



Healthy Fruit, Vol. 30, No. 9, May 31, 2022

Prepared by the University of Massachusetts Amherst Fruit Team

Jon Clements, Editor

Current degree day (DD) accumulations

UMass Cold Spring Orchard, Belchertown, MA (NEWA, since January 1)	30-May
Base 43 BE	820
Base 50 BE	444

Upcoming pest events

Pest	DD's Base 43 F. BE	Recommendation
Black cherry fruit fly 1st catch	702-934	Spray insecticide on ripening cherries
Black stem borer 1st flight peak	635-901	Monitor for signs of boring or hang traps
Codling moth 1st flight peak	562-980	Hang pheromone monitoring traps; set biofix when the first few moths are caught within a day or two
European red mite summer egg hatch	737-923	Scout for mites
Obliquebanded leafroller pupae present	601-821	None

Obliquebanded leafroller 1st catch	793-976	Hang pheromone traps
Obliquebanded leafroller 1st flight peak	851-1214	Ditto
Redbanded leafroller 1st flight subsides	610-891	Petal fall insecticides should be effective
Plum curculio still active until 308 DD's Base 50 F. from petal fall	Accumulated degree days (base 50°F BE) petal fall through 5/31/2022: 233	Fruit becomes very susceptible to PC feeding injury at 6-7 mm., and when night time temperatures are in the 60's; insecticide control for PC is necessary until the 308 DD's threshold has been reached
Oriental fruit moth 1st flight subsides	823-1094	Scout for flagging peach shoot tips
Spotted tentiform leafminer 1st flight subsides	682-941	Who still has a problem with STLM?
White apple leafhopper adults 1st present	679-1041	

Upcoming meetings

Wednesday, June 1, 2022, 4:30 PM – UMass Fruit Team Twilight Meeting, Apex Orchards, 225 Peckville Road, Shelburne Falls, MA. 1 pesticide recertification credit available @ \$20 per person. Light supper will be served.

2022 Virtual Orchard Meetup Series - Orchard Efficiency: Labor & Technology. June 2, 16, and 30; July 14. For more information: https://rvpadmin.cce.cornell.edu/pdf/event_new/pdf96.pdf

Saturday, June 11, 2022 - Massachusetts Cultivated Blueberry Grower's Association (MCBGA), Kenburn Orchards, Shelburne Falls, MA.

Thursday, July 14, 2022 – Annual Summer Meeting of the Massachusetts Fruit Growers' Association, UMass Orchard, Belchertown, MA. Details TBD.

The way I see it

Jon Clements

Taking a breather after measuring many fruitlets over the last 7-10 days. Fruitlets are in the 15-20 mm range now, it's quite clear what is staying and what is going, the going fruits are <10 mm

and not growing. Last chance for a [“rescue” thinning spray of ethrel](#) or Accede (if you have any) but the weather is cooling substantially after today and those treatments are not likely to be particularly effective. I will say that bloom and petal fall chemical thinners seem to have worked quite nicely, the verdict is still out on the 10-12 mm sprays but I would expect some further thinning. Bring in the hand thinning crew as soon as feasible, the earlier you hand thin, the more likely you are to help with return bloom. Consider a summer spray program of NAA and/or ethrel to promote return bloom. (See [Enhancing Return Bloom of Apple](#).)

Hope to see many of you at our fruit twilight meeting tomorrow, June 1, Apex Orchards, Shelburne Falls, MA. 4:30 PM. Courtney Basil will be our host and maybe Tim will even show up? 1 pesticide credit and sandwiches. Yup, I am batting 1,000, the forecast calls for rain, but what else is new? We pulled off Mann Orchards despite a miserable forecast, and speaking of miserable, how about that graupel at the UMass Orchard back in April? But it’s not going to rain during our meeting tomorrow. Do you think we should have a twilight meeting out east (Worcester County area) in mid-June? Any volunteer orchards?

