

Investigating Agriculture in India

From ESRI India Geo-Inquiry Team

Target Audience: Class 10 Geography Students

Time required: 1 hour and 10 Minutes

Indicator: *Understand the concepts of agriculture in India and learn about them on real maps.*

Learning Outcomes: Students will analyse the Agriculture in India using web-based mapping tools to:

- 1–Identify major crops and soil used in India.
- 2–Identify major producer of wheat and rice.
- 3–District wise agricultural details like irrigated land, unirrigated land, agricultural equipment's etc.
- 4–State wise population of India engaged in agriculture.

Map URL:

<https://storymaps.maps.arcgis.com/apps/View/index.html?appid=3f0d8669afb7481aa3bb1059bb2f3c7c>

Can you better understand the importance of agriculture in India?

Can you better understand the land and population dedicated to agriculture?

Can you determine major producers of rice and wheat in India?

Teacher Notes

This is a **discovery** type of investigation. Students use live web mapping services in an online Geographic Information System (GIS) and use real data about rivers around the world.

Students will investigate four themes of geography in this activity:

1. Identify major crops and soil used in India.
2. Identify major producer of wheat and rice.
3. District wise agricultural details like irrigated land, unirrigated land, agricultural equipment's etc.
4. State wise population of India engaged in agriculture.

Students will use several different scales for their analysis—regional and local.

Requirements

1. Laptop or tablet computer, a web browser, and access to the Internet.
2. Ideally, each student works on his or her own computer with a web browser.
3. Alternatively, students could work in teams of two.
4. Another alternative is for the instructor to use 1 computer with a projector in front of the classroom to engage students in questions and dialogue as the lesson is being taught.

Student
name

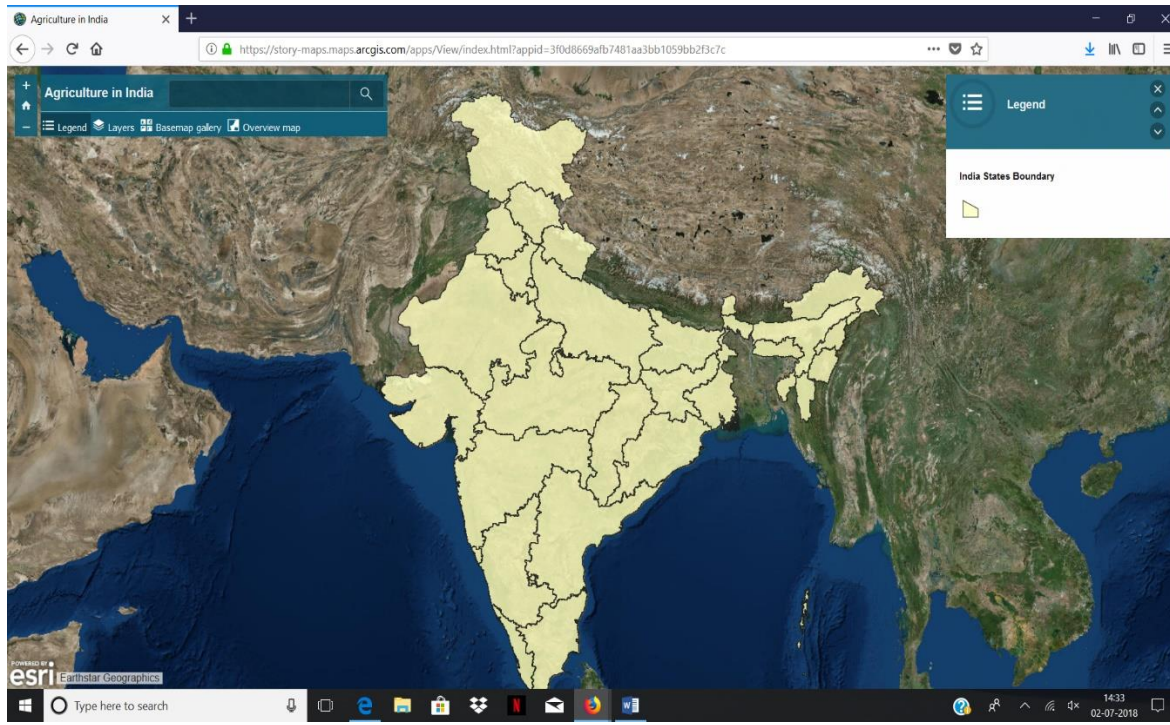
Class

Students have 2 class periods to complete the following investigation.

