

**Thème 2 – Enjeux planétaires contemporains**  
2-B – La plante domestiquée

**Bees.**

**Question 1: Define the causes of the bee Colony Collapse Disorder (CCD)**

**Question 2: Discuss how the Chinese example could help Europe prevent wild bee extinction.**

**Document 1: list of crop plants pollinated by bees.**



Common name	Pollinator impact
Kiwifruit	essential
Watermelon	
Zucchini	
Turnip	
Cucumber	great
Apple, apricot, peach, pear	
Blackberry, blueberry	
Eggplant, sunflower, cotton, coffee...	modest
Potato, broccoli, onion, cauliflower, cabbage, orange, tomato, carrot...	little

**Document 2: pollination of apples in Maoxian.**

While the problem of bee CCD exists worldwide, nowhere is it more disturbing than in China's mountainous Maoxian region, in Sichuan Province, where farmers were forced to pollinate their apple orchards by hand after experiencing the loss of their entire wild bee population.

5 The pollination of apples in Maoxian has to be completed within five days in order for the trees to bear fruit—so every year thousands of villagers arrive for the arduous task of meticulously pollinating every single blossom by hand, according to Dave Goulson, writing for Chinadialogue, an independent non-profit with offices in  
10 London and Beijing.

Using homemade pollination sticks made from chicken feathers and cigarette filters dipped into plastic bottles filled with pollen, a single person can pollinate 5 to  
15 trees in a day. Children also participate by climbing the trees to reach the higher branches