Entomology

Jaime Pinero

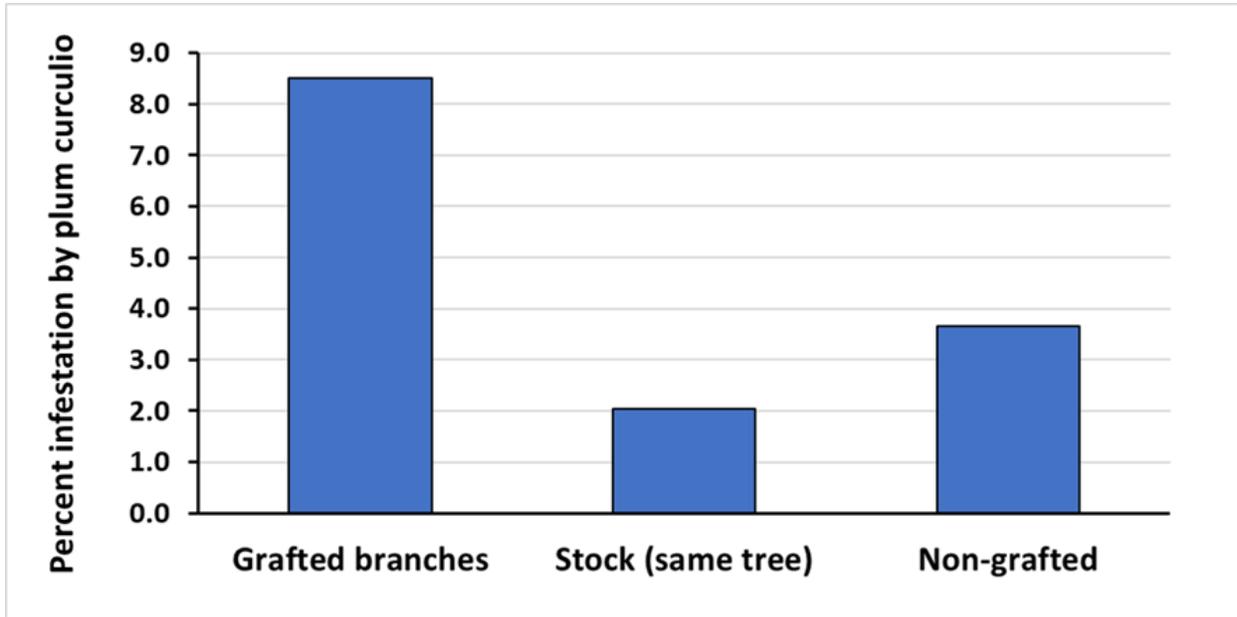
Plum curculio (PC). A perimeter-row spray is recommended if you haven’t sprayed within the last 10-14 days. PC only needs to be controlled until 308 DD have accumulated after petal fall. Make sure that the predicted residual coverage (10-14 days) from the last spray will protect fruit until DD accumulation reaches this value. Based on the weather forecast, *we should be reaching the 308 DD threshold around June 6th at the UMass Cold Spring Orchard.*

