The students presented the tour and we saw all aspects of the college. We then had lunch and after lunch we met an expert on Swedish agriculture Anders Axelsson who prepared for us very interesting worksop. We then went back to the college where we had a BBQ.

Today was time for discussions and conclusion of this event. In the afternoon we visited Goteborg with guided tour. In the evening we said our goodbyes to the fellow groups. We had a group photo and then went back to the beach houses where we packed our bags ready for the morning and had a few beers with some of the Danish boys. In conclusion, it was a very good end to our stay in Sweden.



## **Final Word – Charlie Askew , Coordinator, Easton College**

In summary I would have to say that our Swedish hosts put on a great programme, visits, workshops, and social events. The logistics of hosting such a large group of visitors at quite short notice was a big ask and the Munkagard team rose to the challenge magnificently.

The students were mightily impressed by the visit to the Vaderstad factory where the quality of the information on tillage systems and sustainable soils, backed up by practical demonstrations, enhanced their learning and broaden many minds. It was a perfect ending to our project, all Easton students saying how much they had learned from the Project and from talking to their partner Colleges from Benesov, Green Academy and Munkagard.

When asked what they would remember most from the Sweden visit it was pleasing to hear that not only did the big tractors and state of the art tillage equipment make an impression but also the importance of soil health and sustainability, backed up by demonstrations of drainage capacity. In an unusually hot year, the performance of soils where minimum tillage/direct drilling took place was a surprise to those who have always used the plough. A great example of getting the next generation of farmers to tackle the challenges of the future.



**Challenges for UK Agriculture – How Norfolk and Suffolk can cope with the greatest changes in living memory**

# AGRI-FOOD - FEEDING THE WORLD

**Norfolk and Suffolk has some of the most productive farmland in the UK. This supports an advanced and nationally significant food and drink sector and a world-leading research base which is at the forefront of global food and health research. These strengths put us at the heart of a healthy food future.**

The region plays a vital role in UK food production. But the sector is undergoing the greatest changes within living memory - farming subsidies, trade arrangements, climate change and labour shortages.

Businesses need specialised support as they adapt. Norfolk and Suffolk's strong climate science, automation and plant science innovation expertise presents the opportunity to address some of these challenges, continuing to pioneer and apply new approaches to sustainable agriculture. We are in a good position to increase value-added processing, exports and embed sustainable practices throughout the food chain by utilising our strengths in clean energy and digital innovation.

## *A regional focus for agri-food innovation*

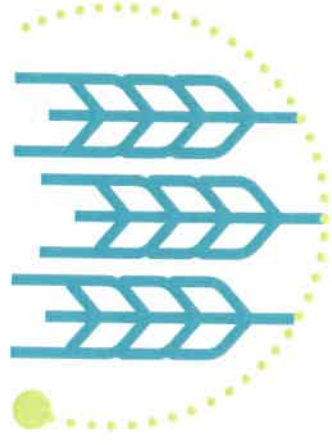
Norwich Research Park is at the forefront of global agri-food research and innovation. It is making a leading contribution to the challenges of food and

Right - Our region grows 12% of the UK's cereals

energy security, healthy ageing and environmental change. It brings businesses together with research organisations with global reputations - the John Innes Centre; the Earlham Institute; the Quadram Institute; The Sainsbury Laboratory; and University of East Anglia.

*This supports an advanced and nationally significant food and drink sector and a world-leading research base which is at the forefront of global food and health research.*

The major commercial opportunities arising from this expertise have been acknowledged by the Department for International Trade (DIT) who have designated it as a High Potential Opportunity in nutrition.



The Centre for Fisheries and Aquaculture Science (Cefas), in Lowestoft, is a world leader in marine science and technology providing innovative solutions for the aquatic environment, biodiversity and food security. The planned collaborative Marine Science Campus will promote and develop local talent to support clean growth and offer cross-sector opportunities. Cefas is working with partners such as UEA and the new Broadland Food Innovation Centre to explore opportunities around aquaculture and seaweed. This work supports partners such as the Renaissance of the East Anglian Fisheries to ensure a sustainable and profitable future for the East Anglian fishing industry.



