# The Northern India April 2020 Wheat Harvest

IS IT BEING DISRUPTED BY THE COVID-19 LOCKDOWN?

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### Background and Motivation

- ▶ India's COVID-19 lockdown began on 25<sup>th</sup> March and has been extended until the 3<sup>rd</sup> May (<u>www.bbc.com/news/world-asia-india-52277096</u>).
- ► Recently, the Indian government lifted some restrictions to reduce the pressure on farming (www.bbc.com/news/world-asia-india-52350544).
- ► There are media reports that the lockdown is interfering with food production and distribution (<a href="https://www.bbc.com/news/world-asia-india-52176564">https://www.bbc.com/news/world-asia-india-52176564</a>).
- Northern India is a major wheat (an important staple crop) producer and exporter (<u>www.apeda.gov.in/apedawebsite/SubHead\_Products/Wheat.htm</u>).
- Wheat is double cropped with rice, and is mostly harvested in April.
- General question: Given the lockdown, could there be a risk to the Northern Indian wheat harvest which could have regional and global impact on wheat supply and prices?
- Specific: Can we use Sentinel to monitor the wheat harvest status through time, compare it to previous years, and identify possible disruptions?

## The April Wheat Harvest

- The wheat crop in Northern India is typically harvested in April over a 2-4 week period.
- ▶ Between March and the end of May, the fields go through a progression of stages:

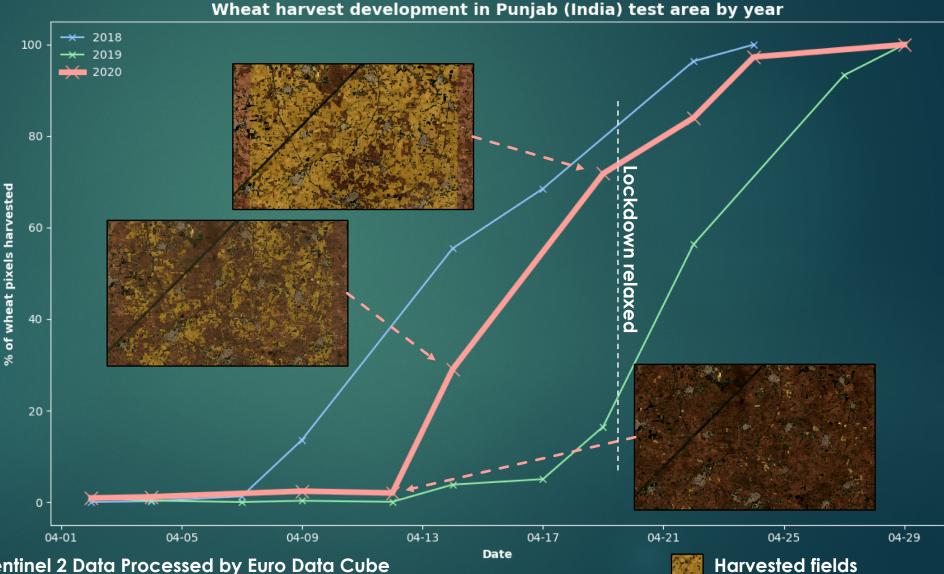


#### Methods

- 100 km² test area near Samana, Punjab, Northern India
- ► Training data manually digitised from Sentinel 2 data for 8 scenes from 2019 for classes: senesced wheat, harvested field, green (not wheat) and other land-cover (urban & water)
- Time frame
- Random forest classifier using all Sentinel 2 12a bands
- Classification of month of April for 2018, 2019 and 2020 (until 19<sup>th</sup>)

#### Results

- ~75% harvested by 19<sup>th</sup> April
- ~100% harvested by 24<sup>th</sup> April
- Rate of harvest comparable to previous years
- Timing of harvest intermediate between 2018 and 2019



#### Conclusions

- ▶ The harvest of the important staple wheat crop in the test area of Punjab state (India) does not seem to have ben delayed or reduced in rate compared to previous years.
- A significant amount (ca. 75%) of the harvest of wheat in this region had already been carried out before lockdown restrictions were relaxed.
- ▶ Therefore the lockdown has not had a noticeable impact on the harvest of wheat in this area and therefore there is no additional risk caused by a delay to the harvest.
- However, this may not be the case in other regions or with other crops, and media repots indicate that other crops have been disrupted (<a href="https://www.bbc.com/news/world-asia-india-52176564">https://www.bbc.com/news/world-asia-india-52176564</a>). Therefore, additional analysis of larger regions for wheat, and then other crops, would be better constrain the scale of the disruption.
- Furthermore, the lockdown may have other implications in the supply chain (e.g. transport to local markets and export) and economic conditions in general which may nevertheless cause food insecurity in and beyond India.