وزارة التعليم العالي والبحث العلمي

MINISTERY OF HIGHER EDUCATION & SCIENTIFIC RESEARCH

Mouloud MAMMERI University Of Tizi-ouzou
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جامعة مولود معمري – تيزي وزو
كلية الآداب و اللغات
قسم الترجمة

Item number :.....
Serial number :.....

A dissertation submitted in partial fulfilment of the requirements for the master's degree in Translation.

DOMAIN: Foreign Languages
SUBJECT: Translation
SPECIALITY: Translation Arabic/English/Arabic

Title

Difficulties of Translating Industrial Agriculture Terms from English into Arabic Language.

Case study : selected videos from youtube channel

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Dedication

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Abstract

DEDICATION

I would like to dedicate this work to my family and relatives,

To all my friends and all the administration staff, colleagues and teachers

And To all the persons who supported me to accomplish this work

Thank you

Djedjiga

I would like to dedicate this work to my sweet and loving parents for their support,

to all my friends , collegues, the administration staff,

and all those who know me and who would be interested in reading the dissertation.

Nassima

ACKNOWLEDGMENTS

Foremost thanks to my god for giving me the patience and the ability to achieve this work.

I would like to express my sincere gratitude to my supervisor Pr. Kherroub Mohand Ou yahia for his guidance, encouragement and advice throughout the fulfilment of this Master Dissertation.

Besides my supervisor, I would like to thank the administration staff and all the teachers of the Translation Department for their support during these two years of master studies; also, I owe a special thanks to the jury panel who accepted to evaluate this research.

Djedjiga

I'm thankful to almightly Allah for giving me the strength, knowledge, ability to undertake this work and complete it.

Also, i would like to thank my respected supervisor Pr.Kherroub Mohand Ou Yahia for his guidance; encourgement and his precious time to complete this dissertation, as well as thanks to the teachers and the administration members of translation department for their support.

And I'm deeply grateful to my parents for their love, support,prayers, and their interest in my academic achievements.

Nassima

General introduction

General introduction

Translation is a mean of communication between cultures and civilizations, it plays a pivotal role in transferring scientific and cultural heritage throughout history, as it links the past to the present and enriches various aspects of our life by helping us to understand all the official and current matters in different fields such as literature, science, medicine, agriculture and technology.

Today, with the development of technology and the appearance of industrial agriculture in western civilizations, translation became necessary in transferring scientific works and modern agricultural technologies to the Arabic world. However, through translating the new concepts and terms related to agriculture the Arabic world will benefit from them in achieving economic development and trade exchange, as well as providing knowledge about industrial farming will help to ensure food security in the Arabic countries.

This piece of research entitled **Difficulties of Translating Industrial Agriculture Terms from English to Arabic.** And is an attempt to analyse the terminology used in modern agriculture through the translation of our corpus and giving examples, it's main aim is to explore the difficulties of translation and discover the methods of translation that may be useful to overcome these difficulties and facilitate communication on agricultural issues.

We choose to handle this subject for many reasons that could be classified in two categories:

The objective one's are our attempt to show the difficulties of translating agricultural terms and overcoming them, help farmers to adopt the modern technologies used in agriculture and remove language barriers by providing efficient and smooth communication between Arabic and foreign countries on agricultural business .

And the subjective one's is our interest to discover the role of translation in the field of agriculture, our desire to study the new terms used in modern agriculture to enrich the Arabic dictionary, as well as the importance of agriculture in our life and the modernity of the topic give us the passion to deal with this research.

In order to achieve our aim we asked the main following question:

- **What are the difficulties of translating industrial agriculture terms from English into Arabic Language?**

From this research problem, we drive the coming questions:

- How do we translate the industrial agriculture terms?
- What are the appropriate methods for translating the terminology of industrial agriculture?

To provide answers to the above-mentioned questions we suggest the following hypotheses:

- Relying on professional vocabulary and specialized glossaries could the right way to translate industrial agriculture terms.
- The lack of equivalence and other linguistic and cultural mismatches between Arabic and English language could make the process of translation difficult.
- Probably the theory of Vinay and Darbelnet is the appropriate method for translating industrial agriculture terminology.

In order to answer the previous questions and affirm or disapprove the above-mentioned hypotheses we will accomplish an analytical study. whereby we will deal with transcript translation then propose our own translation to the corpus which consists of three videos taken from YouTube channel, under the following titles: 'the future of farming',' industrial agriculture and climate change: a vicious cycle' and 'top 15 best modern farming technologies in 2021' . These videos are full of terms related to industrial agriculture and matches our desire in this research, and we will rely on the comparative stylistics theory of Vinay and Darbelnet because we see that is the most appropriate method to study and analyse the agricultural terminology.

In this research, we relied on many references such as; the book of agricultural English by Georgeta Rata, Florin Sala and Ionel Samfira, (2012), the book of Vinay and Darbelnet, (1958) and the online dictionaries like Cambridge English dictionary and the Arabic dictionary Almaany.

As we have developed a research plan, in which our work is divided into an introduction and two chapters: the first chapter will be theoretical and the second one will be practical.

The first chapter is entitled 'industrial agriculture and the specifities of its terminology, in the first part of the chapter we will define industrial agriculture, give a brief history about it, then mention its characteristics, as we will explore the modern industrial agriculture technologies and innovations. After that we move to the second part, 'the terminology related to industrial agriculture', we will try to show the nature and specificities of terms related to industrial agriculture, then we will study the English and Arabic terms of industrial agriculture,

Moreover, we will explore difficulties of translating agricultural terms and present the skills required to translate those terms. At the end of this chapter, we will discuss the theory of translation that we are going to apply for giving answer to the problematic.

The second chapter is a practical part, is entitled ‘commented translation’. We will start this chapter by giving an overlook about YouTube channels and transcript translation, then we move to the presentation of our corpus and discussing the methodology of analysis that we will follow in the translation of the corpus. After that, we will analyse our translation by providing examples according to the theory and methods we adopted in translation and try to set the difficulties we faced during the translation of the corpus.

We will finish this piece of research by a conclusion, where we will sum up the three chapters and try to give answers to our problematic as we will reject or affirm some hypotheses, and then we will present some suggestions and open new horizons for research.

Finally, we will include a list of references and sources that we have relied on in our research, and we will add a glossary of acronyms, and other two glossaries of terms English /Arabic, Arabic /English.

During our research, we faced different difficulties among them; lack of references and sources in Arabic, lack of translation studies and research about the subject, and the theme was very vast , as well as the terminology of agriculture was difficult.

Chapter I : Industrial agriculture and the specifities of its terminology

Chapter I: Industrial agriculture and the specificities of its terminology.

Introduction:

Agriculture plays a vital role in our life, is the main source of our food supply that provides most of the world's food and fabrics, and is the backbone of our economic system. Before the agricultural development, people spent most of their lives searching for food. However, today thanks to technological advancements humans developed new ways to make agriculture the world's largest industry, and the primary source of livelihood that provides not only food and raw materials but also employment opportunities for a large proportion of population. With the new technologies, agriculture has profoundly changed. New ways of cultivation were created and farming process became more efficient especially after the appearance of "industrial agriculture".

Industrial agriculture raised as a new form of farming in the ninetieth century, and it can be defined as the primary system of food production. It depends highly on the use of chemicals, fertilizers, pesticides and technological innovations to raise and cultivate large numbers of livestock and plants to achieve mass production in order to eliminate hunger and ensure food security over the world, and today is the most common type of farming that has greatly shaped the field of agriculture.

I.1. Definition of industrial agriculture:

The term of industrial agriculture is divided into two words: agriculture and Industrial.

- Industrial: the term industrial means the production of goods, from raw materials especially in factories, is the adjective of the noun industrialization that means the process of change from a basic agrarian economy to an industrialized one. (www.oxfordreference.com visited on 08-07-2022 at 20: 48).
- Agriculture: the term agriculture is divided into two Latin words ager/agri means "soil" and "Culture" means" cultivation".(https//:cropforlife.com visited on 04-07-2022 at 11:40).

Agriculture is defined also as an art, science and business of producing crops and livestock for economic purposes.

- Industrial agriculture: Industrial agriculture is the primary system for food production in the United States. The term "industrial agriculture" refers to the type of farming, which raises and cultivates large number of livestock and plants in high-density environment. It uses modern technology to promote faster growth and reduce illness in livestock, and create food products on mass scale, in industrial farming cattle, poultry, pigs and other

types of life livestock are kept in controlled conditions that encourage rapid reproduction and weight gain. Food crops are sprayed with chemical fertilizers and pesticides to promote growth and eliminate insects and other organisms that could destroy them. As it refers to the industrialized production of livestock, poultry, fish and crops, using scientific, economic and political methods, they include innovation in agricultural machinery and farming methods, genetic technology techniques for achieving economies of scale in production, and the creation of new markets for consumption. (www.mossyoak.com visited on 10-07-2022 at 20: 54.)

I.2. History of industrial agriculture:

In the 11th century, the agricultural development began by using draft horse and plow, in the cultivation process. Farmers learned how to maintain soil fertility and the amounts of land under cultivation became larger, and by 1750 agriculture in England became highly organized, there have been a massive increase in agricultural production and this in turn supported Unprecedented population growth that helped the increase of the first industrial revolution by 1780 which brings several innovations and technologies.

The birth of industrial agriculture dates back or came hand in hand with the American industrial revolution that referred as “The second industrial revolution”, In the ninetieth century, and it developed more after the world war two. Industrial agriculture was seen as a necessary measure to address a massive global hunger that has gripped the war-torn world as it has been seen as the immediate remedy to address the growing of global population. (www.dynamics.folio3.com visited on 25-06-2022 at 19: 02.)

However, by the year 1784, people rely on indigenous tools and animal power in farming process and more than half Americans were farmers living in small rural communities. In 1800 C, a profound change occurred in agriculture, by the year 1823, world population reaches on billion people. The first simple threshing machine, horse, down hoes, seed drill came to use. by the year 1890 the steam power replaced horse power, then in 1892 the first gasoline powered tractor was successfully developed and in 1923 the international harvester farm small tractor became the first tractor making an inflation point in the replacement of draft animals with machines, mechanical harvester, planters, trans planters and other equipment were then developed. These inventions increased yields and allowed

individual farmers to manage increasingly large farms, jobs like harvesting crops, milking cows became mechanized, animal and human labor were reduced.

The industrial agriculture arose in the United States through a variety of development in agriculture and it was provided by the industrial revolution starting in the years 1870 and 2000 that resulted in the mechanization of agriculture products manufacturing, water power, electrical energy and transportation developments. Furthermore, by the early 1900s, farmers began to use nitrogen, phosphorus and potassium as critical factors in plant growth, and then new synthetic fertilizers were discovered. These increased the crop yields as it contributed in the expansion of farm size. In addition, the discovery of vitamins and their role in nutrition in the first twentieth century led to vitamin supplements that in the 1920 allowed certain livestock to be raised indoors.

Industrial agriculture was also provided by the green revolution beginning in the years 1940 and 1950, the green revolution transformed farming in many countries and spread several technologies by using scientific methods and technologies knowledge to develop modern crops and agricultural production, these result in the appearance of new crops in the United States like: soybean and Sugar. By the year 1960, industrial methods in agriculture were well established in the United States and other western nations. Synthetic fertilizers increased rapidly and the mechanized methods of farming became the norm, then the agricultural production across the world doubled four times between 1820 and 1975 to feed a global population. During the same period, people involved in agriculture dropped as the process became more automated and agriculture became controlled by automatic tools and technologies through variable rate applications and guidance farming systems. (www.serc.carleton..edu visited on 19-07-2022 at 21:16.) (www.worldencyclopedia.org visited on 09-07-2022 at 19:50.) (Google play application: agricultural books offline. Installed on 19-07-2022).

The green revolution and the industrial revolution changed the ways the world produced its goods and changed the society from having on agriculture base to having one of industry and manufacturing. Industrial agriculture is the primary system of farming and the predominant model of food production as a culmination of social and technological processes that seeks to ensure food security across the world.

I.3. Characteristics of industrial agriculture:

Industrial agriculture is the typical method of soil cultivation and the key source of food production worldwide, and is currently the dominant food production system in the United States, known by mass production and mass marketing to ensure food security over the world. However, this industrial agriculture is characterized by the use of new techniques and technologies in cultivation process, synthetic pesticides and agrochemical products, fertilizers, large monoculture systems, artificial irrigation, CAFO' s, aquaculture.

I.3.1. the use of new techniques and technologies:

Industrial agriculture is a new system of farming that rely on the latest technologies such as smart phones, tablet applications and satellites that provides credible information and data on vegetation state, by generating interactive maps for specific crops like (NDRE.MSAVI) as it helps on seeding and harvesting process. (www.eos.com visited on10-07-2022 at 20:13).

In addition, new techniques are used in industrial farming by relying on modern tools and heavy machinery, which is much faster and efficient than traditional methods in promoting faster growth of crops such as: tractor machete, peak that perform the farming applications like planting, harvesting, cultivating, cutting… and this much easy the work much easier than before for farmers. (www.plantandequipment.com visited on 11-07-2022 at 11:30).

I.3.2. Synthetic Pesticides, Agrochemicals and Fertilizers:

Industrial agriculture involves or depends on large amount of synthetic pesticides and agrochemical products. Herbicides used for destroying weeds and other unwanted vegetation, insecticides to kill or control a wide variety of insects and certain forms of plants or animals life that are considered to be pests, also disinfectants are used for preventing the spread of bacteria and allows plants, animals to survive in better conditions. (www.nieh.nih.gov. visited on 11-07-2022 at 11:25).

I.3.3. Large Monoculture Systems and Artificial Irrigation:

Industrial agriculture is characterized by large-scale monocultures systems that is the practice of growing one type of crops over a large area. Is at the core of industrial land production, and the most common crops are cows, wheat, soybeans, cotton and rice. These crops are typically replanted in the same soil area year after year with no introduction of a different crop to increase efficiency in planting and harvesting and get better yields.

Moreover, industrialized agriculture depends on artificial irrigation such as flood irrigation and drip irrigation that is the use of new systems to control water application through equal distribution of water to the land and growing crops in dry area or during the periods of inadequate rainfall. (www.stray.doginstitute.org visited on 11-07-2022 at 20:45).

I.3.4. CAFO'S System:

The factory system or CAFO'S, is a process of raising livestock by keeping a large number of animals like cows, chickens, hogs, cattle in a confinement for more than 45 days per year. In addition, bring food to enclosures rather than allowing them to graze by using growth-promoting antibiotics, vitamin supplements that encourage rapid reproduction and weight gain to provide maximum output and the lowest possible price. (www.war;nl.com. visited on 11-07-2022).

I.3.5. Aquaculture and Rotational Grazing:

Aquaculture is the cultivation of the natural produce of water like fish, salmon, algae and other aquatic organisms based on fish fed with an external food supply to increase the number of organisms involved and it takes place on land using tanks, ponds or other controlled systems or in the ocean using cages.(Google play store application agricultural books offline. "Intensive Farming" installed on 23-05-2022.).

Moreover, industrial agriculture depends on the use of intensive technologies of crop production and heavy use of large amounts of fertilizers, pesticides, agrochemicals, GMO's, monoculture and meat production in CAFO's. (DUSANKAVACEVIC and BRANKA LAZIK, p: 203). Moreover, this made farming job easier for farmers and the sector of agriculture became more beneficial by gaining more profits and growing production.

I.4. Modern technologies and innovations in industrial agriculture:

Technology is influencing every aspect of our modern lives, and agriculture is no exception, in simple terms, technology may be regarded as the set of skills that allow us to build objects and machines to satisfy our needs. Technology in agriculture, also known as AGTECH, has rapidly changed the industry in recent years by helping farmers to improve efficiency and maximize yield. Some major technologies that are commonly utilized by farmers include: harvest automation, autonomous tractors, seeding and weeding, and drones…

By introducing these game-changing technologies, we can explore new ways to grow and deliver food to the masses and satisfy the new food preferences of a rising generation of digital-natives consumers. Emerging technologies can help address these challenges. Here we consider some emerging technologies in agriculture:

I.4.1.3. Vertical farming:

Vertical farming has come to urban areas. Indoor vertical farming is the practice of growing produce stacked one above another in a closed and controlled environment. In place of natural sunlight, artificial lights are used in growing. Vertical farming is not only scientifically viable but will be financially viable within the decade. It is basically a component of urban agriculture that produces food in vertically stacked layers. It is not limited to just urban environments. It can be used in all areas to make better use of available land. Vertical farming can increase crop yields, overcome limited land area, and reduce farming impact on the environment. Due to the ability to grow year-round, this kind of indoor farms are expanding across the US.

I.4.1.4. Robots:

Agricultural robots are also known as AGBOTS. Robotics is the use of robots or automated machines in place of humans to perform physical tasks. Robots are employed by farmers to automate agricultural processes, such as harvesting, fruit picking, soil maintenance, weeding, planting, irrigation, spraying, weeding, etc., which seemed to be too delicate for robotics in the past. Robots improve productivity and would result in higher yields, they also reduce the work force.