The investigation is ideally to be completed individually.

Open the Map

Open a web browser. [Click here to open the map](https://story-maps.maps.arcgis.com/apps/View/index.html?appid=3f0d8669afb7481aa3bb1059bb2f3c7c). The map you will open is a world map entitled “Agriculture in India”, should look similar to the following:



Bookmarks

You will use this live web map that is created with a Geographic Information System (GIS). A GIS provides an excellent way to explore the world and to learn geography at the same time. This map is served via a web based GIS called ArcGIS Online.

Use your mouse to move the map by clicking on the map and moving the mouse. Zoom in and out on the map using the slider bar on the left side of the map. You can also zoom in by pressing the Shift key while dragging a box across the map with the mouse, and letting go with the mouse. Use the Bookmarks to zoom to the locations identified there, as follows:



When you are done interacting with the map, use the home icon on top left to resume back to map of India.

Introduction

In your whole life you must have come across the term “Agriculture” or would have seen it in Discovery channel at least. Think what comes to your mind first.

Let’s start your investigation by examining agriculture across the world. It is difficult to underestimate the importance of agriculture to the world’s history and geography.

The history of Agriculture in India dates back to Indus Valley Civilization Era and even before that in some parts of Southern India. Today, India ranks second worldwide in farm output. Agriculture and allied sectors like forestry and fisheries accounted for 13.7% of the GDP (gross domestic product) in 2013, about 50% of the workforce. The economic contribution of agriculture to India's GDP is steadily declining with the country's broad-based economic growth. Still, agriculture is demographically the broadest economic sector and plays a significant role in the overall socio-economic fabric of India.

India exported \$38 billion worth of agricultural products in 2013, making it the seventh largest agricultural exporter worldwide and the sixth largest net exporter. Most of its agriculture exports serve developing and least developed nations. Indian agricultural/horticultural and processed foods are exported to more than 120 countries, primarily in the Middle East, Southeast Asia, SAARC countries, the EU and the United States.

Let’s start your investigation by examining agriculture in India.

Questions

1. What are the major soil types present in Karnataka?
Hint: Click on “layers” on top left bar. Layer pop up will get open on top right. Now select “India states boundary” and “Major crops and soil used” layer. You will see pin outs on map. Click on the pin outs to get information.

2. What are the major crops grown in Jammu and Kashmir?

3. Find the number pf people involved in agriculture in the following states.
Hint: In layers section, unmark all the layers except “Agriculture Workers”. Click on the state to get the information.

	State	Percentage	
	Maharashtra		

	Haryana		
	Kerala		

<p>4. Find the ratio of male to female workers engaged in agriculture in the following states. What do you analyse from this? Hint: In layers section, unmark all the layers except “Agriculture Workers”. Click on the state to get the pop up. On the pop up, click on arrow present on right adjacent to graph and find your answer on the second graph.</p>				
	State	Ratio		
	Uttar Pradesh			
	Jharkhand			
	Gujarat			

5. Determine the number of marginal workers and main workers in Jammu and Kashmir.
Hint: In layers section, unmark all the layers except “Agriculture Workers”. Click on the state to get the pop up. On the pop up, click on arrow present on right adjacent to graph and find your answer on the third graph.

6. Analyse the map to determine top three producers of wheat in India.
Hint: On layers section, select “India state boundary” and “Wheat production”. Blue bubbles will appear on the map. Bigger sized bubbles indicate top producers. Click on the bubble to get the name of state.