Petal fall date at the UMass Cold Spring Orchard: May 16th

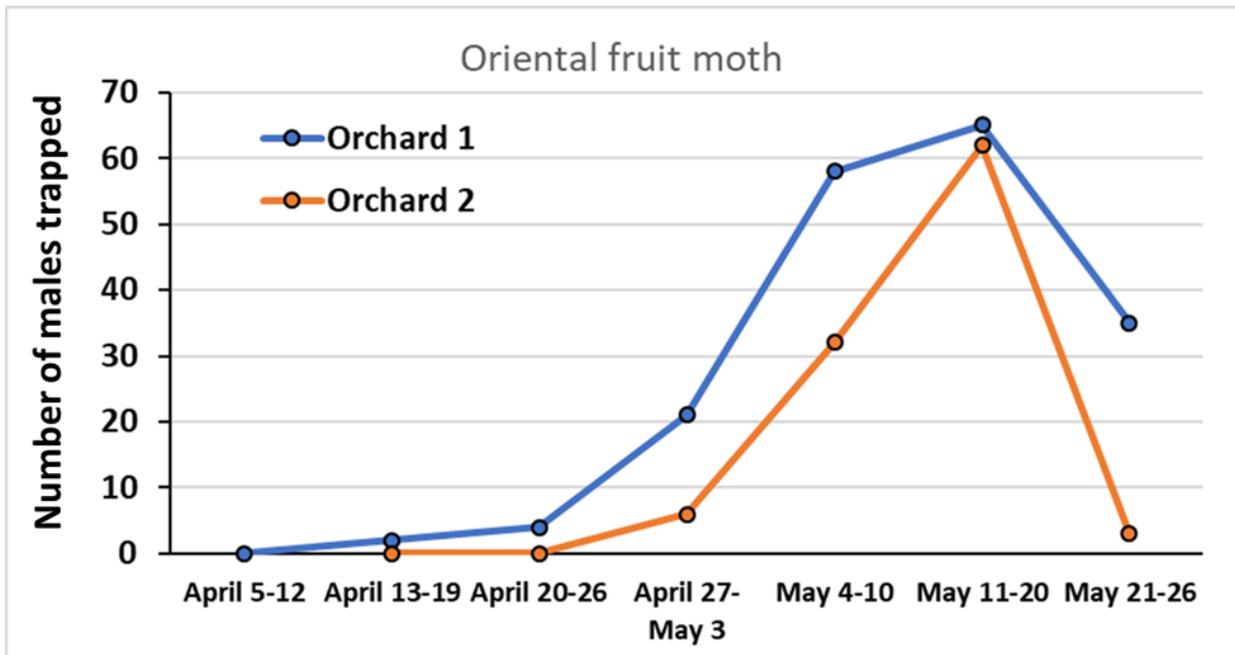
Accumulated degree days (base 50°F BE) since petal fall through 6/1/2022: 266.

Update on the grafting project. We are currently conducting PC fruit injury assessments in many blocks in MA. So far, our results from eight orchards continue to show that grafted branches are getting substantially more injury by PC (about three times more) than trees that did not receive the 6 cultivars (= referred to them as non-grafted trees). While the most important results will correspond to the harvest survey, the findings recorded thus far point to excellent performance of grafted trees. In other words, they are getting more PC injury, as expected.

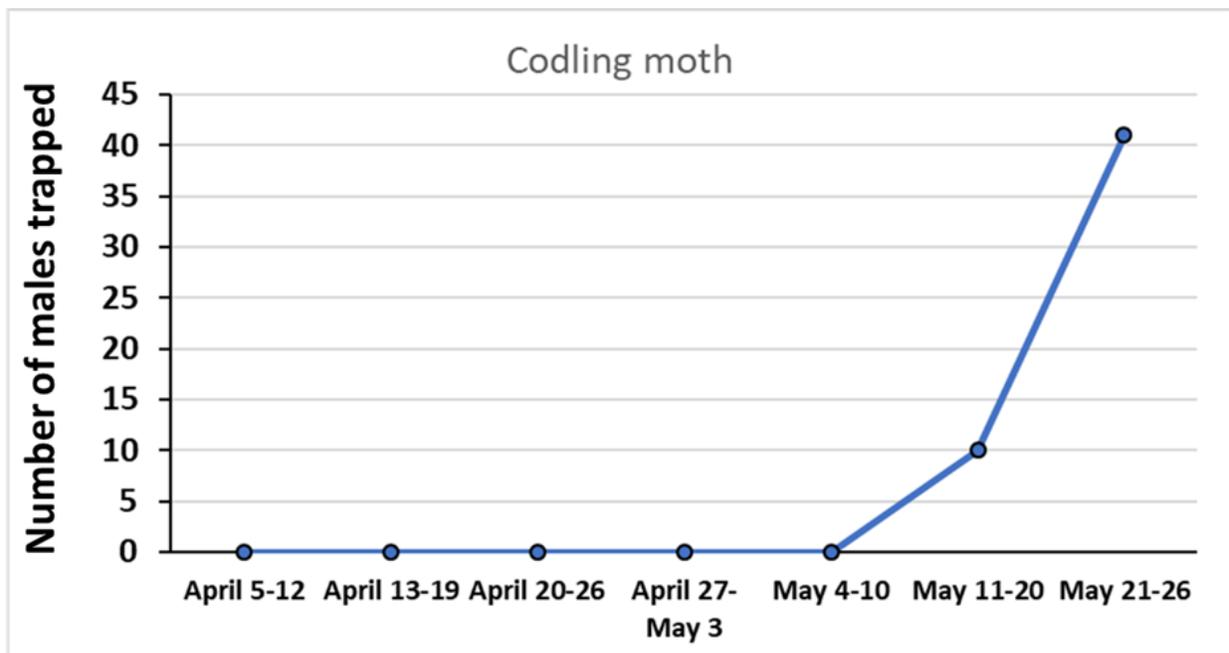
The graph below shows the results from the eight blocks surveyed thus far but we still need to record data from a couple of orchards. Stock refers to fruit samples taken from original, non-grafted branches.