I.4.1.7. Block chain:

Block chain consists of a shared or distributed database used to maintain a growing list of transactions, called blocks. Block chain technology, often called the chain of trust, can support transactional applications and streamline business processes by establishing trust, accountability, and transparency. Although block chain was first largely applied in financial industry as the technology that allowed BITCOIN to operate, it has applications for many industries including agriculture, healthcare, insurance, pharmacy, and manufacturing. Block chain capability of tacking ownership records and tamper-resistance can be used to address issues such as food fraud, safety recalls, supply chain inefficiency, and food traceability. The record of a food item’s journey, from farm to table, can be monitored in real-time. Block chain enables verified transactions and creates a marketplace with immense transparency.

I.4.1.8. Sensor Technology:

This is the most popular technology. Farms are finding it affordable to place sensors strategically throughout their land in order to ripe many benefits. Sensors along with image recognition technologies are allowing farmers to view their crops from anywhere in the world. Sensors help agriculture by enabling real-time traceability. They would enable a real time

understanding of current farm, forests or water condition. They are helping to monitor and manage livestock and crop production. They also help the farm be more environmentally friendly by conserving water, limiting erosion, and reducing fertilizer levels in local rivers and lakes. After crops are harvested, RFID sensors can be used to track food products from the field to the store.

I.4.1.10. RFID technology:

RFID stands for Radio Frequency Identification. It refers to technologies that use radio waves to identify object, animals, or people. Due to its low energy consumption and adaptability to different environments, RFID has found applications in many fields. RFID uses radio frequency waves to identify and track tags connected to objects. RFID technology is used to track all sorts of items. RFID tags and RFID readers can be used to manage agricultural inventories. For example, a bag of rice can have a barcode that can be scanned with your smartphone to retrieve information about the rice.

I.4.1.11. Drones:

Drones are autonomous or remotely controlled multipurpose aerial vehicles driven by aerodynamic forces. They are devices which are capable of sustained flight and do not have a human on board. Drones are increasingly being used as innovative tools in agriculture. The only way farmers can get a bird's eye view of their fields is from a plane or a drone. Drones are being used for crop monitoring and spraying chemicals on crops, drones can produce3D Imaging that can be used to predict soil quality. Sensors attached to drones can be used to monitor crop health, soil health, or detect weed data in crops. Ag–focused drone manufacturers include AG EAGLE, AEROVIRONMENT, and SENTERA. Drones are now regulated by the FAA in the US.(international journal of scientific advances: Emerging technologies in agriculture, p: 31, 32, 33).

Conclusion:

Agriculture plays a vital role in the social and economic development of most developing nations and is the main contributor to their economic growth and stability. Through the application of modern technologies, agriculture has undergone extensive changes during the past century. These technologies are producing new machinery and process techniques for the production, postharvest handling and agribusiness. They are also resulting in innovations in agriculture that make agriculture a sustainable, profitable, and competitive enterprise. The challenges posed by today and tomorrow's global food demand will continue to push the agriculture industry towards technological innovations. Although new and emerging

technologies promise to advance the plight of farmers (facing increasing pressures such as climate change, land scarcity, animal feed availability, price stresses, and soaring input costs), a number of economic, infrastructural, and regulatory obstacles hampers the choice of farmers to adopt new and emerging technologies.

Globalization has brought greater awareness of opportunities and alternatives for farmers to enhance their incomes. Progressive farmers are helping in diffusion of better agriculture technologies in their geographical areas. This makes the agriculture industry to continue to evolve as a dynamic and consumer-driven sector.

Chapter I: Industrial agriculture and the specificities of its terminology.

Introduction:

A century ago agriculture was primary a local concern, and farmers often personally know the customers who ate the food they produced. Today, the situation is very different and agriculture has become an international business where food travels not just across the country but also around the world. Agriculture became more developed with new technologies and innovations, this led to the necessity of communication between countries to co-operate and exchange knowledge to provide trade and food. However, agricultural translation plays a pivotal role in farm safety, machine handling, and selling products abroad through supporting agricultural business and removing language barriers to international Trade by providing efficient and smooth communication between countries on agricultural issues. Moreover, providing translation for a complex sector like agriculture demand special terminology and terms, as it requires many skills to end up the difficulties of translation especially when it involves two different languages like English and Arabic. So, how can we describe the English and Arabic terms of modern agriculture? In addition, what are the required skills to end up the difficulties of translating agricultural terms?

II-1 the nature and specificities of terms related to industrial agriculture:

II-1-1- the nature of terms related to industrial agriculture:

Today, modern or industrial agriculture rely on the latest innovations and technologies in farming process, it combines between different fields such as biology, economy, industry and science. These influenced languages and result in the creation of new terminology and terms to express the new ideas or concepts. However, in order to give translation to these terms we should have a knowledge about the nature of terms that involve in industrial agriculture.

II-1-1-1 Definition of term:

A word or group of words designating something, especially in a particular field, as it can be defined as any word or group of words considered as a member of a construction or utterance. (www.dictionary.com visited on 25-10-2022 at 20: 27).

II-1-1-2 Definition of terminology:

Is a set of special words belonging to science, an art, an author or social entity. In addition, is the language discipline dedicated to the scientific study of the concepts and terms used in specialized languages. (Silvia pavel, Diane Nolet, handbook of terminology, 2001: 119).

Agricultural language is a register which is different from other fields, is unique and use specific language related to sciences, is characterized by its professional vocabulary and informative terminology with a series of specialized glossaries.(Denisa Barbuceanu, p:17-18) And the terms used in industrial agriculture are technical and non-technical words.

II.1.1.3. Technical terms: are words that were defined as terms denoting field specific concepts and these technical words are sub-classified into nine groups that reflect the concepts of the discipline:

- **Object and entities**: this group represent words referring to natural things, material artifacts and abstract entities such as plants, parts of the plant, pests and control instruments. For example:

  -The root of the plant.

  -use fertilizer to increase yields.

- **People**: a group that include words referred to individuals involved in activities specific to agriculture. For example: producers, farmers, growers.....
- **Natural phenomena**: words related to weather and natural resources. For example: water, rain, frost....
- **Processes**, **operations and actions**: contains verbs and nominalization referring to natural events or phenomena and actions performed by people. For example:

  -It's the best time to harvest.

  -Crop yields are destroyed by pests and disease.

  -Gather strawberries.

- **Proprieties**, **states and qualities**: this group include adjectives and nouns with a specialized meaning used to describe elements of the discipline such as entities and actions.

  For example: the symptoms in dry bean are similar to soybean.

- **Time**: this group contains words referring in moments in which typical agricultural activities are carried out or certain phenomena take place: for example :

  -the US estimates that each year between 20% and 40% of global crop yields are destroyed by pests and disease.

- **Regions and areas**: a group representing places where agricultural and research activities are generally performed using proper names. visited on For example:

- Researchers at Harper Adams in the UK plan to grow and harvest an entire hectare of barely.

-the grower is alerted on his device when a troubled area is identified.

- **Chemical nomenclatures**: a group include chemical symbols such as P for phosphorous, K for potassium, N for nitrogen.
- Finally, a group of " **units of measurements"** consisted of three words that represent measures: inches, bu, and ibs used in agriculture to refer to planting practices, size of plants and weight or volume. For example:

-seeding deeper than 2 inches should be avoided....

II.1.1.4. Non-technical terms: do not express meanings that are discipline related but refer to meanings that are common to different fields, and were sub- classified to six groups:

1. **The group of tense**, **aspect**, **and modality**: included words denoting temporal deixis , notions of time and evaluations about the propositional content of the text. A special groups of words that denoted notions of time were nouns and although these nouns are not technical terms in strict sense when combined with technical words they can be said to convey specialized meaning. For example: harvesting time, planting date.
2. **Group of " elements of the subject matter"** described: represented terms of quantities and other proprieties, including adjectives, nouns that tended to co-occur mostly with technical words. For example:

   -High humidity, -additional nitrogen , - amount of fertilizer.
3. **Group of " relation between entities"**: included words signalling relationships among specialized concepts. both in the context of the text and in the real world , to link different ideas or sections of the text include subordinators such as : whether, even if, as long as , even though , as a result and sentence connectors such as : also , so , in addition and the words used to signal relations among entities in the real world included verbs which describe cause effect relations such as : cause, include, provide…
4. **Group of " elements of scholarly practices"**: include items related to research process; some of these words describe research method and procedures. For example: the most effective method, these data are, of a similar field…
5. **Group of the text domain**: include items used to draw the reader's attention to parts of words used to directly address the readers for recommendations and instructions, and word used to perform linguistic acts:

-to draw the attention of the reader for example: see the following....., the table above.....

- Instructions, for example: you should consider, use the best quality.....

-linguistic act like: point out, recommended for.....

6. **Group of others**: contained words whose meaning was essentially general, these items did not represent concepts specific to agriculture. (Veronica Lilian Munoz, p: 34,35,36).

So, in industrial agriculture a specific and standard language is used, as it involves scientific concepts that are expressed through technical words to convey discipline specific propositional content, and non-technical words to evaluate the propositional content that is important guide to the reader through the text ,and this words can be verbs; nouns, adjectives, adverbs, prepositions, connectors, and so on .....

1-2 .Specificities of industrial agricultural terms:

As we have mentioned agricultural English involves scientific concepts that are expressed through technical and non- technical words, and is characterized by its professional vocabulary. However, the terms used in the field of agriculture are specified by accuracy, precision, transparency, unequivocalness, mononymy, appropriate register, conciseness, simplicity, form correctness, derivability, series uniformity, acceptability and poly-functional (Denisa bàrbuceanu. University of Craiova visited on 22-07-2022 at 20:30).

Agricultural terminology differs from ordinary and literacy words since it does not accumulate emotional associations and implications. Those terms characterized by impersonal style, simple syntax, use of acronyms and clarity. In addition, many of terms consist of simple words that are not terms, is characterized also by the peculiarity of the functioning of various terms in it. Moreover, it can be distinguished into terminological groups such as: plant growing, seed production, breeding, genetics...etc. and the main term-forming part of speech is the noun, as there are a large number of borrowed lexical units in agricultural terminology.

Agricultural terminology has characteristics of scientific style like accessibility, unambiguity or accuracy that is the most important factor in the formation of scientific style. In addition, is realized by using special vocabulary (simple, compound terms, phrases, compound syntagms, abbreviations...). Moreover, the degree of accuracy depends on the

author's ability to select those lexical units that would most accurately convey, describe the depicted concept. Also is characterized by comprehensibility and conciseness that are realized through the logical development of ideas and the brevity of the language in agricultural documents to avoid excessive detail or concretization during the description. (Karachunyu.G, English scientific and technical texts in modern linguistic studies, national technical university of Ukraine:11).

Ⅱ-2 English terms related to industrial agriculture:

Today, English is the first spoken language in the world is used in all the fields specially science and technology, and is considered as the mother of the modern innovations. however, any language rely on several morphological ways to build its own terminology to survive, and agricultural sector is very important for any country to develop it's economy and business and offer goods for the population, for this English language use different ways to form agricultural terms such as: affixation, derivation, abbreviations, back formation, borrowings, combination or compounding and conversion.

- **Affixation:**

Words formed by the addition of prefixes or suffixes to the root words to create official or formal words. (www.thoughtco.com visited on 16-10-2022 at 09:59).

For example:

Antibiotics: the prefix anti means fighting or killing and bios is the Greek word life. (www.vocabulary.com visited on 22-08-2022 at 11:56).

Pesticide: from English pest + Latinate cide killer. (www.etymonline.com visited on 22-08-2022 at 11:54).

- **Derivation:**

Words formed from other words by a process of derivation by the addition of affixes such as: prefixes or suffixes. Georgeta Rata, Florin sala and Ionelsamfira, Agricultural English, 2012; 199).

For example:

Harvest: derived from the Anglo-Saxon "haerfest" "autumn" or the Old High German "herbist" the season of gathering crops. (www.britannica.com visited on 22-08-2022 at 11:59).

Biotechnology: bio is a combining form meaning " life" from Greek + technology which is the branch of knowledge that deals with the creation and the use of technical means.(agricultural English , p:6).

- **Abbreviations**:

Is the most widely used term for a shortened or contracted form of a word or phrase. (www.dictionary.com visited on 25-10-2022 at 13:55) or a shortened form of a written word or phrase used in place of the whole word or phrase. (www.merriamwebster.com visited on 25-10-2022 at 14:05).

For example:

CAFO's: concentrated animal feeding operations: the term refers to a facility that keeps a very large number of live animals confined for more than 45 days per year and brings food to their enclosures. (www.nrdc.org visited on16-06-2022 t 14:47).

GMO's: genetic modified organisms: use gene-editing to produce genetically modified organisms. (www.straydog institute.com visited on 10-07-2022 at 20:40).

- **Backformation**:

Is the process by which new words are formed by the deletion of a supposed affix from an already existing word. (www.webdelprofesor.ula. visited on 16-10-2022 at 09:53).

- **Borrowings**:

Are forms borrowed from Greek or Latin and German that are derivatives of independent nouns, adjectives or verbs in those languages. (Agricultural English, p: 4).

For example:

Strawberry: comes from German words " stoh" and " beere". (Agricultural English, p: 272).

Aquaculture: a combination of the Latin term aqua water with culture, which is also from Latin, root meaning agriculture or cultivating. (www.vocabulary.com visited on 22-08-2022 at 11: 50).

Monoculture: mono from Greek origins meaning one single and culture from Latin roots meaning agriculture or cultivating. (www.etymonline.Com visited on 22-08-2022 at 11:45).

- **Combination (compounding)**:

Is a linguistic form that occurs only in combination with other forms, or a bound form used in conjunction with another linguistic element in the formation of the word?

- This combining form may conjoin with:

-Independent word : **for example:** mini-farming: mini is a combining form obtained by shortening of miniature, minimal or minimum with the meaning of small or reduced size + farming : is the business of operating a farm.

-Another combining Form:

For example:

Agrobiodiversity: agro from Greek ″ tilled land″ a combining form meaning ″ field″ ″ soil″ ″ crop production″ + bio a combining form meaning life occurring in loan words from Greek and used in formation of compound words + diversity is the state of being diverse.

-Or with an affix:

For example:

Insecticides: insect from Latin insectrum + cide from French meaning killer. (www.etymonline.com visited on 30-10-2022 at 21:06).

- **Conversion:**

Is a process in which existing or new words are created by using a word in new function (by shifting, changing or converting its original grammatical class to another class) without any change in its form. (www.webdelprofesor.ula.ve visited on 16-10-2022 at 10:23).

For example:

Seeder: comes from the verbal root to sow in proto-indo-European. (www.alphadictionary.com visited on 22-08-2022 at 16:30).

Ⅱ-3. Arabic terms related to industrial agriculture:

With the advancement of science and technology, agriculture became more developed and organized, as it rely on the latest technological tools in the cultivation process and combines between different fields of knowledge. As a result, new expressions and new technical terms started to rise. However, the Arab scholars and scientists were exposed to foreign languages as Greek and Latin through translation as they were rending medical, scientific and technical books from Greek and Latin to Arabic in order to transfer these sciences. this phenomena made it necessary for the Arab grammarians and philologists to create new methods to form new words and accept the foreign terms and neologisms to protect the Arabic language and take advanced step towards modern farming technologies, and the most common methods are; derivation, arabicization, blending and compounding.

II.3.1. Derivation (الاشتقاق):

Is a term used in morphology to refer to one of the two main categories or processes of word formation, and according to Alshehabi, derivation is to form a word from another, but it should be a consistency between them in terms of pronunciation and meaning. Arabic is looked upon as the language of derivation and Arabic philology distinguishes three main forms of derivation. (Alshehabi, p:13).

- **Simple derivation** (الاشتقاق الصغير): modify the stem by adding prefixes and suffixes.

For example; the term "غراسة" على وزن "فعالة" is taken from the stem "غرس " , and it means to practice farming as a job the (glossary of Alshehabi, 2003).

- **Wider derivation** or major derivation (الاشتقاق الكبير) :it is defined as the creation of new words from existing three letter words by conversion and rearrangement of letters. (www.scholar.google.com visited on 23-12-2022).

For example; from the word "زرع"we derived the following words: "مزارع", "زراعة", "مزرعة", "زراعية", "مستزرعة" ,"مزارعين" (from the cropus).

- **Circumlocution/paraphrasing (الاشتقاق بالترجمة):** is a method of introducing new terms into Arabic by giving the meaning of the foreign term. Is also called in Arabic derivation of meaning.

For example, the term agricultural equipment is transferred as "معدّات زراعيّة" here we gave the meaning of the foreign terms by producing new terms in Arabic (from the corpus).

II.3.2. Arabicization:(التعريب)

Is the transformation of foreign terms to Arabic, but these terms should be in harmonization with the phonological and morphological systems of the Arabic language. (القاسمي) is also one of the most factors, which contributed to the rapid modernization of the Arabic language. And is looked upon as an adopted method for introducing new terms into Arabic, it is the process of translating foreign terms using Arabic forms, and is used to preserve the purity of Arabic, standardize the scientific and technical terminology and revive the Arabic- Islamic-cultural heritage. (Ramdan elmgrab, p: 496).

