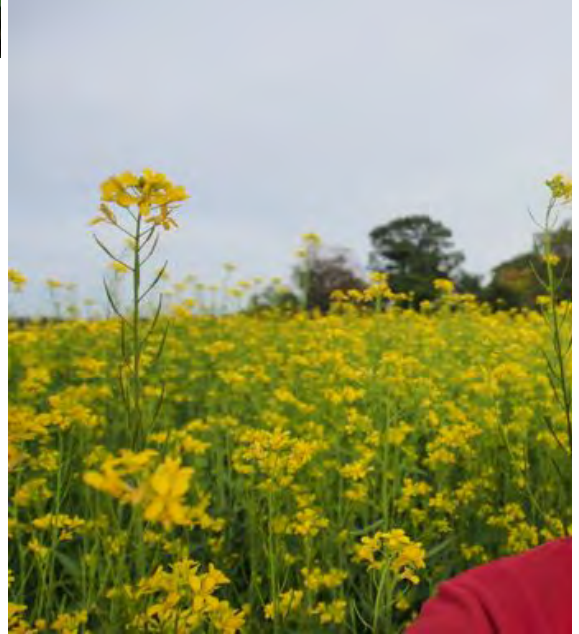




Steps For Success: Biofumigation With Mustard Cover Crops

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1. Prepare field – a reasonably good seedbed with good weed control is needed.
2. Apply up to 100 lbs N/A and incorporate in - 50 lbs N/A will also work but no less
 - a. Up to 80% of this will be recycled and made available to following crop
 - b. More biomass production with higher rate of N = greater biofumigant potential
 - c. 20 lbs of S can help also for producing needed biofumigation compounds
3. Drill or broadcast at a rate of 10 -12 lbs per acre for Caliente mustard, 6-8 lbs ac for Nemat arugula
 - a. Plant as soon as soil can be worked for spring seeding, ~mid-April or earlier if possible
 - b. ~Late July to August 1 planting for fall biofumigation
4. Will double in height after flowering, grows up to 5' tall
5. Aim to incorporate 2-4 weeks after flowering or allow ≥ 10 days before overwintering cover crop planting for fall biofumigations
 - a. This will roughly be toward the end of May with a late March / early April seeding
 - b. Have 6 weeks from flower until viable seed production – avoid or will become a weed
6. Flail chop to cut mustard into many tiny pieces, chopping releases chemical for biofumigation
7. Immediately follow with a roto-tiller to incorporate – Plowing will bury plant material too deep
 - a. Disking can be done but roto-tiller chops material up more and incorporates better
8. Roll to seal the soil surface – we've followed the roto-tiller with a coulter packer to do this
9. Either irrigate or plan the above steps around a rain event
 - a. *Moisture is essential for biofumigation process!!!!* And acts to further seal the surface
10. Do above steps in the morning and as close together as possible
 - a. Chemicals volatilize in heat and over time
11. Wait about 10 days before planting next crop – stunting could result if you plant sooner
 - a. Lightly work the soil before planting to ventilate any remaining gas
 - b. Do not plow or cultivate heavily before planting the next crop –will bury treated soil



TOP: Weed free 'Caliente 199' mustard exhibiting adequate fertility for lush growth: 50-100 lbs. available N & 20 lbs. S recommended.
 BOTTOM: Pumpkin sprouting through (left), and growing in (right) zone-tilled, rolled rye.

Caliente mustard grown to maximum stage before biofumigation- 2-4 weeks after flowering begins (seeds still green), 3-5' tall.



Flail mowing to rupture plant cells, incorporating residue into soil surface, rolling the soil surface to help trap biofumigant gases, and irrigating (if soils are dry) to activate biofumigant compounds.

Simultaneous mow, incorporate, and pack operation in eastern WA.