Oriental fruit moth (OFM). Overall, 2022 OFM populations seem much higher than those recorded in 2021, in most orchards. The first flight of OFM is diminishing and the start of the second flight is expected at about 1000-1400 DD base 45F from January 1. The chart below presents the flight patterns of the OFM (first generation) in two monitored orchards.



Codling moth (CM). We are monitoring CM populations at 6 MA orchards. In one orchard there was an increase of CM captured in pheromone baited traps as shown in the chart below (trapping data are from an organic block for illustrative purposes, most blocks have low CM pressure).



CM management recommendations.

If you established a BIOFIX (date of sustained trap catch), then the first spray for CM was recommended at first egg hatch which already occurred at 250 DD (base 50°F) after BIOFIX. High moth pressure may require 2-3 sprays for the first generation.

The vast majority of insecticides used for CM control are aimed at killing larvae, and thus are typically applied beginning at 250 GDD post biofix.

If you are using traps to treat against CM based on thresholds, then CM suggested trap thresholds: If > 5 codling moths are caught per trap per week using standard lures, there can be problems in fruit from future generations. If trap counts continue to exceed threshold throughout the season, maintain insecticide coverage on a 2-week interval.

Exirel (cyazypyr) and Altacor (rynaxypyr) belong to the Diamide class of insecticides that work on the insect by activating ryanodine receptors, thus depleting internal calcium and preventing muscle contraction. They provide excellent control of both first- and second-generation CM, as well as OBLR. Verdepryn (cyclaniliprole) should also provide excellent CM control.

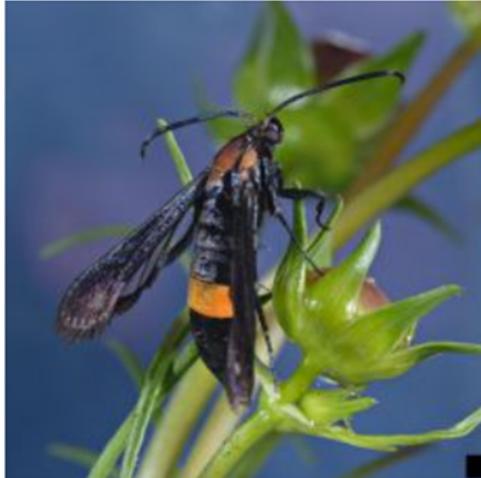
The neonicotinoid Assail will provide very good CM control with a residual action of 10-14 days. This compound is primarily larvicidal, but also has some ovicidal activity when applied over the top of the egg.

Peachtree Borer (PTB). PTB attacks all stone fruits, particularly peach and nectarine. Female moths are dark blue with a broad orange band around the body and forewings darker than the clear hind wings. The male is smaller and has three to four narrow yellowish bands across the body; both pairs of wings are clear.

PTB has a single generation per year. PTB overwinter as partially grown larvae, in a gallery under the bark - usually close to or below ground level. Most larvae complete their development during June and July. Most adults emerge and mate, and females oviposit, during July and August on tree trunks, in cracks or under bark scales, and in soil near the tree trunk.