For example: when we take the word ecology from English language, we transfer it according to the linguistic structure and phonetic rules of Arabic language (الإيكولوجية) .(from the corpus).

II.3.3. Blending :(النحت)

Blending is one of the main processes of word formation and is the merger of two words into one to mean or express new concept.

Verbal blending: (النحت الفعلي) is the formation of a verb fro, a phrase or sentence that represent an idea or event.

Adjectival blending: (النحت الوصفي) is the formation of an adjective out of two words.

Nominal blending: (النحت الاسمي) is the formation of nouns from two mutually complementing words.

Reference blending:النحت النصبي) It happens when we relate someone or something to place or country... (مختار الدرقاوي 43,41).

For example: the term under soil is transferred by تحتربة. (Glossary of Alshehabi, 2003).

II.3.4. Compounding or composition (التركيب):

Compounding is a method of word formation where Arabic words are combined with foreign affixes and suffixes or Arabic affixes or suffixes are combined with foreign words. (Darwish. 2009). On the other hand, compounding can be defined as a word that consists of two smaller words or more whose meaning cannot be portrayed by taking each word in isolation. (Buhri. 2006:p.60). and according to Al-Jarf (1994:p.2) compounds can be primary or secondary, in the primary or base-compounds, two derivationally bound forms are connected and in the secondary or stem-compounds all the components of the compound word are stems(free forms). The Arabic use of compounding is very limEited, compound words are usually phrases with normal words-order, and there are different to write compound words in Arabic (Tarek Abdullah al-Hamidi, Milana Abbasova, Azad Mammadov. (2020). a comparative analysis of the Similar Word-formation Process in English and Arabic, 23(4), University of languages, Baku Azerbaijan: 66).

For example; pesticide is transferred into Arabic as,(مبيد الحشرات) and is a compound word divided to "الحشرات"and "مبيد" . (From the corpus).

Ⅱ-4 Difficulties of translating agricultural terms:

Agricultural translation is one of the many types of professional translation, and it becomes a very wide topic which covers various sub-topics such as agricultural goods, crops, natural resources, farm machinery....etc. translating agricultural- related texts can be challenging because this industry has many specialized words and technical terms, and is not only about perfect language, it requires a complex knowledge of different fields, and encompasses a specialized language combining biology, chemicals or life sciences, as well as the registration information needed for trading in different countries and legislation knowledge required for the contracts, statements and permits necessary to move products to market, however; translators or interpreters have to be experts in the terminology of the sector as there is no room for translation error.(www.eurideastranslation.com visited on 19-05-2022 at 17:10).

Due to the fact that Arabic and English are incongruent languages linguistically and culturally the translator is bound to face difficulty in the process of translation between them, especially when the text involves new terms, neologisms, lack of equivalence and other linguistic and cultural mismatches, additionally; finding equivalents in Arabic for technical English terms causes many problems owing to the different nature of both languages, for example; English utilizes Latin and Greek compound morphemes to express some of these technical terms, Arabic in contrast is not flexible as English in either borrowing from other languages or in using compound morphemes, furthermore; most of the technical and scientific terms come from the west, for this those terms are strange and new to the Arab environment and culture making it difficult if it is not possible to find equivalents for every term in Arabic, as there is no agreement among the Arabs on the rendering of scientific and technical terms. (www.researchgate.net visited on 29-07-2022 at 15:15).

Agricultural translation requires a technical translation, and the complexity of technical translation lies in the fact that it must be as accurate as possible, the slightest error can change the meaning of the text and in addition to knowledge of translation techniques, the knowledge of the terminology described in the text is required. The translation of scientific and technical texts is a field of translation activity which professional performance of work is

possible only by highly technical specialists who know the subject area and its specific terminology well.

Translators should have sufficient command of a foreign language and able to correctly express their thoughts in the target language, preserving the essence and original style. As they should have a good linguistic training which necessarily includes skills and abilities, and needs a well-formed professional competence. In technical translation, the term must be part of a strict logical system of logical classification, clearly distinguish between objects and concepts, and not allow ambiguity or inconsistency. In addition, the main difficulty of scientific and technical translation is the need to combine knowledge of foreign language with knowledge of technology. It is required to simultaneously use explanatory and specialized dictionaries in the relevant branch of science and technology, and the translation must have the following requirements: equivalence, adequacy, information content, consistency and clarity of the presentation. For the translator he needs to general and specific skills, abilities and grammatical structure of the foreign language, and he needs to be practical and have knowledge about the types of translations, methods of translations and extra-linguistic knowledge. (B. Abdusalomova, P: 46-47.).

Agricultural translation is a difficult task, it involves one of the most complicated types of translation that require the compulsory knowledge of all terms relating to a specific technical field of translation. the specialist working with scientific and technical texts should understand not only the meaning of the translated words, but take in account all the nuances of their application. In addition, the translator should always maintain the style of the original document where the technical terminology should be clear, and concise. As well as the clear logical sequence of information and correctness in interpreting the facts is necessary. and the main difficulty in translation of technical documentation or scientific works arise if the word has several meanings like in agricultural terminology there are a lot of synonyms, acronyms, and phrases which are not always clear even to technical specialists and it can be difficult to translate. (www.ijeais.org visited on 26-09-2022 at 19:53).

Ⅱ-5 Skills required translating agricultural terms:

In agricultural translation, a scientific and technical terminology is involved. So is very important to maintain a high level of consistency and accuracy. However, in order to translate

agricultural terms or documents perfectly and effectively the translator should earn different skills and follow some specific rules.

However, bell (1991) defined translation as an expert system described into the following competencies and skills:

Grammatical competence: knowledge of the rules, including vocabulary and word-formation, pronunciation/spelling, sentence structure and skills required to understand the literal meaning of utterances.

Sociolinguistic competence: it is knowledge and ability to produce and understand utterances appropriately in context.

Discourse competence: it means the ability to combine form and meaning to achieve unified spoken or written texts in different genres. This competence depends on cohesion and coherence.

Strategic competence: it is the mastery of communication strategies that may be used to improve communication through understanding the source language and produce in the target language.

Extra-linguistic competence: is composed of general world knowledge and specialist knowledge that can be activated according to the needs of each translation situation. The sub-components include explicit and implicit knowledge about translation.

Psychological competence: can be defined as the ability to use all kinds of cognitive and attitudinal resources like reading and writing skills, creativity, memory, attention, critical spirit and self-confidence.

Transfer competence: it is the ability to complete the transfer process from the source text to the target language, taking into account the translation's function and the characteristics of the receptor.

II.6. Methodology of comparative stylistics:

Comparative stylistics of French and English: a methodology of translation was a book published by Jean. Paul Vinay and jean Darbelnet on 1958, written in French language under the title of stylistique comparée du francais et l'anglais; methode de traduction.

Comparative stylistic is based on the comparison of two languages, to allow a more effective identification of the characteristics and the behaviour of each. and is also based on the linguistics structures and the psychology of language users for better understanding the

rules governing the transfer from one language to another, to identify the difficulties of translation that encounter translators and find systematic solution to translation problems, however; this method contains seven procedures of translation that are divided into two parts:

II.6.1. Direct translation or literal translation:

Is to transpose the source language message element by element into the target language and it includes borrowing, calque and literal translation.

- **Borrowing**:

Is the simplest of all translation methods, used to overcome a lacuna, usually a metalinguistic one, is used in order to create a stylistic effect or introduce the flavour of the source language in the translation by using foreign terms.

- **Calque:**

A calque is a special kind of borrowing whereby a language borrows an expression from another language, but then translate literally, each of it is elements, and is divided into two categories:

Lexical calque: is a calque that respects the syntactic structure of the target language, whilst introducing a new mode of expressions.

Structural calque: is a calque that introduces a new construction into the language.

- **Literal translation:**

Literal translation is the direct transfer of a source language text into a grammatically and idiomatically appropriate target language text.

II.6.2. Oblic translation:

When the translators notice gaps in the target language which must be filled by corresponding elements to have the same impression in the two messages source and target messages they use more complex procedures which are; transposition, modulation, equivalence and adaptation.

- **Transposition:**

It involves replacing one word class with another without changing the meaning of the message, and there are two distinct types of transposition:

Obligatory transposition: when the translators do not have other choices, they must apply transposition.

Optional transposition: is when one expression can be translated by using different procedures.

- **Modulation:**

Is a variation of the form of the message, obtained by a change in the point of view, this change can be justified when although a literal or even transposed translation results in a grammatically correct utterance, and there are two types of modulation; optional and obligatory.

- **Equivalence:**

When one or the same situation can be rendered by two texts using completely different stylistic and structural methods, and the most equivalents are fixed expressions, idioms, proverbs....

Adaptation:

It is used in those cases where the type of situation being referred to by the source language is unknown in the target language , and translators have to create a new situation.(JUAN C. SAGER and M,J HAMEL, Benjamin translation library; 2006,pp: 31,32,33,36,38,39).

Conclusion:

Modern agricultural terminology involves a specific and professional vocabulary that is expressed through technical and non-technical words, these terms are characterized by accuracy, simplicity, clarity, conciseness and precision, and they are created by using different methods of word formation in both English and Arabic languages such as; borrowings, compounding, abbreviations, blending, and derivation. In addition, the translation of agricultural documents from English to Arabic is a very difficult task because of the differences between the two languages, which cause lack of equivalence, and linguistic barriers, as it involves a complex technical translation that requires many skills. However, in order to rend a good translation for the agricultural documents, the translator must be fluent in both languages and an expert in technical translation, as he/she should have knowledge about the agricultural terminology and have an extra-linguistic knowledge, and he/she must pay attention to the cultural barriers and know the different types, methods of translation.

Chapter II : Commented Translation.

After we have dealt with the theoretical part, in this chapter, we will deal with the translation and the analysis of some terms related to industrial agriculture through selecting examples from our corpus. However, before this we will present the corpus and discuss the methodology that we are going to follow in the translation and analysis, and then we will set the difficulties of translating agricultural terms.

III.1. Presentation of the corpus:

Our corpus is a collection of videos selected from YouTube channel, they are related to the field of agriculture and they contain important concepts about the modern form of farming.

The first video is entitled 'the future of farming': it is published and edited by Robin West on May 17, 2017 on TDC and is written by Kiriana Cowanage. This video is about agricultural technologies and innovations that are used and adopted in modern farming, and which will radically change the concept of agriculture during the year 2050 through introducing new ways of cultivating the soil to increase crop yields and produce enough food for the entire world.

The second video is entitled modern farming technologies/laser scarecrows/top 15 best modern farming technology 2021. This video was published on July 9, 2021 on super reviews it deals with the latest and the most recent agricultural techniques. these tools used by farmers in plowing the land and treating fields by employing them in harvesting, sowing seeds, controlling insects, examining products and crop quality to save time and efforts, as well as to achieve an increase in profits and yields, and make agriculture more efficient and sustainable.

The last video is entitled industrial agriculture and climate change: a vicious cycle, this video was produced by ECO.LOGIC, narrated by Rozina Kanchawla and edited by Kristen Rumsey on March 7, 2022. The video shows the practices of industrial agriculture and their impact on climate, which in turn affects yield production and leads to the spread of diseases, floods, and droughts that harm the environment and human health. Also, make our food system less nutritious, at the end they suggest alternatives and solutions to these practices to protect the environment and make our food healthy and more sustainable.

These videos were selected because they contain important concepts and terms about industrial agriculture, and there is no doubt that they will benefit the researchers and specialists in the field of agricultural translation.

The specificities of youtube channels:

The first video 'the future of farming' was taken from TDC, TDC is an American channel that help us to contextualize the news over the world. Is the abbreviation of "the DailyConversation', this channel raised on 2009 and this is the link: http://www.youtube.com/TheDailyConversation.

The second video "modern farming technologies' is published on Super Reviews, a channel based on the latest emerging technological trends and devices, this channel emerged on 2021 in Pakistan, its link is as follow: http://www.youtube.com/superreviews898.

The last video "industrial agriculture and climate change' is taken from Eco. Logic, ecologic is an American channel that provide programs, tools, and opportunities to address serious environmental challenges and inspire practical solutions, this channel was activated on 2020 its link is http://www.youtube.com/Eco.Logic.Programs.

Transcription:

The transcription of the three videos was carried out by the youtube channel , here we took the transcription and we translate it from English to Arabic, is an audio-visual translation and a type of voiceover whereby we the dialogue of off-screen speakers is replaced by the translation to match the screen events rather than the original dialogue.

III.2. Methodology of corpus analysis:

Through this research, we will study a set of industrial agriculture terms that may represent a real problem when we transfer them from English to Arabic.

Firstly, we will translate our corpus from English language to Arabic language and extract twelve examples from the corpus to analyse them according to the theory of comparative stylistics by Vinay and Darbelnet, then we will try to set the difficulties of translating the terminology of industrial agriculture.

In addition, we will rely on a list of references, dictionaries and books to translate and analyse our corpus.

III.3. Translation of the corpus:

First video : The future farming

مستقبل الزراعة

Over the next two decades, a technological wave will revolutionize the efficiency of farms all over the world. It can not come soon enough. By the year 2050 the human population will be nearly 10 million, which means we'll need to have doubled the amount of food we now produce. This is an examination of the agricultural innovations coming down the pipeline that will help get us there. The industry has undergone major developments over the last century, 100 years ago, farming looked like this. Today it looks like this and tomorrow, it will look something like this, this changes have allowed many of us to do either things with our lives.

In 1900, 10,9 million agricultural workers produced the food for 76 million people. Today, just 6,5 million workers feed 321,4 million Americans, two factors were most responsible for this surge in productivity: engines and the wide spread avaibility of electricity. Today, the innovations on our immediate horizon include auto-nomous pickers. UK researchers have already created one gathers strawberries twice as fast as humans, the challenge will be creating robotic pickers that can switch between all kinds of crops; robots or droners that can precisely remove weeds or shoot them with a targeted spritz of pesticid, using 90% less chemicals than a conventional blanket sprayer.

على مدى العقدين القادمين موجة تكنولوجية ستحدث ثورة في فعالية المزارع في جميع أنحاء العالم ولكن لن يتأتى ذلك في القريب العاجل بحلول سنة 2050 سيبلغ عدد السكان 10 مليارات تقريبا مما يعني أننا سوف نحتاج الى مضاعفة كمية الطعام التي ننتجها الآن وهذا اختبار للابتكارات الزراعية القادمة التي ستساعدنا للوصول الى ذلك لقد مرت الصناعة بتطورات مهمة خلال القرن الماضي منذ 100 سنة كانت الزراعة تبدو هكذا واليوم كذلك وغدا ستبدو كذلك وقد سمحت هذه التغيرات للكثير منا بالقيام بأشياء مختلفة في حياتنا، ففي سنة 1900 ، قام 10.9 مليون مزارعا بإنتاج الطعام لـ 76 مليون شخصا، واليوم فقط 6.5 مليون عاملا يطعمون ، 321 مليون أمريكي وقد كانت المحركات والانتشار الواسع للكهرباء العاملين الأكثر مسؤولية عن هذه الزيادة في الإنتاج اليوم في أفقنا الحالي تتضمن هذه الابتكارات قاطفين مستقلين وقد قام فعلا الباحثون البريطانيون بإنشاء قاطف يجمع الفراولة مرتين أسرع من البشر والتحدي سوف يتمثل في إنشاء قاطفين آليين يمكنهم الانتقال بين جميع أنواع المحاصيل وإنشاء رجال آليين أو طائرات بدون طيار يمكنها إزالة الأعشاب الضارة بدقة أو الإطلاق عليهم برذاذ مبيد الحشرات باستخدام مواد كيميائية أقل بنسبة به 90 % من طبقة الرذاذ العادي. أما بالنسبة للمزارع العضوي، فيمكنه قطع الأعشاب الضارة بالليزر بدلا عن ذلك وقد يكون لهذا تأثير كبير حيث تقدر الولايات المتحدة أن ما بين 20

For the organic farmer, they could zap the weeds with a laser instead. This could have a big impact, the UN estimates that each year, between 20 and 40% of global crop fields are destroyed by pests and disease. Tiny sensors and cameras will monitor crop growth and alert farmers on their smart phones if there's a problem, or when it's the best time to harvest; the Bonihob can take a soil sample, liquidize it, then analyze its pH and phosphorus levels- all in real time; as a proof of concept for all this auto-nomous farming technology, researchers at haper Adams in the UK plan to grow and harvest an entire hectare of Barley without humans ever entering the field. Companies like agri box have already commercialized software that analyzes drone captured infrared images to spot unhealthy vegetation. Then, like a real life game of "sin-farmer" the grower is alerted on their device when a troubled area is identified. Machine learning will regularly improve the system's ability to differentiate between varieties of crops and the weeds that threaten them. Not to be left out, a company called Mavrx contracts 100 pilots to fly light aircraft that art fitted with multispectral cameras on data-gathering missions over large farms through out the country, for an even wider view, planet labs operates a fleet of cube sats that take weekly images of entire farms from space to help monitor crops, other companies are creating analytics software to act farm.