**Agricultural businesses make up 9%, compared to 4% nationally**





→ **The climate, labour and technology challenge**

Climate change will have a significant impact on agriculture. Changing rainfall patterns are already leading to water quality concerns and abstraction restrictions which need proactive collaborative solutions. Biodiversity and healthy soils are key to a sustainable environment and effective carbon capture. The University of East Anglia has developed evidence to inform natural capital projects and are working on new sustainable farming approaches with conservation farmers, such as the Holkham Estate in north Norfolk.

Controlled environment farming is an emerging specialism for the area, especially with Bom Group's tomato greenhouses in Cantley and Ingham and the development of the UK's largest vertical farm at the Food Enterprise Park on the outskirts of Norwich. There are also game-changing capabilities for agri-food businesses to take advantage of including 5G, satellite applications, robotics and drones on offer at Adastral Park through BT's global R&D headquarters and the wider Connected Innovation network. This adoption of technology would improve productivity and sustainability across the supply chain. It could also address labour challenges and create high skilled, high paid jobs.

Local businesses have a growing appetite to meet these challenges and with the right kind of support, there is significant opportunity to improve idea diffusion throughout the sector.

**Right** – Our region is home to a world-leading research base which is at the forefront of global food and health research.

→ **Increasing processing value**

The region's advanced food and drink processing sector and specialists in growing markets, like plant-based foods, have the potential to grow in domestic and international markets. The enhanced use of technology and other innovations presents opportunities to increase productivity, enhance sustainability and reduce emissions and water use. The area only processes 50% of the food it grows. There is a substantial opportunity to add value, a 50% increase in high-tech production would add more than £2bn to the economy. There is strong commitment to help businesses develop the right skills and technology needed to embrace these opportunities.

→ **Collaborating to grow**

Eastern England is the UK's food gateway to the world - the single most important area for export and import of food in the UK. We are working with partners in Lincolnshire, Cambridgeshire and Peterborough to develop major regional initiatives in shared areas of interest – automation, agri-tech, plant science and nutritious diets – which present significant opportunity and will unlock our collective potential. Together we can drive the transition to net zero, support with healthier diets, deliver the levelling up agenda, and support a strong global Britain.



**12%**  
of the UK's cereals



**16.6%**  
of the UK's fruit & vegetables



**22.7%**  
of the UK's pigs



**17.6%** of the UK's poultry production



**60%**  
of the UK's sugar



## Local partners will work together to:

### **Deliver a regional innovation support programme**

at the Broadland Food Innovation Centre and establish a regional Food and Drink innovation cluster to add value by significantly increasing the amount of local produce processed locally.

### **Maximise the potential of the Food Enterprise Zones in Norfolk and Suffolk,**

attracting investment to and capitalising on the Freeport East opportunity.

### **Develop collaborative investments**

where there are economies of scale in storage, distribution and processing as a catalyst for adding value to our agricultural products.

### **Collaborate across the region to develop new projects that harness research strengths**

to support clean growth and develop automation solutions contributing to address labour shortages.

### **Develop a world-leading hub for plant and microbial research**

at the John Innes Centre with The Sainsbury Laboratory and explore its translational potential for agri-food innovation and growth.

### **Work with farmers, land managers and environmental specialists**

to target environmental land management initiatives, maximising natural capital and enabling productivity.

### **Grow skills provision for the agri-food sector**

to ensure future farmers are equipped with the knowledge needed for sustainable land management, and support those already in the sector with the right skills to adapt to new opportunities.

#### Measures of success:

- *Businesses supported to innovate and grow, and the case made for successor investment*
- *New inward investment secured*
- *Collaboration leads to a pipeline of new regional initiatives which secure funding*
- *An increase in translational and spinout activity with new products and processes developed*
- *New environmental schemes developed and delivered, informed by excellent natural capital data*
- *Growth in agricultural productivity and increased take-up of sustainable methods of production*
- *New business investment, and inward investment to establish new production facilities to meet local demand thus shortening supply chains and reducing food miles*



Left – Food processing