

科目名 Course Title	人口・食科学 [Economics and Ecology in Population and Food System]		
講義題目 Subtitle			
責任教員 Instructor	近藤 巧 [Takumi KONDO] (大学院農学研究院)		
担当教員 Other Instructors			
科目種別 Course Type	農学院専門科目		
開講年度 Year	2014	時間割番号 Course Number	043126
開講学期 Semester	2学期	単位数 Number of Credits	2
授業形態 Type of Class	講義	対象年次 Year of Eligible Students	～
補足事項 Other Information	第Ⅲ期開講		
<b>キーワード Key Words</b>			
<p>人口爆発、マルサスの公準、人口論、アグロエコシステム、動物生態学、経済成長理論、食料問題、人口成長率、農業技術、GMO、飢餓、飢饉、外部性、効率性、衡平性、食料の利用権</p> <p>population explosion, axiom of Malthus, agro-eco system, animal ecology, economic growth, food problem, population growth rate, Agricultural technology, GMO, starvation, malnutrition, externality, efficiency, equity, food entitlement.</p>			
<b>授業の目標 Course Objectives</b>			
<p>人類の生存にとって不可欠な食料を人類はいかに確保してきたのか。20世紀の人口爆発的条件下での農業技術の進歩と人口増加との関係、食料の増産が環境や生態系に及ぼす影響、なぜ今日10億ともいわれる栄養不足人口が存在し続けるのか、われわれ人類はマルサスの罠から解放されたといえるのか否かについて学ぶ。</p> <p>Food production systems are fundamental to the subsistence of human populations. The world's population is reported to have been seven billion in the year 2012. In the 1800s – about 200 years ago – the world's population was just one billion. It took 1,800 years for it to become one billion. At present every 13 years the world's population is increasing by one billion people. Most of this population growth is occurring in said developing countries.</p> <p>This lecture will address how humankind managed to secure food during the period of population explosion in the 20th Century. The relationship between the growth in agriculture technology and population growth will be considered, and the ramifications deriving from it on natural resource environments and ecologies including those of forests, fisheries, biodiversity, water resources, and land fertility. Additionally, the lecture will discuss two issues. First, why more than one billion people in the world today are starving or suffering from mal-nutrition. Second, whether the food systems in place at present are sustainable. We will consider whether the world is facing a Malthusian trap, or whether such an outcome can be avoided.</p>			
<b>到達目標 Course Goals</b>			
<p>地球規模の人口を養うために必要な食料の必要性和環境に優しい食料生産と分配のバランスについて理解する。</p> <p>Understanding for a balance between the food requirements of a growing population, and the need to produce and distribute food in ways that are more environmentally benign, socially equitable, and economically viable.</p>			
<b>授業計画 Course Schedule</b>			
<p>(序) 世界人口の歴史的な趨勢</p> <p>1) 人口転換モデル</p> <p>2) マルサスの公準と現代</p> <p>(1) 地球は養えるか: 途上国と先進国の食料の不均衡問題</p> <p>1) 経済成長と健康の関係: 日本の経験と発展途上国の課題</p> <p>2) 飢餓と飽食の構造 (総供給アプローチから食料の利用権へ)</p> <p>(2) 経済成長と人口問題</p> <p>1) 経済成長と人口増加: 古典派と新古典派</p> <p>2) 経済成長と自然資本</p> <p>3) 反マルサス主義と新マルサス主義</p> <p>(3) 人口大国の現状と課題: インドの場合</p> <p>1) 人口増加に対応した食糧増産は可能か: ICRIAT の挑戦</p> <p>2) 国際農業試験研究機関の役割</p>			

(4) 人口大国の現状と課題: 中国の場合

- 1) 人口制御の経験
- 2) 食料問題の可能性

(5) 根圏の制御—マクロとマイクロ

- 1) 文明の視点: アジア農業の生物多様性
- 2) 根圏の研究と土壌改良

(6) バイオテクノロジーと育種

- 1) 遺伝子工学・分子生物学の可能性
- 2) Breeding is local

(7) 人口と動物生態学モデル

- 1) 個体群と環境収容力
- 2) 共生系における動物の個体群制御メカニズム

(8) 最終レポートの課題発表

Introduction: dynamics of population and food

Past and projected world population

- a. Demographic transition
- b. Question of axioms of Malthus

1. Overpopulation?

- 1) Famine and obesity
- 2) Total supply of food approach versus entitlement approach
- 3) Efficiency, equity and externality

2. Economic growth and population problem

- 1) Economic growth and population growth
- 2) Economic growth and natural capital
- 3) Anti-Malthusians vs. Neo-Malthusians

3. Situation of Large Population Country: The case study of INDO

- 1) Possibility of increase in food production: : challenges in INCRISAT
- 2) Role of IARC

4. Situation of Large Population Country: The case study of China

- 1) Experience of population control
- 2) Possibility of food shortage

5. Control of rhizosphere

- 1) Biodiversity of Asian agriculture from a viewpoint of civilization
- 2) Research on rhizosphere and soil amelioration

6. Biotechnology and plant breeding

- 1) Potential of genetic engineering
- 2) Breeding is local

7. Demography and animal ecology

- 1) Population and carrying capacity
- 2) Mechanisms regulating populations in symbiotic-sphere

8. Conclusion and subject of final report

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### 準備学習 (予習・復習) 等の内容と分量 Homework

各講義に関する参考文献は分担者が講義の際に指示する。

Reading assignments should be done for the class day.

**成績評価の基準と方法 Grading System**

出席状況、各セクションで適宜出題される小課題、最終レポートによって総合的に判断する。

In the course of the semester there will be a number of short assignments to complete.

Final report must be completed to pass this course.

**テキスト・教科書 Textbooks****講義指定図書 Reading List**

Ecosystems and Human Well-Being/Millennium Ecosystem Assessment: Island Press, 2005

飢餓と飽食/荏開津 典生: 筑摩書房, 1994

Agriculture for Development, World Development Report 2008: The World Bank, 2007

Economics, A Very Short Introduction/Partha Dasgupta: Oxford, 2007

The Doubly Green Revolution/Gordon Conway: Cornell University Press, 1997

Population Explosion/Paul R. Ehrlich, Anne H. Ehrlich: Simon and Schuster, 1990

**参照ホームページ Websites****研究室のホームページ Website of Laboratory****備考 Additional Information**