Management systems, allowing growers of

و40% بالمئة من غلة المحاصيل العالمية يتم تدميرها في كل سنة بسبب الحشرات والأمراض. ستراقب أجهزة الاستشعار الصغيرة والكاميرات نمو المحصول وتنبيه المزارعين على هواتفهم الذكية إذا كانت هناك مشكلة أو عندما يكون الوقت مناسبا للحصاد ويمكن للبونيروب أن يأخذ عينة من التربة لتصفيتها ثم تحليل درجة حموضتها ومستويات الفوسفور التي تحتوي عليها في وقت وجيز، وكدليل على مفهوم كل هذه التقنيات الزراعية المستقلة يخطط الباحثون في هاربر آدمس في المملكة المتحدة لزراعة وحصاد هكتارا كاملا من الشعير بدون أي تدخل بشري في الحقل، وبالفعل قد قامت شركة مثل "أقريبوكس" بتسويق البرمجيات التي تحلل صور الأشعة تحت الحمراء الملتقطة بطائرات دون طيار للكشف عن النباتات غير الصحية ثم مثل لعبة الحياة الحقيقية "خطيئة المزارع" يتم تحذير المزارع على جهازه عندما يتم تحديد منطقة مضطربة. سيعمل التحكم الآلي بانتظام على تحسين قدرة النظام للتمييز بين مختلف أنواع المحاصيل والأعشاب الضارة التي تهددها، بدون استبعاد شركة "مافركس" التي تتعاقد مع 100 طيار للتحليق بطائرات مزودة بكاميرات متعددة الأطياف في مهمة جمع البيانات عبر مزارع واسعة في جميع أنحاء البلاد، ومن أجل رؤية الشمل، تقوم شركة "بْلانِتْ لَابس" بتشغيل مركب من الأقمار الصناعية المصغرة التي تلتقط صور أسبوعية لكامل المزارع من الفضاء للمساعدة في مراقبة المحاصيل، كما تقوم شركات أخرى بإنشاء برامج التحليل للعمل كأنظمة لإدارة المزارع مما يسمح للمزارعين من

that all sizes to deal with this new tsunami of data; and the farmers business network combines data from many farms into one Giant pool to give its members the power of macro-level insights that traditionally only been available to corporate mega-farms; vertical farms are essentially ware houses with stacks of hydroponics systems to grow leafy greens. They are sprouting up in cities all over the world where fresh produce and land is scare. The key obstacle here is the cost of energy, and the toll using a lot of it takes on the environment. The upside is that artificial lights and climate controlled buildings allow crops grow day and night, year round, producing a significantly higher yield per square foot than an outdoor farm. For now though, only expensive leafy greens like lettuce or herbs like basil have proven profitable in the vertical system, and the jury is definitely still on wether this is truly and environmentally friendly technique, one possible solution is to optimize photosynthesis and turbo-boost growth a technique tested by researchers at project growing underground, an experimental farm operations in old world war II bomb shelters underneath London; another advancement in indoor farming is the open agriculture initiative, which aims to create a "catalogue of climates" so temperature and humidity can be set to recreate the perfect conditions for growing crops that could normally come from all over the worl, locally instead.

مختلف الأحجام بالتعامل مع هذه التسونامي الجديدة من البيانات، وتلتقط شبكة أعمال المزارعين البيانات من ويكوّن منها مجموعة ضخمة بُغية منح أعضائها قوة البصيرة على مستوى واسع والتي كانت في البداية متوفرة فقط لدى المزارع الضخمة. المزارع العمومية العمودية هي عبارة عن مستودعات ومباني تتكون من أنظمة الزراعة المائية لزراعة الخضر الورقية وتنمو في جميع مدن العالم حيث يوجد ندرة في المنتجات الطازجة والأراضي، وتكمن العقبة الأساسية هنا في تكاليف الطاقة واستخدامها المفرط الذي يؤثر على البيئة، والشيء الإيجابي هو أن الأضواء الاصطناعية والتحكم في مناخ المباني يسمح للمحاصيل بالنمو ليلا ونهارا على مدار السنة، وتنتج كميات من المحاصيل تفوق تلك تنتجها المزارع الخارجية لكل قدم المربع رغم أنه لحد الآن فقط الخضر الورقية الغالية مثل الخس أو الأعشاب كالريحان فقط من أثبتت أنها مربحة في النظام العمودي وبالتأكيد لم يتقرر بعد ما إذا كانت هذه التقنية صديقة للبيئة أم لا وإحدى الحلول الممكنة تتمثل في استخدام الموجات الطويلة للضوء الأزرق والأحمر لتحسين التركيب الضوئي وتقنية "توربوبوست" لتعزيز النمو.

وهي تقنية تم اختبارها من قبل الباحثين في مشروع الزراعة تحت الأرض كمزرعة تجريبية نفذت تحت ملاجئ الحرب العالمية الثانية في لندن. تقدم آخر في الزراعة ويتمثل في مبادرة الزراعة المفتوحة التي تهدف الى إنشاء "قائمة المناخات" بحيث يمكن ضبط درجة الحرارة و الرطوبة لإعادة تهيئة الظروف المثالية لزراعة المحاصيل التي تأتي عادة

من كل أنحاء العالم بدلا من أن تكون محلية وهي محاولة لمعالجة مشكلة نقل الطعام لأميال فعندما يتم شحن المنتجات حول العالم تقوم بتوليد انبعاثات غير ضرورية لثاني أكسيد الكربون، وما عليك سوى أن تنظر الى المكان الذي تمت فيه زراعة بعض المواد التي تتناولها اليوم لفهم حجم المشكلة. يطلب ملايين الأشخاص الذين يدخلون الطبقة المتوسطة في البلدان المتقدمة بعشرات الملايين من اللحوم الإضافية في كل سنة، وتهدف هذه الأفكار الى الاستفادة من كل حيوان لأقصى حد، ومن كان يعتقد أن أجهزة الفيتبيتس يمكن أن تكون للماشية أيضا؟ حيث يتم تزويد الأبقار بأطواق ذكية تراقب إذا ما كانت مريضة أو إذا كانت تتحرك أكثر وهو علامة على الخصوبة، ويقوم باحثون في الكلية الريفية في اسكتلندا بتحليل الكيتون والكبريت المنبعث من تنفس الأبقار للكشف عن المشاكل المحتملة في النظام الغذائي للحيوان.

والتصوير الحراري للضرع الملتهب لتوفير العلاج المبكر لمكافحة العدوى البكتيرية المعروفة ب "إلتهاب الضرع"، والتي هي إحدى أكثر العوائق تكلفة في صناعة الألبان، ويتم تصويرها بكاميرات ثلاثية الأبعاد تقيس الوزن والكتلة العضلية للماشية بسرعة ليتم بيعها في أفضل حالاتها، حتى أن بعض الشركات بدأت في وضع مكبرات الصوت فوق حظائر الخنازير للكشف عن السعال وإعطاء العلاج للحيوانات المريضة لمدة اثنا عشر يوما في وقت أبكر من قبل ويتم استخدام مضادات حيوية قليلة إذا أصيب عدد أقل من الحيوانات بالمرض لفترات زمنية أقصر، كما قام باحثون في بلجيكا بتطوير

This is an attempt to tackle the "food miles" issue. When produce is shipped around the world it creates unnecessary CO2 emissions just look at where a few of the items you eat today were cultivated to understand how big of a problem this is. The millions of people entering the middle class every year in developing countries are demanding tens of millions of pounds of additional meat. These ideas aim to get the most from every animal who would've thought fit bits could be for livestock that monitor if they're sick or if they're moving around more, which is a sign of fertility; researchers at Scotland's rural college are analyzing Coco breath, Exhald Ketones and sulfides reveal potential problems with an animal's diet; thermal imaging spot inflamed udders to provide earlier treatment to combat a bacterial infection known as "mastitis, one of the costlied set backs in the dairy industry; 3D cameras that quickly measure the weight and muscle mass of cattle so they're sold in their beefiest; companies have even begun positioning microphones above pig pens to detect caughs, giving sick animals the treatment they need a full 12 days earlier than before less antibiotics are used if fewer animals become ill for shorter lengths of time; and a system of just three cameras, developed by researchers in Belgium, tracks the movements of thousands of chickens to analyze their behaviour and spot over 90% of possible problems, there's stat I found eye.

Opening: consumption of farmed fish has now surpassed our concumption of beef. Researchers are raised. Aquaculturists at the institute of Marine and environmental technology in Balti more are developing an artificial ecosystem that mimics ocean conditions so that salt water fish farms can be built in land. This would allow millions of hand locked people to be able to enjoy fresh fish, instead of consuming frozen fish grown or cought on the coast that to be shipped thousands of miles in refrigerator trucks that use a lot of energy. The most exciting thing about this experimental fish farm is that it's actually a closed system that creatively uses three sets of bacteria in differnts ways to so it doesn't produce any waste and even powers it self. [Dr. Yonathan Zohar]: "this is the world's most sustainably produced fish. The system is completely and fully contained. There is zero inetraction with the environment. There is no waste. Zero waste goes back to the environment, which is the big problem with aquaculture today". This revolutionary technique could be critical for saving species in the wild, like rapidly depleting bluefin tuna populations, without curbing the appetites of sushi lovers like me another ingenious appreach from a company in California are proteinaceous fish food pellets made from the bodies of a bacteria that grow by consuming a combination of methane, oxygen and nitrogen. The US's food and agriculture organization estimates that 2

نظام ثلاث كاميرات فقط لمتابعة حركات آلاف الدجاج وتحليل سلوكهم للتعرف على أكثر من 90% من المشاكل الممكنة، وهنا وجدت هذه الإحصائية التي أثارت الانتباه: وهي أن استهلاكنا للأسماك المستزرعة الآن تجاوز استهلاكنا للحوم البقر. ويعمل الباحثون على زيادة أنواع الأسماك التي يتم تربيتها. يقوم مربوا الأحياء المائية في معهد التكنولوجيا البحرية والبيئية في بالتيمور بتطوير نظام اصطناعي يحاكي ظروف المحيطات، بحيث يمكن بناء مزارع أسماك المياه المالحة على الأرض، وهذا سيسمح لملايين الأشخاص القاطنين بعيدًا من البحار بأن يستمتعوا بسمك طازج بدلا من استهلاك السمك المجمد المربي أو الذي يتم صيده على الساحل، ويجب نقله آلاف الاميال في الشاحنات، المبردة التي تستخدم الكثير من الطاقة. والشيء الاكثر إثارة حول هذه المزرعة التجريبية للسمك هو أنها في الواقع نظام مغلق يستخدم ثلاث مجموعات من البكتيريا بطرق مختلفة وبشكل مبدع ولهذا لا تنتج أي نفايات حتى أنها تقوم بتقوية نفسها. يقول [الدكتور يونثان زوهر]: هذا الإنتاج للأسماك هو الأكثر استدامة في العالم وهو نظام كامل وشامل تماما، حيث لا يوجد اي تفاعل مع البيئة وليس هناك اي نفايات تعود إلى البيئة، وهذه هي المشكلة الكبيرة في تربية الأحياء المائية اليوم. ويمكن أن تكون هذه التقنية حاسمة لإنقاذ الكائنات الحية في البرية مثل التونة التي تستنفذ بسرعة، وبدون قطع شهية عشاق للسوشي مثلي، فقد تم ابتكار طريقة أخرى من قبل شركة في كاليفورنيا عبارة عن كريات سمك بروتينية مصنوعة من

أجسام بكتيرية التي تنمو عن طريق استهلاك مزيج من الميثان والأكسجين والنيتروجين. تقدر منظمة الأغذية والزراعة الأمريكية أن مليارين من الأشخاص يستهلكون الحشرات كجزء من نظامهم الغذائي كما يقول [آكل الحشرات]: كجزء من نظامهم الغذائي أتناول حشرات مثل هذه لأنها توفر التغذية وتغذي الجسم، هي ليست مسمنة لكنها تحتوي على الكثير من المكونات الجيدة، وإذا أكلتها طوال الوقت فنادرا ما تمرض وتعتبر الحشرات من بين أرخص مصادر البروتين ، وأكثر تغذية وهي صديقة للبيئة، لذلك هناك حركة تنموية لإيجاد طرق جديدة لدمج الحشرات في المنتجات الغذائية التي يمكن تسويقها بطريقة غير مقلقة للناس، وبعض الأمثلة على ذلك هي مسحوق البروتين ودقيق الحشرات، ولكن حتى ان لم تكن الحشرات من أطباقنا فلا يزال بإمكانها مساعدتنا كثيرا في إطعام الحيوانات، و من جهة أخرى هناك مختبر اللحوم المزروعة كبديل للبروتين ، ففي عام 2013 تم صنع أول همبرجر يتكون من خلايا عضلية نضجت في مختبر ب هولندا، وبعدها تم انتاج كرة اللحم من قبل شركة في كاليفورنيا تسمى ب "مامبيس ميتس"، هذه مجرد عناوين الملتمسة، لكن أسعار الإنتاج يجب أن تنخفض قبل أن نضطر إلى اقتناء الوجبات الاصطناعية بكميات معتبرة. يقول [الدكتور مارك بوست]: لذا وبالتالي إنها الأفضل للبيئة، ونحتاج لموارد أقل بكثير لإطعام الكوكب بأكمله، وربما سوف ننظر إلى هذا الوقت على أنه نوع من الوحشية حيث لا زلنا نقتل الحيوانات ونستخدمها لهذه الدرجة من أجل استهلاكنا للحوم". لقد دفعنا بقاء الإنسان

billion of people consume insects as a part of their diet [insect eater]: " I eat insects like this because they provide nutrition, they nourish the body they are not too fatty but have a lots of good ingredients if you eat this all the time, you will get sick very rarely, Bugs are among the cheapest, most nutritions environmentally. Friendly source of protein. So, there's a growing movement to find new ways to incorporate them into food products that can be marketed in a way that doesn't gross people out. Some examples food products that can be marketed in a way that doesn't gross people out. Some examples are protein powder and insect flour. But even if insects never make it on to many of our plats, they can still help us a lot as animal feed; on the other end of the alternative protein spectrum is lab grown meat, In 2013 the first hamburger was made from muscle cells grown in a lab in the Netherland, followed by a meat ball grown by a California company called Memphis Meats. These groped headlines, but production costs need to come way down before we will be buying synthetic meats in significant quantities.

[Dr. Mark post]: "so, it's better for the environment and we need much less resources that we can feed the entire planet and we will probably look back at this time as sort of barbaric, that we still killed animals to such as a degree for our meat consumption. "Human survival on earth has, by necessity driven us to use and change the world around us.

حيث لا يوجد اي تفاعل مع البيئة وليس هناك اي نفايات تعود إلى البيئة، وهذه هي المشكلة الكبيرة في تربية الأحياء المائية اليوم. ويمكن أن تكون هذه التقنية حاسمة لإنقاذ الكائنات الحية في البرية مثل التونة التي تستنفذ بسرعة، وبدون قطع شهية عشاق للسوشي مثلي، فقد تم ابتكار طريقة أخرى من قبل شركة في كاليفورنيا عبارة عن كريات سمك بروتينية مصنوعة من أجسام بكتيرية التي تنمو عن طريق استهلاك مزيج من الميثان والأكسجين والنيتروجين. تقدر منظمة الأغذية والزراعة الأمريكية أن مليارين من الأشخاص يستهلكون الحشرات كجزء من نظامهم الغذائي كما يقول [آكل الحشرات]: كجزء من نظامهم الغذائي أتناول حشرات مثل هذه لأنها توفر التغذية وتغذي الجسم، هي ليست مسمنة لكنها تحتوي على الكثير من المكونات الجيدة، وإذا أكلتها طوال الوقت فنادرا ما تمرض وتعتبر الحشرات من بين أرخص مصادر البروتين ، وأكثر تغذية وهي صديقة للبيئة، لذلك هناك حركة تنموية لإيجاد طرق جديدة لدمج الحشرات في المنتجات الغذائية التي يمكن تسويقها بطريقة غير مقلقة للناس، وبعض الأمثلة على ذلك هي مسحوق البروتين ودقيق الحشرات، ولكن حتى ان لم تكن الحشرات من أطباقنا فلا يزال بإمكانها مساعدتنا كثيرا في إطعام الحيوانات، و من جهة أخرى هناك مختبر اللحوم المزروعة كبديل للبروتين ، ففي عام 2013 تم صنع أول همبرجر يتكون من خلايا عضلية نضجت في مختبر ب هولندا، وبعدها تم انتاج كرة اللحم من قبل شركة في كاليفورنيا

Some of our most powerful innovations are aimed at solving problems we ourselves create as climate patterns change and human population rises, the prospect of a global food shortage becomes increasingly dire, it's a threat that even the deployment of millions of auto nomous farmer. Bots would be unlikely to solve. But where man made machines mail fall short, bacterial machines may very prevail..... bringing me to the technology that can continue to deliver the biggest increases in crop yield: genetic modification, scientific break thoughs like CRISPR, genomic selection, and SNP's now allow single letters within a gene to be precisely edited. Unlike older methods of genetic manipulation like transgenic modifications that made uncontrolled alterations to large regions of DNA, CRISPR a gene editing system repurposed from bacteria. More closely mimics the process of random mutation this process is critical for environmental adoptation, Darwinian natural selection, and ultimately evolution. While this fact alone may not placate the most passionate anti GMO advocate, highly precise techniques, like CRISPR should help ease the legitimate health and environmental concerns that have thus far curbed significant commercial investments. But not every one is setting on the side lines. Two large cultural companies, Dupont and Syngenta, have used genome selection to develop two new drought.

