Soil Solarization

Tips from a Grower and a Researcher

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* Start small, on a good field.
  + Don’t start on your worst field.
  + Save money, time and disappoint by starting on a small-scale because there is a learning curve to doing it successfully.
* Focus on solarization as a tool for annual weeds. As a generalization, solarization does not have good control of perennial weeds like Bermuda grass, Johnson grass and bindweed.
* Be cautious of solarizing fields with a mix of annuals and perennial weeds for solarization can promote perennial weed growth and/or those weeds can puncture the plastic and reduce the effectiveness.
* Solarization shifts the weed management problem from the planting beds to the furrows.
* Be wary of furrows getting wet while being solarized. This can happen by an unexpected spring rain, which is why starting too early can be a risk, or by having solarized field near fields that are being sprinkler irrigated and a gentle wind can send water to the furrows, enough to germinate weeds. While beds are under plastic, furrow cultivation is not very feasible because the plastic can be disturbed/torn. As such, you don’t want to manage weeds in the furrow.
* Regarding the plastic, it is important that the material is transparent and contains UV-protection (to prevent deterioration of the plastic). The thickness isn’t that important, but rather the thinner the plastic, the cheaper the cost.
* If thicker plastic is used, it can be left on the soil and planted directly into. This is not typical because very thin plastic is often used which is not suitable to withstand a growing season.
* If drip tape is laid on the soil surface under the plastic, it should not deteriorate. This was previously a problem but has been corrected.
* Good soil-plastic contact is important.
* Soil moisture increases solarization effectiveness and can increase the depth at which it is effective. However, in very hot, sunny climates one can get away with little to no moisture so getting the moisture ‘right’ is not as important of a factor.
* Solarization is especially useful for weed management in crops that straddle seasons since solarization eliminates weed seeds regardless of the season, unlike pre-irrigation. For example, it’s August and you’re prepping for a carrot planting. Pre-irrigation will germinate warm season weeds, whereas the weeds that will become a problem are the cool season that couldn’t be controlled with the late summer pre-irrigation. Solarization will manage both the warm season and cool season weed seeds.
* The soil amendments that would typically be added before a crop planting, such as compost, or crop biomass (cover crop or cash crop) can be incorporated pre-solarization and can enhance the effectiveness of solarization (biosolarization). Additionally, soil should not be disturbed post-solarization such as to shape beds or add amendments; therefore, pre-incorporation is better.