7. Analyse the map to determine highest producer of rice in India.
Hint: On layers section, select “India state boundary” and “Rice production”. Pink bubbles will appear on the map. Bigger sized bubbles indicate top producers. Click on the bubble to get the name of state.

8. Find the percentage of unirrigated land in Kachchh, Patan and Jamnagar districts of Gujarat. What do you observe?
Hint: Select “Agriculture Detail- District Wise” layer. Click on different districts to get information.

9. Select Leh district of Jammu and Kashmir. Determine percentage of household owing agricultural equipment and percentage of household having Kisan credit card.

10. Determine the percentage with assured irrigation for two crops for the following districts:

State	District	% of assured irrigation for two crops	
1 Andhra Pradesh	Kadapa		

2 Goa	South Goa	
3 Chattisgarh	Korba	
4 Assam	Nagaon	

1. What are the major soil types present in Karnataka?

The major soil types present in Karnataka are red soil, lateritic soil, black soil, alluvio-Colluvial soil, forest soil and coastal soil.

2. What are the major crops grown in Jammu and Kashmir?

The major crops grown in Jammu and Kashmir are paddy, wheat, maize, barley, bajra, jowar, gram, apple and walnuts.

3. Find the number of people involved in agriculture in the following states.

Maharashtra – 26,543,510

Haryana - 4,039,760

Kerala – 2,038,040

4. Find the ratio of male to female workers engaged in agriculture in the following states. What do you analyse from this?

Uttar Pradesh- 29,900,980:9,865,510

Jharkhand- 4,765,440:3,723,880

Gujarat- 8016900:4,468,680

Observation: More male population is engaged in agriculture than female population.

5. Determine the number of marginal workers and main workers in Jammu and Kashmir.

In Jammu and Kashmir, marginal workers are 1,716,460 and main workers are 2,700,030.

6. Analyse the map to determine top three producers of wheat in India.

The top three producers of wheat in India are Uttar Pradesh, Punjab and Madhya Pradesh.

7. Analyse the map to determine highest producer of rice in India.

The highest producer of rice in India is West Bengal.

8. Find the percentage of unirrigated land in Kachchh, Amreli and Jamnagar districts of Gujarat. What do you observe?

Kachchh- 62.51%

Patan- 55.97%

Jamnagar- 45.94%

Observation: Almost half of the land is unirrigated.

9. Select Leh district of Jammu and Kashmir. Determine percentage of household owing agricultural equipment and percentage of household having Kisan credit card.

Percentage of household owing agricultural equipment: 1.02%

Percentage of household having Kisan credit card: 1.69%

10. Determine the percentage with assured irrigation for two crops for the following districts:

Kadapa(YSR), Andhra Pradesh: 15.72%

South Goa, Goa: 21.98%

Korba, Chattisgarh: 5.29%

Nagaon, Assam: 24.14%

References

1. NCERT Class 10 Geography Book.
2. Geospatial Data from ArcGIS sharing portal.



<http://www.esriindia.com/>

ASSESSMENT CRITERIA: INVESTIGATIONS

Skill	Criteria	4	3	2	1	0
Inquiring Experimenting	Following Instructions	- Follows almost all instructions in the task accurately	- Follows most instructions in the task accurately	- Follows some instructions in the task accurately	- Follows few instructions in the task accurately	- Follows no instructions in the task accurately
Handling Researching	Organising information/ data	- Organises all information accurately - Includes all necessary features	- Organises most information accurately - Includes most necessary features	- Organises some information accurately - Includes some necessary features	- Organises little information accurately - Includes few necessary features	- Organises no information accurately
Understanding Analysing	Explaining	- Gives complete and accurate descriptions and reasons for results	- Gives complete and accurate descriptions and partly complete and accurate reasons for results	- Gives complete and accurate descriptions	- Gives partly complete and accurate descriptions OR - Repeats mathematical terms for results	- Gives no accurate descriptions
Evaluating Reflecting	Making informed judgements/ decisions	- Forms an opinion that is supported entirely by the evidence available	- Forms an opinion that is supported mostly by the evidence available	- Forms an opinion that uses some evidence	- Forms an opinion	- Forms no opinion
Participating (Choose the appropriate criterion)	Collaborating with other students	- Contributes fully to the group's work - Understands the group's results completely	- Contributes fully to the group's work - Understands most of the group's results	- Contributes partly to the group's work - Understands some of the group's results	- Contributes little to the group's work - Understands little of the group's results	- Makes no contribution
	Working independently and persevering	- Requires almost no supervision or encouragement - Tries to complete almost all task activities	- Requires some supervision or encouragement - Tries to complete most task activities	- Requires regular supervision or encouragement - Tries to complete some task activities	- Requires frequent supervision or encouragement - Tries to complete few task activities OR - Seeks immediate help	- Requires constant supervision to complete any task activities
						20