على الأرض بالضرورة الى استخدام وتغيير العالم من حولنا، وتهدف بعض الابتكارات الأكثر قوة إلى حل المشاكل التي نخلقها بأنفسنا، فمع تغيير أنماط المناخ وارتفاع عدد السكان يصبح احتمال نقص الغذاء في العالم متزايد بشكل رهيب إنه تهديد من المحتمل أن لا يتم حله حتى مع انتشار الملايين من المزارعين الآليين لكن حيث قد تفشل الآلات التي هي من صنع البشر يمكن أن تسود الآلات البكتيرية بشكل جيد للغاية وهذا ما جاء بي إلى التكنولوجيا التي يمكن أن تستمر في تقديم أكبر الزيادات في غلة المحاصيل وهي التعديل الجيني والتقدم العلمي، مثل "كريسبر" والاختيار الجيني و SNPالذي يسمح الآن بتحرير الأحرف الفردية داخل الجين بدقة على عكس الأساليب القديمة للتلاعب الجيني .مثل التعديلات الوراثية التي أدت الى تغيرات غير منضبطة في مناطق كبيرة من الحمض النووي، "كريسبر" هو نظام جيني تمت صياغته من البكتيريا و يحاكي عملية التغيير العشوائي، وهذه العملية حاسمة للتكييف البيئي والاختيار الطبيعي الدارويني وأساسية للتطور، بينما هذا الواقع وحده لا يرضي معظم مؤيدي مكافحة الكائنات المعدلة وراثيا. ويجب على التقنيات العالية الدقة مثل "كريسبر " أن تساعد في الحد من المخاوف الصحية و البيئية المشروعة التي قيدت الكثير من الاستثمارات الاقتصادية لحد كبير، لكن ليس الكل باقي على الجانب، فقد قامت الشركتان الزراعيتان "دوبونت" و "سين ڤنتا" باستخدام الجينوم الإختياري لتطوير سلالتين جديدتين من الذرة تتحملان الجفاف و تسمى ب "أكومكس" و"أرتزان" وهناك أيضاً مشروع الجيل

Tolerant strains of corn called AQUAMAX and Artesian, then there's the next Gen Cassava project led by Cornell university, in patership with research institutes all over Africa, that aims to " significantly increase the rate of genetic improvement in Cassava breeding to unlock the full potential of this staple crop that's central to food security and livelihoods across Africa". Genetically improving the cultivation of other crops that haven't been modified yet could additionally lead to huge yield increase for millet and yams, for example; Rice, one of the world's most important crops, has seen its yield plateau meaning that, for years now, the maximum amount that can be grow on, say, an acre of land has not increased. The C4 Rice project at a massive global collaboration between 18 biology labs spread across four continents is trying to change that, their goal is to genetically engineer a new strain of rice, so that it's photosynthetic process works more like maize,vwhich could theoretically turbo boost its yield by 50% and of course, it's not just crops, piglines are being altered to make them immune to an illness that costs American farmers $600 in a year. While it is hard to predict which of these developments will have the greatest impact on food production, we should be pursuing all of them. The use of genetic technologies will inevitably prove essential for tackling what would likely be an insurmountable challenge, sustainably doubling our global food supply,

القادم ل "كسافا" الذي تقوده جامعة "كورنيل" بالشراكة مع معاهد البحث في جميع أنحاء إفريقيا، و الذي يهدف بشكل كبير إلى زيادة نسبة التقدم الوراثي للتناسل في "كاسافا" لفتح كامل الامكانيات لهذا المحصول الأساسي الذي يعتبر أساسيا للأمن الغذائي و سبل العيش عبر افريقيا، بالإضافة يمكن أن يؤدي التحسين الوراثي لزراعة المحاصيل الأخرى التي لم يتم تعديلها بعد الى زيادة كبيرة في انتاج الدخن و اليام، فمثلا الأرز هو أحد أهم المحاصيل في العالم الذي شهد استقرار محصوله، ممّا يعني أنه منذ سنوات لم ترتفع الكمية القصوى التي يمكن زراعتها على فدان من الأرض، و مشروع القارات الأربعة للأرز عبارة عن تعاون عالمي ضخم بين 18 مختبراً للبيولوجيا منتشرون عبر أربع قارات يحاولون تغيير ذلك و الهدف هو إلى تصميم سلالة جديدة من الأرز وراثيا، حيث تعمل عملية التركيب الضوئي الخاصة بها مثل الذرة، والتي يمكن من الناحية النظرية أن تزيد بسرعة من غلة محصولها بنسبة 50٪، و بالطبع إنها ليست مجرد محاصيل، إنّما يتم تغيير سلالة الخنازير لتحصينهم ضد المرض الذي يكلف المزارعين الأمريكيين 600 دولار سنويا، و بينما من الصعب أن تتوقع أي من هذه التطورات سيكون لها التأثير الأكبر على الإنتاج الغذائي.

يجب أن نتابعها جميعا، و سيثبت حتما أن استخدام التقنيات الوراثية أمر أساسي لمواجهة التحديات التي تبدو مستعصية، و مضاعفة امتداداتنا الغذائية العالمية بشكل مستدام، الخبر الجيد هو أن بعض العلماء و المهندسين و المزارعين و المبتكرين

the good news is that some of the world's most creative scientists, engineers, farmers and innovators are working on solutions for this problem,even as you watch this video, , this piece was based on articles that recently appeared in the Economist and the journal of nature, and our recent video on India's high way mega project led some of you to suggest other projects for us to look into your suggestions for video topics are always appreciated thanks for watching until next time for TDC. I'm Bryce plank.

الأكثر إبداعا في العالم يعملون على إيجاد الحلول لهذه المشكلة حتى أثناء مشاهدة هذا الفيديو، وهذه القطعة كانت مستندة إلى المقالات التي ظهرت مؤخرا في الاقتصادية ومجلة الطّبيعة، وقد أدى الفيديو الأخير الذي قمنا به حول المشروع الضخم للطرق السريعة في الهند الى اقتراح بعضكم لمشاريع أخرى للبحث فيها و دائما نقدر اقتراحاتكم حول مواضيع الفيديو، شكرا على المشاهدة إلى المرة القادمة على TDC، أنا برايس بلانك.

The second vidéo : Modern Farming technologies/laser scarecrows /top 15 gest modern farming technology In 2021.

التقنيات الزراعية الحديثة / فزاعات الليزر

أفضل خمسة عشر تقنية زراعية في سنة 2021.

Hello youtubers our today's topic is about the latest farming technologies that are next level. In recent years, the adoption of digital technologies in farming has been adjusting the ways that farmers treat crops and manage fields technology has changed the concept of farming, making it more profitable, safer and simple.

Today's farming routinely uses sophisticated technologies such as temperature, moisture, sensors and GPS technology, here we are going to take a look at 15 innovative farming technologies and practices that are changing agriculture and farming ways across the world.

15-Indoor and vertical farming. Indoor vertical farming can be defined as the practice of growing produce stacked one above another in a closed and controlled environment. The advantages of indoor vertical farming are apparent from urban growth to maximizing crop yield with reduced labor costs. This type of growing is often associated with city and urban farming because of its ability to thrive in limited space. Vertical farm set ups don't require soil for plants to grow, traditional farmers could learn a lot from vertical farmers about design and building

مرحبا بمستخدمي اليوتيوب، موضوعنا اليوم سوف يكون حول آخر التقنيات الزّراعيّة التّي هي من المستوى القادم. في السّنوات الأخيرة، أدّى اعتماد التّقنيات الرّقميّة في الزّراعة إلى تعديل الطّرق التّي يتعامل بها المزارعون مع المحاصيل والحقول، فقد غيّرت التكنولوجيا مفهوم الزّراعة بجعلها أكثر ربحا، أكثر أمانا وبساطة.

تستخدم الزراعة اليوم التقنيات المتطوّرة بشكل روتيني مثل أجهزة استشعار الحرارة والرّطوبة، وتقنية نظام تحديد المواقع العالمية، هنا سوف نلقي نظرة على خمسة عشر تقنية وممارسات مبتكرة في الزراعة التّي تقوم بتغيير الزراعة وطرق الزّرع حول العالم.

الرّقم خمسة عشر يتمثّل في الزّراعة الدّاخليّة والعموديّة. يمكن تعريف الزّراعة الدّاخليّة العموديّة على أنّها مزاولة زراعة المحاصيل حزمة فوق الأخرى في بيئة مغلقة وخاضعة للرّقابة، وتتضح إيجابيات الزّراعة الدّاخليّة العموديّة من النّمو الحضري إلى زيادة غلّة المحاصيل مع انخفاض تكاليف العمل، وغالبا ما يرتبط هذا النّوع من الزّراعة بالمدينة والزّراعة الحضريّة لقدرتها على النّمو في مساحة محدودة. فالزّراعة العموديّة لا تستلزم التربة للنّمو ويمكن للمزارعين التقليديين أن يتعلّموا الكثير حول التّصميم والبناء من المزارعين الذين يقومون

بالزّراعة الدّاخليّ، حيث قاموا بتصميم مزارعهم بذكاء لزيادة الغلّة وتقليل النّفايات.

الرقم أربعة عشر في قائمتنا يتمثّل في انتشار المزارع الآلية، هناك العشرات والمئات من الرّوبوتات الزّراعيّة مزوّدة بأجهزة الاستشعار المجهريّة التّي تساعد في المراقبة والتنبؤ من الأرض دون أيّ تدخّل بشري في هذه التّكنولوجيا، وأحد أكثر الاستخدامات الشائعة لمجموعة الرّوبوتات تتمثّل في مهمّات البحث والإنقاذ، انتشار الرّوبوتات يوفّر فرصة لفحص البيانات الزّراعيّة لمناطق كبيرة ويسمح بتحسين الفحوصات المطلوبة في الزّراعة الدّقيقة لدرجة كبيرة.

الرّقم الثالث عشر هي تقنية الزّراعة الدّقيقة. تسمح الزّراعة الدّقيقة للمربّين والمزارعين بالعمل مع تربة أفضل في الحقول الواسعة وإدارتهم كمجموعة من الحقول الصّغيرة، ويمكن تسوية الحقول باللّيزر، ممّا يعني أنّه يمكن استخدام المياه بفعاليّة وبتدفق أقّل للمزارع وتصريفها في الجداول المحليّة والأنهار، ويمكن أن تأتي النّتيجة بإمكانيات كبيرة لجعل الزّراعة أكثر استدامة وتحقيق زيادة في توفر الغذاء.

في الرقم اثنا عشر سوف نستكشف أكثر تقنية زراعيّة متقدّمة وهي تقنية الزّراعة الأتوماتيكيّة التّي ترتبط بالزّراعة الذّكية، هذه التّقنيّة تجعل المزارع أكثر كفاءة وتقوم بالتّشغيل الآلي لدورة إنتاج المحاصيل، والهدف الأساسي للتكنولوجيا الأتوماتيكيّة هو تغطية المهام المتعبة، كما تعالج تقنية الزراعة الأتوماتيكيّة مشاكل عديدة مثل:

structures, as they designed their farms smartly to increase yield and reduce waste.

The number 14th one in our list is Robotic farm swarms, there are dozens and hundreds of agricultural robots with microscopic sensors, which cooperatively monitor and predict from the land without any human intervention in this technology. One of the most promising uses of swarm robotics is in search, rescue missions, swarm robotics provide an opportunity to inspect agricultural data for large areas, and it allows to highly enhancing tests required in prevision agriculture.

Number 13 is precision agriculture. Precision agriculture allows growers and farmers to work with better soil in larger fields and manage them as grows of small fields. Fields can be leveled by lasers, which means water can be applied more efficiently and with less farm effluent running off into local streams and rivers, the result can hold great potential for making agriculture more sustain bale and increasing food availability.

On the number 12th, we are going to explore the most advanced farming technology, farm automation; farm automation technology is associated with smart farming, and this technology makes the farms more efficient and automates the crop production cycle, the primary goal of automation technology is to cover easier some tasks, farm automation technologies

ارتفاع عدد السّكان، الأعمال الزّراعيّة، العجز وتغيّر اختيارات المستهلك.

الرّقم الحادي عشر في اختيارنا الحديث لتقنيات الزّراعة هو البيوت الزّجاجيّة، تحوّلت صناعة البيوت الزّجاجيّة في العقود الأخيرة من منشآت صغيرة الحجم إلى منشآت أكبر حجما بشكل ملحوظ وتتنافس مباشرة مع الإنتاج التّقليدي القائم على الأرض.

واليوم وبفضل التّحسينات الضّخمة والحديثة في تطوّر التّكنولوجيا، تشهد الصّناعة ازدهارا لم يسبق له مثيل. والبيوت الزّجاجيّة التّي تظهر بشكل متزايد هي البيوت الزّجاجيّة ذات الحجم الواسع والمملوءة بتدفق رؤوس الأموال وتتمركز في المناطق الحضرية.

وتتمثل التقنية العاشرة في الزّراعة الرّقميّة، فقد أدّى تقدّم الزّراعة الرّقميّة والتّقنيات المرتبطة بها إلى فتح ثروة من البيانات الجديدة، حيث يمكن لأجهزة الاستشعار والأقمار الصّناعيّة جمع المعلومات على مدار 24 ساعة يوميا في كامل الحقل باستخدام خوارزميّة الذّكاء الاصطناعي. وتكون كميّة البيانات التّي يمكن أن تولّدها هذه المستشعرات هائلة بحيث تكمن أهميّة الأرقام في الكمية الكبيرة لسيل البيانات.

وتمكن أجهزة الاستشعار الخوارزميات من تفسير بيئة الحقل كبيانات إحصائية يتاح فهمها وهي مفيدة للمزارعين لاتّخاذ القرار.

الرّقم التّاسع يتمثّل في المحاصيل المعدّلة وراثيا، المحاصيل المعدّلة وراثيا هي نباتات معدّلة وراثيا حيث يتم نقل الحمض النّووي الجديد إلى الخلايا

addresses a major issues like a rising global population, farm labor, shortages and changing consumer preferences.

The 11th one is our modern picks for farming technologies is modern greenhouse. In recent decades, the greenhouse industry has been transforming from small-scale facilities to significantly more large, scale facilities that compete directly with land based conventional food production.

Today, due to the tremendous recent improvements in growing technology, the industry is witnessing a blossoming like no time before. Greenhouses are increasingly emerging that are large-scale, capital-infused, and urban-centered.

10- The rise of digital agriculture and its related technologies has opened a wealth of new data opportunities, remote sensors and satellites can gather information 24 hours per day over an entire field by using the algorithm of artificial intelligence the amount of data. These sensors can generate is overwhelming and the significance of the numbers is hidden in the avalanche of that data.

Remote sensors enable algorithms to interpret a field’s environment as statistical data that can be understood and useful to farmers for decision-making.

Number 09 is genetically modified crops. Genetically modified crops are genetically modified plants that are used in agriculture

for the production of genetically modified plants, new DNA is transferred into plant cells. The many farmers choose to grow genetically modified crops because they are bred to achieve benefits such as resistance to certain insects and diseases, or enhanced nutritional value a fresh fruits and vegetables are available in GUo varieties, including potatoes, summer squash, apples and papaya.

النّباتيّة، ويختار العديد من المزارعين زراعة المحاصيل المعدّلة وراثيا لأنّها تتكاثر لتحقيق فوائد كمقاومة حشرات وأمراض معيّنة، أو تحسين القيمة الغذائيّة، حيث تتوفّر الفواكه والخضر الطّازجة في مجموعة متنوّعة ومعدّلة وراثيا والتّي تتضمّن البطاطا والقرع الصّيفي والتّفاح وثمار البابايا.

The 8th modern technology in our list is livestock farming technology. Livestock management has traditionally been known as running the business of poultry farms, dairy farms or other livestock related agribusiness. The traditional livestock industry is a sector that is widely overlooked and under-serviced, although it is arguably the most vital. Livestock technology can enhance or improve the productivity capacity, welfare, or management of animals and livestock, this technology can improve the productivity and welfare of livestock by detecting sick animals and intelligently recognizing room for improvement.

نأتي على التقنيّة الحديثة والثّامنة في قائمتنا هي تقنية تربية الماشية، كانت تربية الثروة الحيوانيّة معروفة تقليديّا بإدارة أعمال مزارع الدّجاج وإنتاج اللّبن أو أعمال تجاريّة أخرى متعلقة بالماشية. التّربية التّقليديّة للثروة الحيوانية هو قطاع يتم تجاهله بشكل كبير على الرّغم من أنّه أكثر القطاعات أهميّة. يمكن لتقنية تربية الماشية أن تحسّن القدرة الإنتاجيّة وتعزيز رفاهيّة أو تسيير الحيوانات وإنعاش الثّروة الحيوانيّة عن طريق كشف الحيوانات المريضة والتّعرف بذكاء على مجال التّحسين.