Monitoring. Pheromone traps can be used to monitor PTB. Captures peaking at less than 10 moths per week generally indicates low pest pressure. Also, inspect the base of the tree for gum containing frass and sawdust.

Control. Mating disruption is one IPM strategy that growers are adopting due to the loss of chlorpyrifos. The Isomate PTB Dual mating disruption pheromone dispensers release pheromones for 100 to 120 days and should be placed in the orchard before moth emergence in early June. For effective control of this pest, use at least 200 dispensers per acre, distributed uniformly throughout the entire block. The Isomate PTB Dual dispensers will also control LPTB, but they need to be placed in the orchard earlier in the spring before adult LPTB emergence.



Peachtree borer - *Synanthedon exitiosa* (photo: Joseph Berger, Bugwood.org)

Pathology

Dan Cooley

No pathology update this week...

Horticulture

Thinning Comments for the first week in June

Duane Greene

We are nearing the end of the chemical thinning season. Fruit size in many orchards is 15 mm or slightly larger. There are fewer thinning options now and the effectiveness of those remaining continues to diminish as fruit size increases. The forecasted temperature for the week generally is moderate with mostly sunny skies. Given the fruit size now and the weather forecast, one can expect only moderate thinning.

Thinners available include...

Carbaryl - This is generally considered a mild thinner that may be useful over a wide fruit range of fruit sizes. It may be used alone at this fruit stage development stage but given the moderate temperature forecast for the coming week, it would probably be advisable to include it with other thinners as well.

NAA – NAA can still be effective especially at higher rates. This is a little late to use NAA but side effects such as reducing fruit size at higher rates are not likely due to the moderate temperature forecast.

MaxCel - This can be effective at this fruit stage but the full effect will probably not be achieved because of the temperature. It must be applied with carbaryl.

Ethrel - This thinner should be used only as a last resort. It is an erratic thinner. Generally, we suggest that you try to thin with the thinners mentioned above until about the 17-18 mm fruit size stage. Between 18 and 24 mm fruit size ethephon is about the only viable thinning option you have available this year. I have had moderate success applying ethephon at 1 pt per 100 gal with carbaryl. Some varieties are more susceptible, such as Golden Delicious, so lower rates on these varieties would be prudent. If you still have excessive fruit set, it might be worthwhile to try to reduce the crop load to a more manageable level on some of your trees.

Accede - This is the thinner introduced last year as an EUP. It is not available this year but the 15-18 mm fruit size stage is the thinning window it is primarily intended to be used in. It will be available next growing season.

Thinning by the numbers

Jon Clements

I have several (= too many!) blocks in both a commercial orchard and at the UMass Orchard where I have been measuring fruits and inputting those measurements into the fruitlet growth rate model over the past 7 to 10 days. I have been using both [Malusim](#) and the [Fruit Growth Model](#) apps. I won't go into the protocol details here, but suffice it to say I was measuring Honeycrisp, Gala, Fuji, and MAIA-1 (Evercrisp, measured once only because of a poor set?) using 5 trees by 14 fruit clusters per tree measured. Trying to figure out how to summarize the results, I have included a couple screen shots from the Fruit Growth Model app with some commentary. I am also working with [Farm Vision Technologies](#) on the same trees, and for your interest, have included a screenshot from their web console. Still digesting all these results and I am sure I will have a lengthy report later. Much information overload!

8:27



< Back

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TFF Honeycrisp

FULL TREE

Sample Number

1	2	3	4	5	6	7
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Average Apples Per Tree

515	110	59				
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Average Number of Clusters

110	110	110				
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Predicted Set (%)

	21.3	11.2				
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Average Growth Rate (mm)

	3.42	5.10				
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Dropping Size: 3.6 mm

TREE BOTTOM (clusters 1-6)

Average Apples Per Tree

226	48	28				
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TREE TOP (clusters 7-14)

Average Apples Per Tree

288	76	42				
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UMO Honeycrisp

FULL TREE

Sample Number

1	2	3	4	5	6	7
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Average Apples Per Tree

508	342	248				
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Average Number of Clusters

