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DOUBLE CROPPING AS A MEANS TO SUPPLY FOOD IN EAST ASIA

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Grade Level: 7th

Purpose/Overview:

The purpose of this lesson is to show students why double cropping will increase crop production on a limited amount of land.

Essential Question:

Why does double cropping enable farmers to increase their food production?

National Geographic Standards from *Geography for Life*

Geographic Elements and Standards:

Places and Regions --

4. The physical and human characteristics of places

Oklahoma Academic Standards:

Grade 7 World Geography: Eastern Hemisphere

Literacy Skills Standard 1: The student will develop and demonstrate Common Core Social Studies reading literacy skills.

C. Integration of Knowledge and Ideas

7. Integrate visual information (e.g., in charts, graphs, photographs, videos, or maps) with other information in print and digital texts.

Literacy Skills Standard 2: The student will develop and demonstrate Common Core Social Studies writing literacy skills.

B.4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

Content Standard 5: The student will analyze the interactions of humans and their environment in the Eastern Hemisphere.

2. Evaluate the effects of human modification of and adaptation to the natural environment including the:

- A. Deforestation of Indonesia's rainforests,
- B. Creation of living space through the drainage of seawater and the system of dikes in the Netherlands,
- C. Transformation of arid lands of the Arabian Peninsula through introduction of western irrigation methods,
- D. Use of terrace farming and double-cropping as solutions to food needs of East Asia, and,
- E. Benefits and dangers of nuclear power generation as exemplified by the environmental disaster at Chernobyl.

Materials:

Internet connection, LCD projector, computer, pencils, colored pencils, Post-It Note chart tablets, Internet articles listed in the **Procedures** section of this lesson

Time period: One to two 45-minute class periods

Procedures:

Ask students to describe what double cropping means to them. List possible answers on the board. Locate the definition on a reliable website [see the **Resources** section below], have students write this definition, then compare it to the ones they suggested. Ask why this type of farming might be necessary anywhere in the world. Then place the focus on East Asian countries. (This lesson can follow the one on "Terrace Farming in East Asia" since they will have already learned the countries in East Asia.) Show the video [Syngenta Double Cropping with Ian Matheson](#) so students can hear from an expert how this process works. [If you cannot get access to YouTube from school computers, there is another link that may permit you to see the same video.]

Print out and give to each small group the "What Is Multiple Cropping?" article [see the **Resources** section below]. Have each group read the article, discuss the main points, and write a summary in 35 words. [Note to teacher: Consider using the GIST strategy for helping students to read expository text and to get the main idea. See the **Resources** section below.] Each group will write their summary on a piece of poster paper or oversized Post-It-Note paper, then read it aloud to the class. These summaries will be posted when read so all groups have access to them.

Closure:

Divide students into teams of four or five. Give each student a copy of the article "Multiple Cropping" [see the **Resources** section below]. After reading and discussing the article, each team will present a short project to summarize a specific section assigned to them. Suggestions for these projects may include a poster with diagrams, a T-chart for advantages and disadvantages of multiple crop systems, a diorama, a mini-debate, or another creative way of displaying the facts.

Assessment:

1. Teacher observes students and checks for accuracy.
2. Students will be assessed on their ability to analyze and summarize text in a presentation using a creative project.

Extension/Simplification:

As an extension students may research any of the specific multiple cropping systems and present a tri-fold brochure advertising its benefits.

For simplification with a special needs class - Rather than using the closure activity above, you may have students choose a GIST poster to illustrate. You can also have the students read the closure article as a whole class, discuss the main points, and assign the students an opportunity to illustrate and caption specific parts of the article. They will be assessed on their ability to analyze what they read and apply the facts on a tangible product.

Teacher Resources: (All links were live as of October 18, 2013)

"What Is Multiple Cropping?" -- A short article which explains what multicropping is and the

advantages and disadvantages of it:

<http://www.wisegeek.com/what-is-multiple-cropping.htm>

Multiple Cropping -- Types of multiple crop systems, criteria for selection of crops, and disadvantages of multiple crop systems:

<http://www.articlesbase.com/environment-articles/multiple-cropping-4831668.html>

Product Line 3.1 Future management systems for efficient rice monoculture -- A dense article for students with well above average reading ability; it may be useful for developing solid background information:

<http://grisp.irri.org/product-line-3-1>

Multiple Cropping in Tropical Asia -- A 1976 article explaining why double cropping is used in Asia, and the major multiple cropping patterns used:

<http://ufdc.ufl.edu/UF00080891/00001/2j>

Mapping Single-, Double-, and Triple-crop Agriculture in China at $0.5^\circ \times 0.5^\circ$ by Combining County-scale Census Data with a Remote Sensing-derived Land Cover Map -- A scholarly article for students with well above average reading ability; it provides further information on regional multi-cropping rotations, maps of the regions, and discussions of significant consequences on the biogeochemical cycling of carbon and nitrogen in agro-ecosystems:

http://www.geocarto.com.hk/cgi-bin/pages1/june03/3_qiu.pdf

Intercropping and Crop Rotation, Their Advantages -- Definitions of different types of crop rotations and the advantages of each:

<http://www.cropsreview.com/crop-rotation.html>

A definition of multiple cropping and examples of where it is utilized:

http://en.wikipedia.org/wiki/Multiple_cropping

GIST Strategy:

<http://wvde.state.wv.us/strategybank/GISTStrategy.html>

Videos:

Syngenta Double Cropping with Ian Matheson -- Explanation of why he double crops in Canada (2:41):

<http://youtu.be/GghIKVsL2cA>

<http://www.cleanvideosearch.com/media/action/yt/watch?videoId=GghIKVsL2cA&name=Syngenta+Double+Cropping++with+Ian+Matheson&uploadUsername=syngentacanada&hitCount=286>