The 7th one technology is RFID (radio Frequency identification). Crop tracker has harnessed the technology of RFID (radio Frequency identification) for the use of the harvest, storage and packing of crops. This technology eliminates the risk of costly human error during organization process with RFID; customers will be able to know

تتمثل التقنية السّابعة في تكنولوجيا تحديد تردّدات الرّاديو. وقد سخّرت تقنية تعقّب المحاصيل تكنولوجيا تحديد تردّدات الرّاديو لاستخدامها في حصاد وتخزين وتعبئة الغلّة، تزيل هذه التّقنية الخطر عن الخطأ البشري المكلف أثناء عملية التنظيم، ومن خلال تحديد ترددات الرّاديو

سيتمكّن المستهلكون من معرفة أصل المنتج المتاح لديهم ممّا يجعلهم أكثر ثقة وإخلاص.

الرّقم السّادس يتمثّل في تقنية الكروموسومات الصّبغية المصغّرة، حيث قام المهندسون الوراثيون بتسخير تقنية الكروموسومات الصّبغية المصغّرة لتعزيز الصّفات الوراثيّة للنبات، كما يمكنّها تحسين مقاومة المحاصيل بمميّزات جديدة مثل: تحمّل التبني مع الحدّ الأدنى من المواد الوراثيّة، وتحتوي الكروموسومات الصبغية المصغّرة على نواقل فعّالة للتعبير عن الجينات الأجنبية بدون تدخل في التّطور الطّبيعي للمضيف ونموّه. ولكن هذه التكنولوجيا لم يتم استكشافها بالكامل ولديها إمكانيات كبيرة لتطبيقها في الزّراعة.

يمثل الرّقم خمسة يتمثّل في تقنية الوقت الفعلي للحركة، تستخدم هذه التقنية الناشئة لتعزيز دقّة إشارات تحديد المواقع الموجودة، ويتم تطبيقها غالبا لمعاينة أو فحص الأراضي، وتهدف إلى تنظيم أفضل للكثافة النباتية وخطط التجارة للأرض التّي يتم زراعتها، وتعمل تقنية الوقت الحقيقي للحركة على تحسين نظام تحديد المواقع أو تعقب الأقمار الصّناعيّة باستخدام مستقبلات ثابتة في الحقول من أجل توقع أكثر دقّة للمحاصيل وتكاليف الزراعة.

الرّقم أربعة عبارة عن معدّات زراعية آلية، يمكن للآلات مثل التجهيزات الزراعية المشغلة أن تعمل على مدار الساعة بدون تعب أو ملل لزيادة الغلة في وقت وجيز، كما تقوم أيضا المعدّات الزراعيّة

the origins of the product they have on hand which lead them to more costumer loyalty and trust.

Number 6 is Mini chromosome technology genetic enginess have harnessed the application of mini chromosome technology to enhance the genetic traits of a plant. It can also improve crop resistance with new traits such as straw tolerance with minimal amount of genetic material, mini chromosomes have effective vectors to express foreign genes without the interference with the host's natural development and growth but this technology has not been fully explored and has great potential for broad applications in agriculture.

The number 5 is real time Kinematic. This is emerging technology used to enhance the accuracy of existing GPS signals. It is applied to lend surveying mostly with the goal of aligning the best plant density and trading plans to the land being planted, real time Kinematics improves GPS or Satellite tracking with stationary receivers in the fields for more accurate prediction of the yields and expenses of farming.

Number 4th is Automated farm equipment can work round the clock tirelessly to bring higher yields in a shorter time. Automating farming equipment such as self-driven tractor or seeder solves the problem of both

time constraints and labor shortages. They are perfect for chard management as they allow farmers to work on more targeted things.

3rd most important technique in our list is genetic editing, this is a method of selective breeding, a practice as ald as our need to grow food. Farmers have always bred crops and animals to draw out traits that make them more wholesome and sustainable. Genetic editing is tremenclously useful in agriculture, it can be used to silence undesirable genes in crops, such as a genes responsible or browning in mushrooms and to alter the behavior of other genes.

The 2nd technology in today's farming techniques is product testing in-field. The farming practices of some crops are highly regulated and require strict lab testing and reporting. This creates a demand for innovations in in-field product testing technologies that can lower the cost and wait time to get lab results, light la bis one of these inventions, this portable and light weight equipment can accurately test for the crops out side of the lab, sampling and testing can now be carried out in the fields, or at processing centers ande simplifiying the production process.

Number 1 is laser Scarecrows. The laser Scarecrows projects green laser lighting not visible by humans in the sun. The automated laserdarts across fields up to 600

الآلية كالجرّار المستقل أو آلة نثر البذور بحلّ مشكلة ضيق الوقت ونقص اليد العاملة، إنّها مثالية لإدارة الحقول كما تسمح للمزارعين للعمل أكثر على أهداف أخرى.

وأعظم تقنية هي التقنية الثالثة التي تتمثل في التعديل الجيني، وهي طريقة التكاثر الانتقائي كممارسة قديمة قدم حاجتنا إلى زراعة المحاصيل الغذائية، فدائما ما قام المزارعون بزراعة المحاصيل وتربية الحيوانات لاستخراج المميّزات التّي تجعلها أكثر فائدة واستدامة.

فالتّعديل الجيني مفيد جدّا في الزّراعة ويمكن استخدامه لتهدئة الجينات الغير مرغوب فيها في المحاصيل مثل الجينات المسؤولة عن احمرار في الفطر ويحسن سلوك الجينات الأخرى.

إن التقنية الثانية في تقنيات الزراعة الحديثة هي اختبار المنتج في الحقل، فزراعة بعض المحاصيل منظمة للغاية وتتطلب فحوصات مخبرية وتقارير صارمة وهذا أدى إلى طلب الابتكارات في تقنيات فحص المنتجات في الحقل والتي يمكن أن تقلّل التكلفة مدّة الانتظار للحصول على نتائج المختبر الضوئي. ويعدّ المختبر الضوئي أهم هذه الاختراعات، ويمكن لهذه المعدّات الخفيفة والمحمولة فحص المحاصيل بدقّة خارج المختبر، كما يمكن الآن أخذ عيّنات واختبارها في الحقول ومراكز المعالجة وتبسيط عملية الإنتاج.

التقنية رقم واحد هي فزاعات الليزر. تقوم فزاعات الليزر بإضاءة ليزر خضراء غير مرئية للبشر في الشمس وتصل سهام الليزر الآلية عبر

الحقول إلى 600 قدم وترعب الطّيور بشكل فعّال لمنعها من تدمير أي محصول، وهي أقلّ تدميرا للبيئة وأقلّ كثافة في اليد العاملة مقارنة باستخدام الشبكة. والآن يمكن للابتكارات أن توفّر للمزارعين سيطرة أفضل على مراقبة جودة المحاصيل ومواجهة الحشرات، كما تحسّن من تطبيقاتهم الحالية لتحقيق أرباح طائلة.

حسنًا، كان هذا كلّ ما وددنا عرضه عليك اليوم، نتمنى أن تكون أحببت الفيديو، أخبرنا عن رأيك في التعليق أدناه ولا تنسى الاشتراط في قناتنا على اليوتيوب واضغط على أيقونة الجرس للمزيد من التحديثات والإشعارات، دمت سالما، سنعود قريبا بفيديو جديد.

feet and effectively startele birds enough to prevent them from destroying any crop. They are also less environmentally destructive and less labor intensive compared to the use of netting innovations can now provide farmers better reignover crop quality control, pest managment and even the optimization of their existing practices to acheive higher revnue.

Well, this was all for today, hope you liked the video, let us know about your opinion in the comment section below do not forget to subscribe to or toutube channel. Hit the belli con for more updates and notifictions, stay safe and we will back noon with another video.

3rd vidéo : Industrial agriculture and climate change avicious cycle

الزراعة الصناعية وتغير المناخ: دورة مغلقة

Our food system is a significant contributor to greenhouse gas emissions that are causing climate change results in more extreme and unpredictable weather patterns that in turn impacts our food and agricultural system.

Let’s explore this cycle and the connections between food agriculture and climate.

Our modern food system is heavily centralized and controlled by a few major corporate actors this results in our food system being characterized by land degradation monocultures, heavy chemical inputs, concentrated feeding operations, hign food miles extensive food waste growing crops requive significant amounts of land, the demand for cropland often bads the cleaning of rain forests, wet lands and prairies which are then replaced with monoculture crops, rain forests, wet lands and prairies are all natural carbon dioxide and this is a good thing when we emit high amount of carbon dioxide, our natural systems have a way ofabsorbing the excesscarbon in the atmosphere when we destroy these natural spaces we not only destroy the earth’s ability to capture that carbon dioxide, but in the process we release significant amounts of carbon dioxide that have been captured all at once when we clear the land in place of these

يعد نظامنا الغذائي مساهم هام في انبعاث غاز الاحتباس الحراري الذي يتسبب في تغيير المناخ، مما ينتج أنماط مناخية أكثر خطورة ولا يمكن التنبؤ بها والتي بدورها تؤثر على نظامنا الغذائي والزراعي.

دعونا نستكشف هذه الدورة والروابط بين الأغذية و الزراعة والمناخ.

نظامنا الغذائي الحديث مركزي بشكل كبير ويتم التحكم فيه من قبل بعض الشركات الأساسية الفاعلة، وهذا يؤدي إلى تميّز نظامنا الغذائي بانحلال التربة والزراعة الأحادية والاستخدام المفرط للمواد الكيميائية وعمليات التغذية المرّكزة، وأميال نقل الطّعام العالية وأيضا تبذير الطّعام بشكل واسع، تتطلب زراعة المحاصيل مساحات كبيرة من الأراضي، وغالبا ما يؤدي الطلب على الأراضي الزراعية إلى إزالة الغابات الاستوائية والأراضي الرّطبة والمروج التّي يتم استبدالها بعد ذلك بمحاصيل أحادية الزراعة، وتعتبر الغابات الاستوائية والأراضي الرّطبة والمروج كلّها أحواض كربون طبيعي ممّا يعني أنها تمتص ثاني أكسيد الكربون وهذا أمر جيّد، عندما نصدر كمية كبيرة من ثاني أكسيد الكربون، أنظمتنا تمتلك طريقة لامتصاص الكربون الزّائد في الغلاف الجوّي، وحين ندمّر هذه المساحات الطّبيعيّة فإنّنا لا ندمّر فقط قدرة الأرض على التقاط ثاني أكسيد الكربون، ولكن أثناء العملية نصدر كميّات معتبرة من غاز أكسيد الكربون

natural spaces we not only destroy the earth's ability to capture that carbon dioxide, but in the process we release significant amounts of carbon dioxide that have been captured all at once when we clear the land in place of these biodiverse natural systems we now grow monocultures, monocultures is the cultivation of a single crop in a given area, fields are planted with monocultures as a way to increase efficiency or maximize profits but sadly monocultures degrade soil health by depleting nutrients from the soil, planting exact some plants season after season leads to a loss of nutrients in the soil, an alternative to this would be practice crop rotation meaning alternating crops for each harvest to keep the soil healthy, when soil degrades it loses it's ability to absorb carbon dioxide levels are steadily rising, leading to climate change, additionally soil degradation results in the use of chemical inputs each growing season because the soil becomes less fertile, it's important tonote that monocropping can occur on both conventional and organic farms, as we mentioned soil degradation often means more chemicals inputs like pesticides and fertilizers are produced through an energy intensive process that releases high quantities of greenhouse gases.

Over over application of nitrogen, based fertilizer to cropland also produces greenhouse gas emissions, specifically

التّي تمّ امتصاصها مرّة واحدة عندما قمنا بتصفية الأرض، والآن بدل هذه النظم الطّبيعية المتنوعة بيولوجيا نقوم بالزراعة الأحادية، الزراعة الأحادية هي زراعة محصول واحد في منطقة معيّنة، وتزرع الحقول زراعة أحادية لزيادة الكفاءة أو مضاعفة الأرباح، لكن للأسف الزراعة الأحادية تُسَبِب تدهور صحة التربة عن طريق استنزاف العناصر الغذائية في التربة، وتؤدي زراعة نفس النباتات موسما بعد موسم إلى فقدان العناصر الغذائية في التربة، وقد يكون البديل عن ذلك ممارسة الدّورة الزراعيّة للمحاصيل، ممّا يعني تناوب المحاصيل لكل موسم حصاد للحفاظ على صحة التربة، فعندما تتحلّل التربة تفقد قدرتها على امتصاص مستويات ثاني أكسيد الكربون التّي ترتفع بشكل ثابت، ممّا يؤدي إلى تغيير المناخ، كما أنّ انحلال التّربة يؤدي إلى استخدام المواد الكيميائية في كل موسم زراعي لأنّ التربة تصبح أقل خصوبة.

من المهم ملاحظة أنّ الزّراعة الأحادية يمكن أن تحدث في كلا من المزارع التقليدية والعضوية، وكما ذكرنا سابقا انحلال التربة يعني الحاجة إلى المزيد من المواد الكيميائية مثل المبيدات الحشرية والأسمدة، يتم إنتاج الأسمدة الكيميائية من خلال الاستخدام الكثيف للطّاقة التّي تطلق كميات كبيرة من الغازات الدّفيئة.

كما أن الإفراط في استخدام الأسمدة المكوّنة من النيتروجين في الأراضي الزراعية ينتج انبعاث غازات الاحتباس الحراري، خاصة عند استخدام المزيد من الأسمدة النيتروجينية أكثر ممّا يمكن

when more nitrogen fertilizer is applied than what crops can actually take up and use the excess is broken down in the soil and can become the gas nitrous oxide. Nitrous oxide has a far greater global warming potential than either methane or carbon dioxide meaning it traps more heat in the atmosphere, another consequence of using high amounts of chemical inputs is the adverse health impacts it brings to farm workers who are exposed to these chemicals.

A report from 2013 indicated that an estimated 5.1 billion pounds of pesticides are applied to crops each year and thousands of farm workers experience the effets of acute pesticide poisoning, including headaches, nausea, shortness of breath or seizures, pesticide exposure leads to chronic health problems such as cancer, infertility and other reproductive problems, neurological disorders and respiratory conditions.

Finally, the combination of degraded soil and high chemical inputs results in runoff in farms across the Midwest pesticides often run off farms make their way to the Mississippi river and eventually end up in the Gulf of Mexico where is a growing dead zone, this dead zone approximately 6334 square miles, is an area of low to no oxygen where fish and marine life are unable to live, and as a result of excess nutrients from farms that end up in upland water sheds and

للمحاصيل أن تتحمّله فعليا، ويتم تفكيك الفائض في التربة الذي يمكن أن يصبح غاز أكسيد النيتروز. ويحتوي أكسيد النيتروز على إمكانات مسبّبة للاحتباس الحراري أكبر بكثير من الميثان أو ثاني أكسيد الكربون، ممّا يعني أنّه يغطي المزيد من الحرارة في الغلاف الجوّي، والنتيجة الأخرى لاستخدام كميات كبيرة من المواد الكيميائية تتمثل في الآثار الصّحية المضرّة التي تسبّبها لعمّال المزارع الذين يتعرضون لها .

أشار تقرير من عام 2013 إلى أنّه يتم استخدام ما يقدّر بنحو 5.1 مليار باوند من مبيد الحشرات على المحاصيل كل سنة، وأن الآلاف من عمال المزارع يعانون من آثار التسمم الحاد بمبيد الحشرات بما في ذلك الصّداع والغثيان وضيق التنفس أو التعرض للنوبات، يؤدي التعرض لمبيد الحشرات إلى مشاكل صحية مزمنة مثل السّرطان، العقم ومشاكل الإنجاب الأخرى، والاضطرابات العصبية، وأمراض التنفس، وأخيرا يُؤدي الجمع بين التّربة المنحلة والاستخدام المفرط للمواد الكيميائيّة إلى جريان المياه، في مزارع الغرب الأوسط مبيدات الحشرات غالبا ما تشق طريقها عبر مزارع الجريان السطحي إلى نهر المسيسيبي لينتهي بها المطاف في خليج المكسيك، حيث توجد منطقة معدومة متنامية، هذه المنطقة تبلغ حوالي 6334 ميل مربّع، وهي منطقة منخفضة الأكسجين حيث لا تستطيع الأسماك والكائنات البحرية الحية العيش هناك.

كنتيجة للعناصر الغذائية الزائدة من المزارع التي

eventually end up in the Gulf of Mexico where is a growing dead zone, this dead zone approximately 6334 square miles, is an area of low to no oxygen where fish and marine life are unable to live, and as a result of excess nutrients from farms that end up in upland water sheds and eventually drain down into the gulf of Mexico.