113	113	113				
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Predicted Set (%)

	66.3	48.3				
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Average Growth Rate (mm)

	3.40	4.93				
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Dropping Size: 6.7 mm

TREE BOTTOM (clusters 1-6)

Average Apples Per Tree

225	157	96				
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TREE TOP (clusters 7-14)

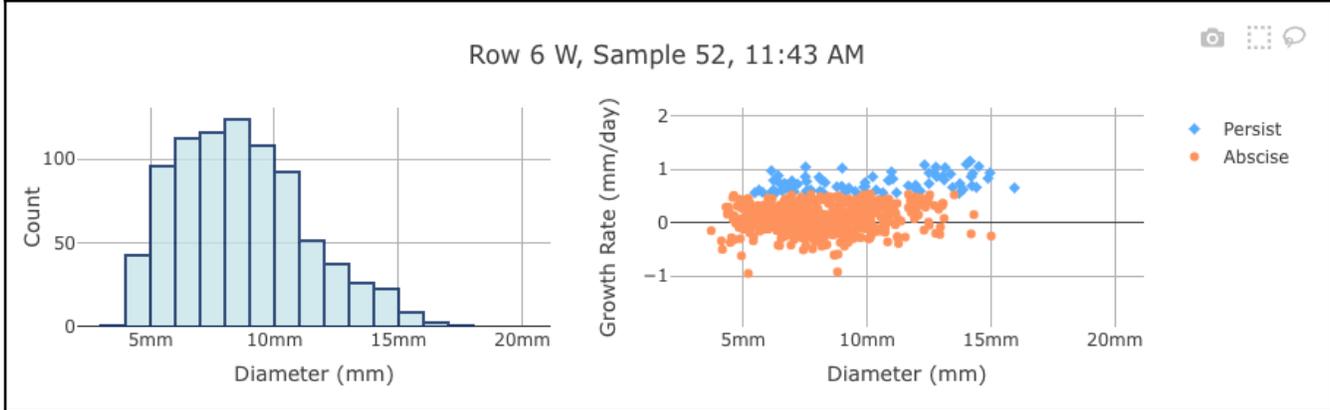
Average Apples Per Tree

282	190	152				
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Here the bloom and petal fall thinners worked exceedingly well and no further thinning to speak of was needed at 10-12 mm. In fact, a little over-thinning may have occurred.

In contrast, here there are still too many apples and an aggressive 10-12 mm chemical thinning application would be advised.

	Time Collected	Row	Sample	Side	Length (m)	Count (per m)	Growth Rate to Persist (mm/day)	Predicted Persistent %	Projected Count (per m)
	11:43 AM	6	52	W	3.8	1628 (428.3)	0.5	14.2%	231 (60.7)



Example Farm Vision Technologies web console for TFF Honeycrisp indicates 14% fruit persist which is not too far off from the 11% predicted set from the actual measurements. Farm Vision uses a smartphone with GPS and a depth camera to scan the whole tree canopy (5 trees).

Row 6 W, Recorded at 05/27/22, 11:43 AM EDT



Example Farm Vision scan, note individual fruitlet clusters being marked and measured!

Guest article

No Guest article this week...

Useful links

UMass Fruit Advisor: <http://umassfruit.com>

Network for Environment and Weather Applications (NEWA): <http://newa.cornell.edu>

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[The Jentsch Lab](#) (Peter Jentsch, Poma Tech)

[Acimovic Lab](#) (Srdjan Acimovic at Virginia Tech)

[Tree Fruit Horticulture Updates](#) (Sherif Sherif at Virginia Tech)

App store: Malusim (iOS and [Google Play](#)); Fruit Growth Model (iOS); Orchard Tools (iOS); MyIPM (iOS and [Google Play](#)); Eco Fruit/Apple App (iOS and [Google Play](#)) Note: for iOS apps search the App Store on your iOS device.

The next Healthy Fruit will be published on or about June 7, 2022. In the meantime, feel free to contact any of the [UMass Fruit Team](#) if you have any fruit-related production questions.

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