Summary - Recommendations

In the spring of 2010 different weed control measures in arugula were examined at the pilot farm Queckbrunnerhof of the Service for Rural Areas (DLR) Rheinpfalz. In contrast to the tested herbicide options surface steaming resulted to complete weed suppression also of the problem weed ragwort, and at the same time clearly increased yield. Further tests will be undertaken to verify these results.

Test Question and Background

Due to changes in herbicide availability, weed control in arugula has become extremely difficult. In addition retailers call for zero tolerance for contamination with ragwort in the product. Combinations of available herbicides such as Goltix, Devrinol fl and Butisan (§ 18b) should be tested and compared with surface steaming.

Results

1. The weather in the culture period (4.05. -22.06.2010) was quite harsh in the first half of the culture period in May with unusually low temperatures (avg. 13 °C) and very high rainfall (123 mm marked).
2. Under these conditions the arugula culture strongly reacted on the herbicides used before seeding. They led to stress related anthocyanin accumulation and delayed growth in the initial growth phase. While the later use of Butisan showed good crop tolerance the treatment with extremely low amounts of Lentagran (not reported) led to drastic leaf colors, which largely outgrew in the later stages of culture development.
3. With available herbicides only partial effects against weeds in arugula could be achieved. In common practice a combination of Goltix and Devrinol only reached average efficiency of about 70-80%.
4. Surface steaming for 15 min to 10 cm depth, as it was implemented by the company MSD, showed good crop tolerance. The weed effect was complete and the yield was higher by 19% than in the control plots.

Kritische Anmerkungen

The impressive effect of steaming is accompanied by rather high cost for primary energy of at least 2,500 liters of oil per hectare and a limited area coverage. But steaming appears worth exploring for high value crops and high labor cost for manual work such as weeding in the field and the sorting of the product before packing. This should especially be the case for arugula and babyleaf salads.

Accordingly, this method will be examined further. If the clear increases in yield were also confirmed in the future, they could help to cover the occurring costs.
Figure 1: Growth disturbance of different weed control methods in arugula (Rukola selvatica, Seeding 04.05.2010)

Wachstum = Growth; Kontrolle = Control; Dämpfen = Steaming

Figure 2: Effect of weed control methods in arugula (08.06.2010)

Wirkungsgrad = Effectivity; Dämpfen = Steaming

Figure 3: Yield after weed control in arugula (22.06.2010)

Ertrag = Yield; Kontrolle = Control; Dämpfen = Steaming
**Figure 4 and 5:** Effect of steaming for week control in arugula

Control | Steamed

**Figure 6 and 7:** Occurrence of weed in control plots

Ragwort | Shepherd’s