One of the biggest sources of agricultural greenhouse gas emissions is industrial sized factory farm operations, also known as concentrated animal feeding operations or cafos, in particular livestock such as cows produce methane emissions when they digest food and also produce large amounts of manure which also emits methane CAFOS are associated with many other environmental and social harms, they are inhumane places for animals often have terrible working conditions for workers and produce health harming air and water pollution that adversely affect those living in surrounding areas. Cafos can house several hundred to millions of animals in a single location and contribute to over seven percent of greenhouse gas emissions in the US, there are plenty of ways to raise livestock that are more humane, earth friendly and more healthy for consumers. Food miles is the distance food is transported from the time of it's making until it reaches the consumer. A lot of food consumption is a high carbon footprint that's especially likely if the food arrived by

التي تنتهي في مستجمعات الأمطار المرتفعة وتصب في النّهاية في خليج المكسيك.

أحد أكبر مصادر انبعاث غازات الاحتباس الحراري الزراعية هي العمليات الزراعية الضخمة والمعروفة باسم عمليات تغذية الحيوانات المرّكزة أو "كافوس" وخاصة الماشية مثل الأبقار التي تنتج انبعاث غاز الميثان عندما تقوم بهضم الطعام، وتنتج أيضا كميّات كبيرة من السّماد (الرّوث) الذّي ينبعث منه أيضا الميثان. كما يرتبط نظام عمليات تغذية الحيوانات المركزّة بالعديد من الأضرار البيئية والاجتماعية، فهي أماكن غير إنسانية للحيوانات وغالبا ما تكون فيها ظروف العمل مرعبة للعمّال وتتسبّب في تلوّث الهواء والماء الذّي يضرّ بالصّحة ويؤثر سلبا على أولئك الأشخاص الذّين يعيشون بالمناطق المحيطة بها.

يمكن لنظام تغذية الحيوانات المركّزة أن يؤوي المئات إلى الملايين من الحيوانات في مركز واحد، ويسهم في أكثر من 7 بالمائة من انبعاث غازات الاحتباس الحراري في الولايات المتحدّة. هناك العديد من الطّرق لتربية الماشية التّي هي أكثر إنسانية وصديقة للأرض، وأكثر صحة للمستهلكين. أميال الطّعام هي المسافة التي ينتقل بها الطعام من وقت صنعه إلى غاية وصوله للمستهلك. ويعتبر الاستهلاك الكثير للطّعام من أكبر مصادر الكربون خاصّة إذا تمّ توصيل الطّعام عن طريق الجو بسبب التأثير المناخي العالي على الرّحلات، عندما نستهلك الطّعام فإنّنا نقوم أيضا باستهلاك الموارد اللازمة لنقل العديد

من تلك البضائع حول العالم، اعتدنا على أكل الفواكه والخضر التّي لا تكون في موسمها طوال السّنة دون التفكير في المكان الذي تمّت فيه زراعتها حتى تتمكّن من الوصول إلى أطباقنا، يقدّر أنّ الوجبات في الولايات المتحدّة تسافر حوالي 1500 ميلا للوصول من المزرعة إلى الطّبق، ونقوم بتبذير حوالي 1.4 مليار طن من الطّعام سنويّا على الصّعيد العالمي، ويرمي الأمريكيون الطّعام أكثر من أي دولة أخرى، أي من %ما يقرب 40 مليون طن أو 30 إلى 40 إجمالي الامتدادات الغذائية الأمريكية.

تبذير الطّعام ليس فقط تبذير المياه أو الطّاقة التّي يتطلّب إنتاجه، لكن عندما ترمي بقايا الطّعام في مكب النفايات تطلق كمية كبيرة من الميثان حيث أن بقايا الطّعام تمثّل 11% من انبعاثات العالم، ويحتل الطعام مساحة أكبر بالولايات المتحدة من أي شيء آخر في مكب النفايات. من خلال برامج التسميد والدورات المغلقة يمكننا التقليل من تبذير بشكل كبير، كما ترون كل هذه العوامل تساهم في تغير المناخ، وهذا النظام بدوره ضعيف جدّا في مواجهة تغيّر المناخ، وحيث اعتاد المزارعون على امتلاك مجموعة متنوعة من المحاصيل وتنوع أنواع المحاصيل أصبحت الآن مزارع صناعية تتميّز بمحاصيل أحاديّة من نفس أنواع المحاصيل. فعلى سبيل المثال تزرع المكسيك 59 نوعا من الذّرة المحليّة وفي البيرو 55 نوع من الذّرة، لكن الولايات المتحدّة تقوم بزراعة أقل من عشرة أصناف، وتعتبر الذّرة الصّفراء الأكثر شيوعا. 90% من الذّرة في الولايات المتحدّة تتم

air due to the high climate impact of planes, when we consume food we are also consuming resources needed to transport many of those goods around the world, we have grown accustomed to eating fruits and vegetables that are not in season all year around without thinking about where the foods were grown to be able to reach our plates. It’s estimated that meals in the US travel about 1500 miles to get from farm to plate. Globally, we waste about 1.4 billion tons of food every year, Americans discard more food then any other country nearly 40 million tons or 30 to 40 percent of the entire US food supply. Wasting food not only is a waste of the water and energy it took to produce it, but when food waste is disposed often landfills it releases high amount of methane, wasted food generates 11 of the world’s emissions and food takes up more space in the US landfills than anything else through composting programs and closed loop cycles we can drastically reduce our food waste. As you can see, all of these factors contribute to climate change and in turn, this system is very vulnerable in the face of climate change. Where farmers used to have a diversity of crops and a diversity of crop species now industrial farms are characterized by mono crops of the same crop species. For example,Mexico grows 59 varieties of indigenous corn in Peru 55 varieties but the US grows under 10 varieties. The most common of which by far

زراعتها من بذور معدّلة وراثيا لشركة واحدة،وحاولت الشركات الزراعية الكبرى مثل: "كورتيفا"، "مونسانتو"، "تايسونس"، "سينقينتا" وغيرها زيادة الأرباح والكفاءات بطريقة أزالت بها كل أنواع البذور وما سيحصل في النهاية هو أننا لن نزرع أنواعا مختلفة من المحاصيل مجدّدا، بعض أنواع المحاصيل قد تكون ملائمة لظروف الجفاف، وبعضها مناسبة للفيضانات وبعضها أكثر مقاومة للحشرات، ولكن الآن نأمل أن تصمد أنواع المحاصيل القليلة التّي نزرعها لكلّ التغيرات المناخية القادمة. وقد يؤثر التغير المناخي على إنتاج الذّرة في بداية سنة 2030 في ظلّ سيناريو انبعاث غازات الاحتباس الحراري. وفقا لدراسة جديدة نشرتها وكالة ناسا في مجلة "Nature food" من المتوقع أن تنخفض غلّة محاصيل الذّرة بنسبة 24%، وإلى جانب تأثر المحاصيل، الماشية أيضا تعاني مع ارتفاع درجة الحرارة. الضغط الحراري يعني عدد أقلّ من حالات الحمل لدى الحيوانات وإنتاج أقلّ للحليب، كما أن الماشية تستغرق وقتا أطول للوصول إلى وزن السّوق، كما نرى أيضا المزيد من الآفات مع ارتفاع درجة الحرارة التي يمكن أن تعني المزيد من الأمراض التّي تنتشر عن طريق الحشرات وبالطّبع ارتفاع درجات الحرارة يعني مخاطر أكثر على عمال المزارع الذّين يتعرضون للأشعة وحرّ الشمس.

نظامنا الزراعي الحديث متمركز جدا، وهذا يعني أنّ الزراعة في كاليفورنيا توفّر ثلث من الخضر في الولايات المتحدة الأمريكية وثلثي الفاكهة

is yellow corn, 90% of the corn in the US is grown from a single company's genetically modified seeds, large agricultural business like Cortiva, Monsanto, Tysons, Syngenta, and others have attempted to maximize profits and efficiencies in a way that has gotten rid of seed varieties, what ends happening is that we no longer cultivate different crop varieties, some crop species may be suited for drought conditions, some for flooding, some more resistant to pests but now we are left hoping that the few crop species that we do grow will withstand all the climatic changes that will come. Climate change may affect the production of corn as early as 2030, under a high greenhouse gas emissions scenario, according to new NASA study published in the journal "nature food" corn crop yields are projected to decline 24%, besides crops being impacted livestock also suffer as temperatures increase heat related stress means fewer animal pregnancies as well as less milk production and livestock take a longer time to reach market weight with higher temperatures we also see more pests which can mean more diseases spread by insects and of course higher temperatures mean higher risk to farm workers who face heat exposure. Our modern agriculture system is highly centralized, this means California agriculture supplier one. Third of the country's fruits and nuts, in recent years California has experienced severe drought

والمكسرّات في البلاد.

تعرضت كاليفورنيا في السنوات الأخيرة لظروف جفاف قاسية، وحرائق غابات وتسرب لمياه البحر، وهذا الانخفاض في مستوى المياه الجوفية أدّى إلى تدمير المحاصيل وتسرب المياه المالحة وتسبب في ارتفاع أسعار الغلّة للمستهلكين، ومن جهة أخرى يؤدي تغيّر المناخ أيضا إلى أحوال جويّة قاسية بما ذلك تساقط أمطار غزيرة، وتؤدي هذه الأمطار إلى تآكل التربة والجريان السّطحي ويمكن أن يسبّب اضطراب المحاصيل. وتؤثر كل هذه الأحداث المرتبطة بالمناخ مثل الجفاف والفيضانات وموجات الحر على المحاصيل والثروة الحيوانية، في حين أنّه من الصّحيح أن ثاني أكسيد الكربون يساعد أيضا في نمو وانتشار أنواع أخرى من الأعشاب الضّارة، مع استمرارنا في تدمير التربة من خلال الزراعة الأحادية والمواد الكيميائية الثقيلة أصبح طعامنا أيضا أقل تغذية. يمكننا أن نبدأ في جعل نظامنا الغذائي غير مركزي وزراعة الغذاء محليا، هل تعلم أن حاليا أربع شركات تتحكم في 85% من صناعة لحوم البقر في الولايات المتحدة الأمريكية؟ وهذا لا يساعدها في جعل نظامها مرن للغاية ونحن بحاجة إلى انتهاك هذه الاحتكارات.

كما نستطيع أيضا زراعة الأغذية باستخدام طرق زراعية عضوية وطبيعية، وهذا يشمل الممارسات التّي لا تستخدم المواد الكيميائيّة وبدلا من ذلك تعتمد على الطرق الطبيعية للقضاء على الحشرات، وهذا يتضمن أيضا تنفيذ الدّورات الزراعية للمحاصيل وتغطيتها وبناء تربة صحية

conditions wildfires and seawater intrusion. This combination of reduced groundwater levels destroyed crops, salt-water intrusion leads to crop prices going up for consumers, and on the other hand, climate change leads to extreme weather events including torrential down pours. These down pours lead to soil evasion, runoff and can mean crop distraction. All of these climate related weather events such as drought, floods, heat waves affect crops and livestock, while it’s true that carbon dioxide helps crops grow carbon dioxide also helps weeds and invasive species grow as well. As we continue to degrade our soil through mono cropping and heavy chemical inputs our food also is becoming less nutritious, we can start by decentralizing our food system and growing food more locally. Did you know that currently four companies control 85% of the beef industry in the US this doesn’t lend itself to a very resilient system and we need to break this monopolies. We can also grow food using organic and natural growing methods. This include practices that do not use chemical inputs rather they rely on natural pest management, this also includes implementing crop rotations and cover crops and plant species are local to our areas and eat seasonal foods we can learn where our food comes from and we can reduce waste by compositing and creating closed loop systems.

لتكون بمثابة أحواض الكربون. يمكننا معرفة أنواع المحاصيل والنباتات المحلية في مناطقنا وتناول الأطعمة الموسمية، ويمكننا معرفة مصدر طعامنا وتقليل التبذير عن طريق تركيب وإنشاء الأنظمة المغلقة، كما يمكننا تبني عادات غذائية أكثر استدامة وذلك من خلال تناول طعام نباتي أو محلي أو دعم المزارع الصغيرة والمزارعين .

إزالة الكربون من نظامنا الغذائي سيؤدي في الأخير إلى جعله مرنا، إذا ركّزنا على مبادئ العدالة الإيكولوجية يمكننا أيضا ضمان فوائد طويلة المدى لأنفسنا، لمجتمعنا، لعمال المزارع والحيوانات. إزالة الكربون من نظامنا الغذائي هو مفتاح لمستقبل أكثر استدامة.

We can adopt more sustainable eating habits whether that’s eating locally grown foods or supporting small scale farms and farmers. Decarbonizing our food system will ultimately build resilience, if we center principals of justice ecology we can also ensure long term benefits for ourselves, our communities farm workers and animals, decarbonizing our food system is key to a more sustainable future.

III.4. Analytical study of the corpus through selected examples:

In this part, we are going to deal with the analysis of twelve examples of industrial agriculture terms extracted from the three videos " the corpus", and we will examine them according to the theory of Vinay and Darbelnet by taking two examples for each strategy.

III.4.1. Borrowing :

The source language	The target text (suggested translation)	Procedure of translation
For the organic farmer, they could zap the weeds with a laser instead.	أمّا بالنسبة للمزارع العضوي فيمكنه قطع الأعشاب الضّارة بالليزر بدلا من ذلك.	Borrowing (1st video)
The Bonirob can take a soil sample, liduidize it, then analyse it's PH and phosphorus levels all in real time.	ويمكن للبونيروب أن يأخذ عينة من التربة لتصفيتها ثم تحليل درجة حموضتها ومستويات الفوسفور التي تحتوي عليها في وقت وجيز.	Borrowing (1st video)

The first table shows that the terms "Laser" and "Bonirob" is the source text are transferred precisely as : "الليزر والبونيروب" in the Target language.

These terms represent names of industrial agriculture technologies in the source language, the word "Laser" means a device that produces a powerful naraw beam of light that can be used as a tool to cut metal or perform medical operations. (www.dictionary.cambridge.com visited on 03-01-2023 at 16:27). And is a systemic herbicide for the post-emergence control of orange of grass weeds and cereal volunteers in the crops. (www.agricentre.basf-co-uk visited on 06-01-2023 at 10: 26), this term has no equivalent in the Target language, for this we kept the same word of source language "Laser" and we translate it by "الليزر" in the target language, by applying the borrowing procedure to introduce the Flavour of the source Text and create specific stylistic effect as Vinay and Darbelnet stated.

And the term "Bonirob" in the source language means a multi-purpose field used for agricultural applications. (https://info.amazone. Visited on 03-01-2023 at 16: 36), Bonirob is a new expression that do not exist in the target language or culture, therefore we used the same word of the source language "Bonirob" in the target language "البونيروب" through adopting

the borrowing procedure to overcome the gaps of the recipient language and transfer the message clearly to the target audience.

III.4.2. Calque :

The source language	The target text (suggested translation)	Procedure of translation
Vertical farms are essentially ware houses with stacks of hydroponics systems to grow leafy greens.	المزارع العمودية عبارة عن مستودعات ومباني تتكوّن من أنظمة الزراعة المائية لزراعة الخضر الورقية.	Calque (1st video)
Precision agriculture allows growers and farmers to work with better soil in larger fields and manage them as a group of small fields.	تسمح الزراعة الدقيقة للمربيين والمزارعين بالعمل مع تربة أفضل في الحقول الواسعة وإدارتهم كمجموعة من الحقول الصغيرة.	Calque (2nd video)

The previous chart shows that the two expressions “vertical farms” and “precision agriculture” are translated by "المزارع العمودية" and "الزراعة الدقيقة".

According to the Cambridge dictionary “vertical farms” is an activity of growing crops in many layers, one above another inside a building or under the ground often in specially controlled environment and is a fixed expression in the source language, therefore we translate it literally into the target language "المزارع العمودية" through adopting the lexical calque procedure and we maintained the linguistic unit the target language to make the whole message of the new expression comprehensible for the audience.

According to dictionary, the term “precision agriculture” is a compound word composed of precision and agriculture:

- Precision: means to do something exactly as it should be.
- Agriculture: is the methods that used to rise and look after crops and animals.

And when we combine the two words “precision + agriculture” it became one expression that means the application of technologies and principals to manage spatial and temporal variability associated with all aspects of agriculture production for improving production and environmental quality. (www.researchgate.com visited on 08-01-2023 at 18: 00). For this, we translate it word for word to the target language as "الزراعة الدقيقة" by applying the lexical

calque procedure and we respected the syntactic structure of the target language to introduce a new mode of expression and make the content of the video clear.

III.4.3. Equivalence :

The source language	The target text (suggested translation)	Procedure of translation
UK researchers have already created one gathers strawberries twice as fast as humans.	وقد قام فعلا الباحثون البريطانيون بإنشاء قاطف يجمع الفراولة مرتين أسرع من البشر.	Equivalence (1st video)
Over-over application of nitrogen, based fertilizer to croplands also produces greenhouse gas emissions, specially when more nitrogen is applied that what crops can actually take up.	كما أنّ الإفراط في استخدام الأسمدة المكونة من النيتروجين في الأراضي الزراعية ينتج انبعاث غازات الاحتباس الحراري، خاصة عند استخدام الأسمدة النيتروجينية أكثر مما يمكن للمحاصيل أن تتحمّله.	Equivalence (3rd video)

this chart below shows that the two expressions “strawberries” and “greenhouse gas emissions” are translated by : "الفراولة" and "غازات الاحتباس الحراري" in the target language.