المهارة	المعيار	4	3	2	1	0
الاستفسار	اتباع التعليمات	- يتبع غالبا جميع التعليمات المذكورة في المهمة بدقة.	- يتبع معظم التعليمات المذكورة في المهمة بدقة.	- يتبع بعض التعليمات المذكورة في المهمة بدقة.	- يتبع القليل من التعليمات المذكورة في المهمة بدقة.	- لا يتبع أيا من التعليمات المذكورة في المهمة بدقة.
طرق المعالجة	تنظيم المعلومات/البيانات	- ينظم جميع المعلومات بدقة.	- ينظم معظم المعلومات بدقة.	- ينظم بعض المعلومات بدقة.	- ينظم القليل من المعلومات بدقة.	- لا ينظم أيا من المعلومات بدقة.
البحث		- يضمن جميع المميزات والخصائص الضرورية.	- يضمن معظم المميزات والخصائص الضرورية.	- يضمن بعض المميزات والخصائص الضرورية.	- يضمن القليل من المميزات والخصائص الضرورية.	
الفهم	التوضيح	- يعطي وصفا كاملا ودقيقا وأسبابا للنتائج.	- يعطي وصفا كاملا ودقيقا وأسبابا دقيقة جزئيا للنتائج.	- يعطي وصفا دقيقا وكاملا.	- يعطي وصفا دقيقا جزئيا وغير كامل.	- لا يعطي أي وصف دقيق.
التحليل				- يكرر التعبيرات الرياضية للنتائج.	أو	
التقييم	صنع تشكيل الأحكام/القرارات	- يشكل رأيا مدعما كليا بالدليل المتوفر.	- يشكل رأيا مدعما على الأغلب بالدليل المتوفر.	- يشكل رأيا مستخدما بعض الأدلة.	- يشكل رأيا.	- لا يشكل رأيا.
التعمق ونقل الخبرة						
المشاركة	التعاون مع الطلاب الآخرين	- يشارك مشاركة كاملة بعمل المجموعة ويفهم نتائج المجموعة بشكل كامل.	- يشارك مشاركة كاملة بعمل المجموعة ويفهم معظم نتائج المجموعة.	- يشارك مشاركة جزئية بعمل المجموعة ويفهم بعض نتائج المجموعة.	- يشارك بصورة قليلة بعمل المجموعة . يفهم القليل من نتائج المجموعة.	- لا يقوم بأية مشاركة.
(اختر المعيار المناسب)	العمل بالاعتماد على النفس والمواظبة	- لا يحتاج في الغالب لأي إشراف أو تشجيع. يحاول غالبا إكمال جميع أنشطة المهمة.	- يحتاج بعض الإشراف أو التشجيع. يحاول أن يكمل معظم أنشطة المهمة.	- يحتاج دعما أو تشجيعا دوريا لإكمال بعض أنشطة المهمة. يحاول إكمال بعض أنشطة المهمة.	- يحتاج إلى دعم أو تشجيع متكرر. يحاول إكمال القليل من أنشطة المهمة.	- يحتاج إشرافا دائما لإكمال أي من أنشطة المهمة.
				- يبحث عن مساعدة فورية.	أو	