

USE OF COVER CROPS FOR WEED SUPPRESSION, JAPAN

Dr. Hiroshi Uchino

SCIENCE
PRIZE
WINNER

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INNOVATION

A new simple method was developed by Dr. Uchino to measure the Vegetation Cover Ratio (VCR: a percentage of area covered by vegetation to unit soil surface area) of each crop species to evaluate the relationship between growth traits of cover crop and weed suppression.

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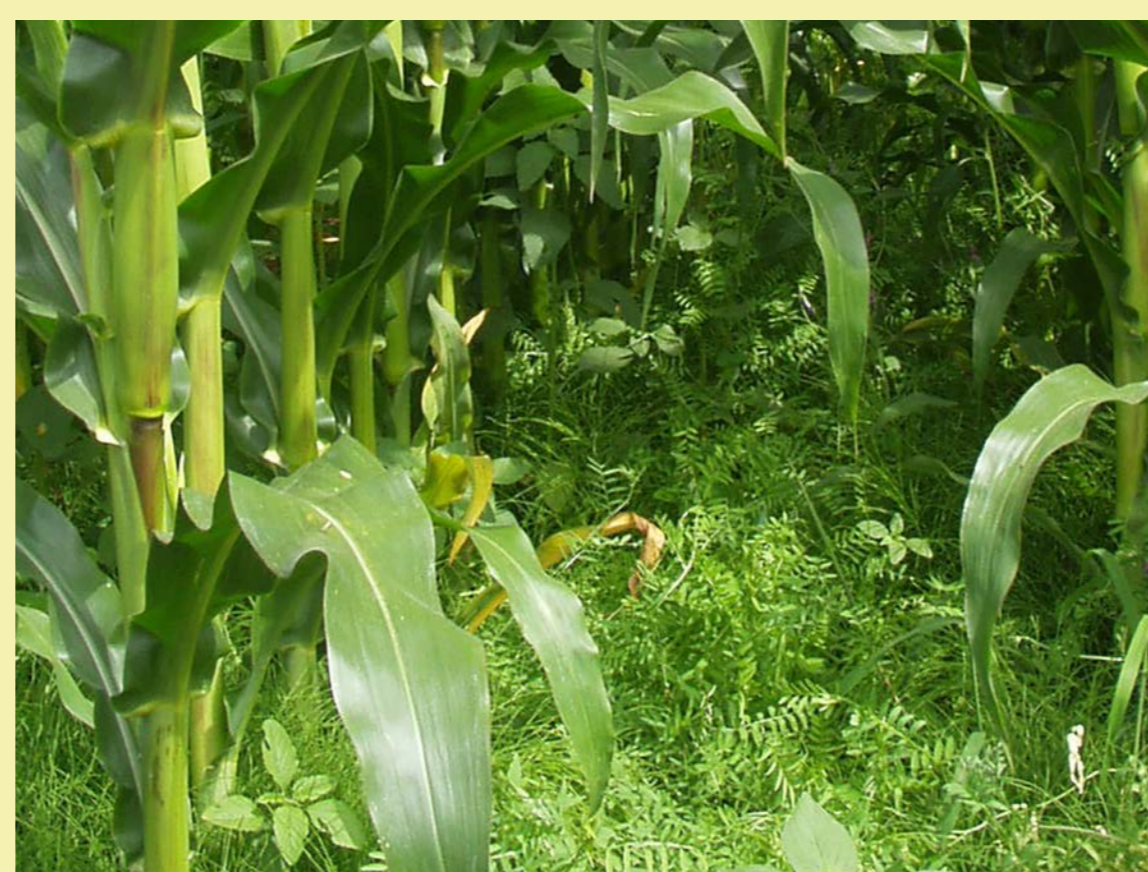
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DESCRIPTION

Weeds are one of the most serious threats to cause a significant crop yield loss in organic farming. Cover crops are effective to prevent weed damage, but they sometimes suppress not only weed growth but also the growth of the main crop/s.

To achieve stable weed suppression in organic farming, in field studies with soybean, maize and potato in Hokkaido and Tohoku, the northern regions in Japan, Dr. Uchino used the VCR method to evaluate the relationship between growth traits of cover crop and weed



Maize with hairy vetch as cover crop

suppression, and revealed that weed growth could be suppressed effectively by cover crops with high VCR. He also showed that cover crop species with heavier seed weight performed more effective weed suppression compared to light seed weight species.

RELEVANCE

Weed control is one of the big problems in organic agriculture. Weed suppression by interseeding cover crops was found to be stable in crop rotation systems. Weed growth was suppressed by sowing cover crops and this weed suppression was highly associated with the increase of VCR of main crops plus cover crops at the early growth stage. This study shows that careful selection and combination of species of main crops and cover crops of different canopy structure and maturing periods can effectively suppress weeds.

Two cover crop species, spring-sown winter rye and hairy vetch, were selected as the most suitable candidates for interseeding as a cover crop in Hokkaido.

Dr. Uchino revealed an important mechanism of weed suppression by cover crops in organic farming systems in the northern part of Japan. His findings demonstrate the relevance of cover crops for weed suppression to organic farmers.



Weed infestation in soybean with (right) and without (left) cover crop