The term “strawberries” is a fixed term, and according to Cambridge dictionary is a small, juicy, red fruit shaped like a cone with seeds on its surface or the plants on which this fruit grows, in the target language it has three correspondent terms: "توت الأرض" or "فريز" or "الفراولة". (www.almaany.com visited on 31-12-2022 at 15: 05). Therefore we choose the most common term and we translate it by "الفراولة" through adopting the equivalence procedure.

In the source text, greenhouse gas emissions is the emission into the earth’s atmosphere of any of various gases, especially carbon dioxide that contribute to the greenhouse effects. (www.collinsdictionnary visited on 31-12-2022 at 13: 38). This term has two correspondent in the target language: "غازات الاحتباس الحراري"or "الغازات الدفيئة". (www.almaany.com visited on 31-12-2022 at 19: 45). For this we translate it according to it’s meaning in the text: "غازات الاحتباس الحراري" by using completly different stylistic and structural methods and through applying the equivalence produce.

III.4.4. Transposition :

The source text	The target text (suggested translation)	Procedure of translation
Genetically improving the cultivation of other crops that haven't been modified yet could additionally lead to huge yield increase for millet and yams.	بالإضافة يمكن أن يؤدي التحسين الوراثي لزراعة المحاصيل الأخرى التي لم يتم تعديلها بعد الى زيادة كبيرة في انتاج الدخن واليام.	Transposition (1st video)
Decarbonizing our food system is a key to a more sustainble future.	إزالة الكربون من نظامنا الغذائي هو مفتاح لمستقبل أكثر استدامة.	Transposition (3rd video)

As it is shown in the table above, we see that the two expressions “Genetically improving” and “decarbonizing” are translated in the target language by : "التحسين الوراثي" and "إزالة الكربون".

The term “Genetically improving” in the source text means the science of applying genetic and plant breeding principles and biotechnology to improve plants. (https://cropscience.illinois.edu visited on 10-01-2023 at 19: 56). Also is a compound word composed of genetically as an adverb and improving as adverb, therefore, we translate it in the target language by "التحسين الوراثي" through adopting transposition procedure, the transposition occured at the level of two words “genetically” replaced by an adjective and “improving” by noun without changing the meaning of the message.

The verb “decarbonizing” means the process of reducing or completely eliminating carbon emissions. (https://persefoni.com learn visited on 10-01-2021 at 19: 11), and we translate it in the target language by "إزالة الكربون" through applying transposition procedure because we do not have other choices, so we replaced the verb “decarbonizing” by two nouns "الكربون" and "إزالة" in the target language to keep the meaning of the message.

III.4.5. Literal translation :

The source text	The target text (suggested translation)	Procedure of translation
A report from 2013 indicated that an estimated 5.1 billion pounds of pesticides are applied to crops each year.	أشار تقرير من عام 2013 إلى أنه يتم استخدام ما يقدّر بنحو 5.1 مليار باوند من مبيد الحشرات على المحاصيل كل سنة.	Literal translation (3rd video)
Researchers at harper adams in the UK plan to grow and harvest an entire hectare of Barly without humans ever entering the field.	يخطط الباحثون في هاربر آدمس في المملكة المتحدة لزراعة وحصاد هكتارا كاملا من الشعير بدون أي تدخل بشري في الحقل.	Literal translation (1st video)

As it is shown in the table above the two expressions: “a report from 2013 indicated that an estimated 5.1 billion pounds of pesticides are applied to crops each year” and “Researchers at harper adams in the UK plan to grow and harvest an entire hectare of Barly without humans ever entering the field” are translated Literally in the target language.

The first expression is translated by:

أشار تقرير من عام 2013 إلى أنه يتم استخدام ما يقدّر بنحو 5.1 مليار باوند من مبيد الحشرات على المحاصيل كل سنة.

And the second expression is transferred by:

يخطط الباحثون في هاربر آدمس في المملكة المتحدة لزراعة وحصاد هكتارا كاملا من الشعير بدون أي تدخل بشري في الحقل.

In these two expressions we transferred directly the source text into grammatically and idiomatically appropriate target text by using word for word or Literal translation procedure as Vinay and Darbelnet stated because the structure, the style and meaning of the expressions in the target language are the same as those of the source language.

III.4.6. Modulation :

The source text	The target text (suggested translation)	Procedure of translation
And of course, it's not just for crops, piglines are being altered to make them immune to an illness that costs American farmers 600 $ in a year.	وبالطبع يتم استخدامها أيضا لتغيير سلالة الخنازير لتحصينهم ضدّ المرض الذي يكلف المزارعين الأمريكيين 600 دولار سنويا.	Modulation (1st video)

As it shown in this chart, the expression "and of course, it's not just for crops, piglines are being altered" is translated in the target language by: "وبالطبع يتم استخدامها أيضا لتغيير سلالة الخنازير".

Here, in the source text we have a negative situation or expression "it's not just for", and we translate it in the target language by using a positive expression "وبالطبع يتم استخدامها أيضا" through applying the procedure of modulation to carry out a new form of the message in the target language that correspond to the situation indicated in the source text without changing the meaning.

III.4.7. Adaptation :

The source text	The target text (suggested translation)	Procedure of translation
Aquaculturists at the institute of Marine and environmental technology in Balti more are developing an artificial ecosystem that mimics ocean conditions.	يقوم مزارعي النباتات ومربو الكائنات المائية في معهد التكنولوجيا البحرية والبيئية في بالتيمور بتطوير نظام اصطناعي يحاكي ظروف المحيطات.	Adaptation (1st video)

This table shows that the term “Aquacultrists” is translated by : "مزارعي النباتات ومربو الكائنات المائية"in the target language.

The term Aquaculturists is a fixed expression in the source language. According to the dictionary of Cambridge it means raising of water animals such as fish for food or the growing of plants in water for food, this term is unknown and unfamiliar in the target language, therefore, we used a new expression to transfer the meaning from the source text to the target text through applying the adaptation procedure and we translate it as follow "مزارعي النباتات ومربو الكائنات المائية" in order to create a situational equivalent and make the message comprehensible for the target audience.

Through our translation process of industrial agriculture terms we encountered many difficulties among them; the lack of corresponding terms in the Arabic language, and the use of abbreviations that was an obstacle for us in understanding the content of the videos, also our limited knowledge in the field of agriculture and the difficulty of the terminology caused a problem in transferring the industrial agriculture terms from English to Arabic.

To sum up, in this chapter we arrived to analyse the industrial agriculture terms after translating our corpus and by following the procedures of translation of Vinay and Darbelnet in the translation and analysis of twelve examples, as well as we set the main difficulties that we have faced while translating the terms of industrial agriculture.

General Conclusion

General conclusion

Translation is a mean of communication and knowledge, and with the development of technology it became very developed as it serves all the domains, especially in the field of agriculture where it plays a vital role in transferring the principles and ways of farming from one country to another through removing language barriers and providing communication on agricultural issues, and it helps to meet the basic needs of human being.

Through this research, we tried to get an idea about the difficulties that the translator might face when translating terms related to the modern agriculture, by posing a problem at the beginning of our study entitled " what are the difficulties encountered by the translator while translating industrial agriculture terms" followed by sub questions and hypotheses, that we dealt with.

Based on our research problem presented at the beginning of the research, we have reached a set of results that we collect in the following points:

- The terminology of industrial agriculture is informative and it involves professional vocabulary and scientific concepts that are expressed through technical and non-technical terms. In addition, is characterized by accessibility, accuracy, transparency, conciseness and simplicity.
- Industrial agriculture terms are created in English language through using several morphological ways such as; affixation, conversion, abbreviations, borrowing and combination, as well as the Arabic language relies on derivation, Arabicization, compounding and blending to form the terminology of modern farming.
- The translation of agricultural terminology requires a complex knowledge of different fields, and the translator should earn many skills to rend the translation correctly.
- The use of dictionaries and having extra linguistic knowledge is very important to have effective communication on agricultural issues, specially that agriculture requires a technical translation.

In addition to these results, we managed to provide answers and confirmed the hypotheses in the following points:

- The difficulty of agricultural terminology and the lack of dictionaries and correspondent terms in Arabic represent an obstacle in translating the terms related to industrial agriculture. as well as the cultural and the linguistic differences between Arabic and English language and the disagreement between the Arabic scholars on developing

unified terminology cause a problem in transferring the terms of industrial agriculture from English to Arabic.

- The use of specialized glossaries and the mastery of the source language and the target language are very important in translating the terminology of industrial agriculture. In addition to this, the translators must earn lot of skills and they need to have knowledge about different fields such as science and technology as they should be specialists in technical translation to transfer the message correctly.
- Yes, the theory of Vinay and Darbelnet is appropriate for translating industrial agriculture terms but maybe the addition of other theories will facilitate more the process of translation.

At the end, we hope that we have succeeded in this research and we invite the students to investigate themes like the methods of creating modern agriculture terminology and the theories of translation that could be applied in translating agricultural terminology.

Appendix

Acronyms:

Acronyms	Significance
AGTECH	Agricultural technology
AGBOTS	Agricultural robots
CAFO'S	Concentrated animal feeding operations
C4	The four continents
CO_2	Carbon dioxide
DNA	Deoxyribonucleic acid
FITBITS	Fitness interval tracker and body index technology.
GIS	Geographic information system
GMO'S	Genetically modified organisms
GPS	Global positioning system
ICT	Information and communication technologies
ML	Machine learning
PH	Acidity
RFID	Radio frequency identification
RG	Rotational grazing
VRT	Variable rate technology

English Arabic dictionary

A	
Accuracy	الدقة
Acronyms	الاختصارات
Agriculture	الزراعة
Animal	حيوان
Antibiotics	مضادات حيوية
Algorithm	خوارزمية
Artifacts	الأدوات
autonomous	آلي
B	
Bacteria	بكتيريا
Basil	ريحان
Barley	قمح
Beans	الفصولياء
C	
Carbon dioxide	ثاني أكسيد الكربون
Chemical inputs	المواد الكيمائية
Cattle	الماشية
Climate	المناخ
Corn	ذرة
crop	محصول
D	
Degradation	تدهور
Digital	رقمي
Destruction	اضطراب
Drought	الجفاف
Drone	طائرة
E	
Equipment	معدات
Environment	البيئة
F	
Farm	مزرعة
Farmer	مزارع
Fertilizers	أسمدة
Field	حقل
Floods	فيضانات
Food	الغذاء

G	
Genes	جينات
Genetic editing	التعديل الجيني
Greenhouse	الغازات الدفيئة
Globalization	العولمة
Global warming	الاحتباس الحراري
H	
Harvest	الحصاد
humidity	الرطوبة
I	
Indigenous	أصلي
Indoor	داخلي
Industry	صناعة
Industrial agriculture	زراعة
Innovation	ابتكارات
Insects	حشرات
irrigation	الري، السقي
K	
kinmatic	حركي
L	
Laser scarecrows	فزاعات الليزر
Leafy greens	الخضر الورقية
Light lab	مختبر ضوئي
livestock	الثروة الحيوانية
M	
Maize	الذرة
Machete	منجل
Mechanizations	آليات
Methane	الميثان
Millet	الدخن
Minichromosome	الكروموسومات
monoculture	الزراعة الأحادية
N	
Nomenclature	التسميات
Nitrous oxide	أكسيد النيتروز
O	
organic	عضوي
P	
Papaya	ثمارالبابيا
Pests	الحشرات

Pesticides	مبيد الحشرات
Phosphorous	الفوسفور
Picker	قاطف
Plow	حرث
Prairies	مروج
productivity	الإنتاج
R	
Rainforests	الغابات الاستوائية
Rice	الأرز
Robots	الربوتات
runoff	الجريان السطحي
S	
Salt water	المياه المالحة
Seeds	البذور
Sensor	جهاز الإستشعار
Smart farming	الزراعة الذكية
Soil	التربة
Spray	رذاذ
squash	القرع الصيني
T	
Technologies	التقنيات
Temperature	درجة الحرارة
tractor	جرار
V	
Vegetations	النباتات
Vegetables	الخضر
Vertical farms	
W	
Warehouse	مستودعات
Weeds	الأعشاب الضارة
Wetlands	الأراضي الرطبة
wheat	القمح
Y	
Yam	اليام
yield	الغلة

Arabic English dictionary

أ	
Maize, corn	الذرة
Yam	اليام
Artifacts	الادوات
Wetlands	أراضي رطبة
Rice	أصلي
Indigenous	أسمدة
Fertilizers	آلي
Autonomous	آليات
Mechanizations	أكسيد النيتروز
Nitrous oxide	أعشاب الضارة
weeds	ابتكارات
Innovations	اختصارات
Acronyms	اضطراب
Destruction	إنتاج
productivity	
ب	
Seeds	بذور
Bacteria	باكتيريا
Environment	بيئة
protein	بروتين
ت	
Degradation	تدهور
Genetic editing	تعديل الوراثي
Nomenclature	تسميات
Soil	تربة
technologies	تقنيات
ج	
Drought	جفاف
Tractor	جرار
Runoff	جريان سطحي
Sensor	جهاز استشعار
genes	جينات
ح	
Harvest	حصاد
Insects/pests	حشرات
Plow	حرث
Kinematic	حركي
Field	حقل

خ	
Vegetables Leafy greens algorithm	خضر خضر ورقية خوارزمية
د	
Millet indoor Temperature accuracy	دخن داخلي درجة الحرارة الدقة
ر	
Spray Humidity Digital basil	رذاذ رطوبة رقمي ريحان
ز	
Agriculture Monoculture Smart farming Industrial agriculture	زراعة زراعة أحادية زراعة ذكية زراعة صناعية
ق	
barley	قمح
ط	
drone	طائرة
ع	
Organic globalization	عضوي عولمة
غ	
Rainforests Food Yield Carbon dioxide greenhouses	غابات استوائية غذاء غلة أكسيد الكربون غازات دفيئة
ف	
Laser scarecrows Floods fruits	فزاعات الليزر فيضانات فواكه
ق	
Wheat Picker squash	قمح قاطف قرع صيني
ك	
Minichromosome	كروموسومات

م	
Cattle	ماشية
Pesticides	مبيد الحشرات
Crop	محصول
Light lab	مختبرضوئي
Warehouse	مستودع
Equipments	معدات
Antibiotics	مضادات حيوية
Prairies	مروج
Farm	مزرعة
Farmer	مزارع
Vertical farms	مزارع عمودية
Saltwater	مياه مالحة
Methane	ميثان
Chemical inputs	مواد كميائية
ن	
vegetations	نباتات

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Abstract:

This work deals with the difficulties of translating terms related to industrial agriculture from English to Arabic, whereby we translated our corpus consisting of three videos taken from YouTube channel through adopting the comparative theory of Vinay and Darbelnet, and we tried to highlight the most important difficulties.

Through this research, we concluded that the terminology of industrial agriculture is informative and is characterized by accuracy, conciseness and clarity. As well as it is formed by using several morphological ways such as derivation, borrowing, combination and abbreviations. In addition, the translation of industrial agriculture terms requires complex knowledge of different fields and it involves technical translation. Furthermore, after the analysis we concluded that the translator faces multiple difficulties in translating agricultural terms such as the lack of equivalence. Therefore is necessary to master the language and specialize in the field to convey the meaning in a correct way, we also concluded that Vinay's and Darbelnet theory is appropriate for translating industrial agricultural terms.

Key words: Difficulties, the comparative theory of Vinay and Darbelnet, the terminology of industrial agriculture, translation, technical translation.

ملخص:

يتناول هذا العمل صعوبات ترجمة المصطلحات المتعلقة بالزراعة الصناعية من اللغة الإنجليزية إلى اللغة العربية، حيث قمنا بترجمة مدونتنا المكونة من ثلاث فيديوهات المأخوذة من قناة اليوتيوب بالاعتماد على النظرية المقارنة لفيني وداربلني وحاولنا تسليط الضوء على أ هم الصعوبات.

ومن خلال هذا البحث نستنتج أن المصطلحات الزراعية ذات طبيعة إخبارية وتتميز بالدقة والإيجاز والوضوح ويتم الاعتماد على طرق عديدة لتكوينها مثل: الاشتقاق، التركيب، الاقتراض والاختصارات، كما أن ترجمة المصطلحات الزراعية تتطلب معرفة في مختلف المجالات وتستلزم ترجمة تقنية، وبعد التحليل استنتجنا أن المترجم يواجه صعوبات متعددة في ترجمة المصطلحات الزراعية مثل نقص المقابل ولهذا ي لنقل المعنى بطريقة صحيحة، كما استنتجنا أن نظرية فيني و داربلني مناسبة لترجمة مصطلحات الزراعة الصناعية.

الكلمات المفتاحية: الصعوبات، النظرية المقارنة لفيني وداربلني، مصطلحات الزراعة الصناعية، الترجمة، الترجمة التقنية.