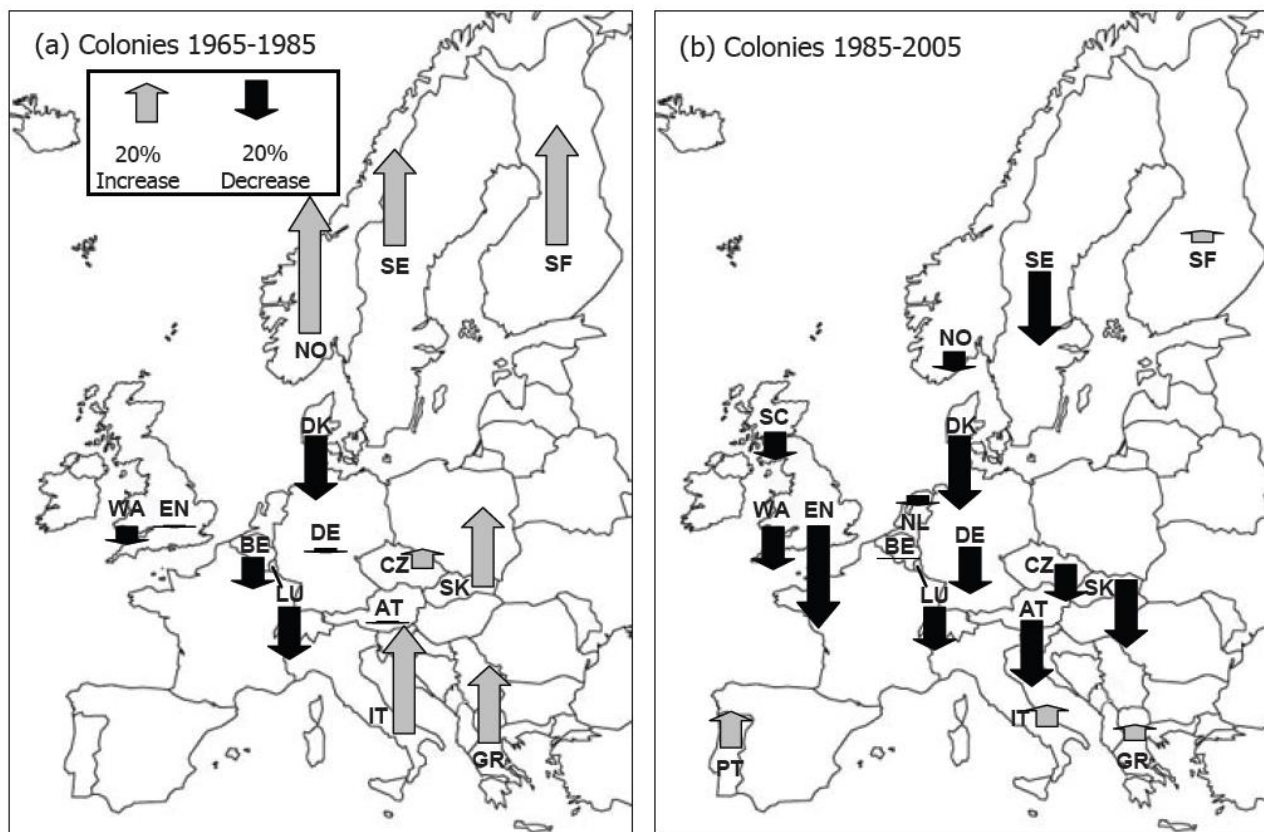


Source: <http://www.theepochtimes.com/n3/1321746-after-bee-die-off-chinese-apple-farmers-resort-to-hand-pollination/>

Picture from : [http://www.huffingtonpost.com/entry/humans-bees-china\\_us\\_570404b3e4b083f5c6092ba9](http://www.huffingtonpost.com/entry/humans-bees-china_us_570404b3e4b083f5c6092ba9)

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### Document 3: Bee colony decline in Europe.



Source: Simon G Potts et al., "Declines of managed honey bees and beekeepers in Europe," *Journal of Apicultural Research* 49(1): 15-22 (2010)

### Document 4: Pesticide ban and potential impact chemicals industry

The EU's recent adoption of a proposal to temporarily restrict the use of three pesticides from the neonicotinoid family for a two-year period has caused significant debate amongst scientists and industry members. Neonicotinoids, a class of insecticides designed to affect the central nervous system of insects, have enjoyed high adoption rates over the past two decades, ever since the first neonicotinoid was launched by Bayer in 1991. Their popularity is mainly due to their relatively low toxicity levels in mammals compared to previous insecticides.

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[...] The studies reveal that exposing bees to neonicotinoids at sub-lethal doses results in a loss of orientation in individual bees, lower productivity in worker bees, decline in the queen's production, and reduced colony growth rates, thus linking bee colony collapse disorder (CCD) to the widespread use of neonicotinoids. The two-year moratorium comes into effect on 1 December 2013. The moratorium will restrict the use of neonicotinoids to crops not attractive to bees and other pollinators, prohibit seeds from being treated with neonicotinoid pesticides, and forbid the sale of neonicotinoids to amateur growers.

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Sources: <http://www.sustainalytics.com/eu-pesticide-ban-and-potential-impact-chemicals-industry>

## **Teacher's corner :**

You've got the opportunity to test if the student is aware about pollination, bees and why not honey!

After having defined the bee colony collapse disorder (CCD) causes, you will discuss what impact can the decline of wild bees in China threatens more than just its apple and pear.

We may suggest the following order:

Document 2: decline of beehives in Europe.(Same data in America).

Document 4: causes.

One is said : the use of neocotinoids leads to CCD.

The studies reveal that exposing bees to neonicotinoids at sub-lethal doses results in a loss of orientation in individual bees, lower productivity in worker bees, decline in the queen's production, and reduced colony growth rates.

Document 3: how man has to replace bees' work.

You have to collect pollen (using the filter cigarette) and then using your stick, smack each flower to let some pollen grain onto the female part.

If fertilization is successful, you will have some fruit. If not, that can lead to a loss of crop and underfeeding (starvation?).

The problem is worldwide.

Document 1: we need to find a solution! The shrinking bee population is very alarming. Strong impact on essential; if little, we can suppose there is another pollinator or it is all wind-made.

Back to document 4: the EU (stands for European Union of course; 28 countries) has made a ban over these chemicals.

### **Other possible questions:**

Describe a flower ?

Describe a bee; place it in the classification.

What others pollinators do you know? Bats, butterflies, moths, wind...