

## Salty farms for storing global carbon

As a low-cost strategy for soaking up some of the excess carbon dioxide in the atmosphere, a number of researchers have proposed reforesting huge tracts of land across the globe (SN: 12/24/88, p.411). But the massive reforestation required to slow global warming would render large amounts of arable land unavailable for agriculture. A team of scientists is now investigating an alternative: trapping carbon in seaweed or in plantations of salt-tolerant desert brush.

An estimated 2.6 million square kilometers would be available for these "biomass farms," divided about equally between ocean waters on the continental shelf and the world's inland salt deserts, according to a February report by the Electric Power Research Institute (EPRI) in Palo Alto, Calif. To keep the carbon they've incorporated from returning to the atmosphere, mature plants must be harvested and buried in a way that largely prevents decay. Seaweeds might be stored in ocean sediments, though no one has yet devised a cost-effective way to do that, says Louis F. Pitelka, a plant ecologist with EPRI. As a result, he says, the report concludes that salt-tolerant plants, known as halophytes, "appear to be a more effective medium for carbon storage than seaweed." With funding from EPRI and a Southwest electric utility, researchers in Arizona have begun to investigate the uptake and storage of carbon by halophytes that are simply plowed into desert soil at maturity.

## 'Bioherbicide' snuffs out competition

Weed scientist Donald L. Wyse and his colleagues have bred what they describe as the first intentionally designed biological herbicide. Called the "smother" plant, this short-lived green mulch quickly carpets a field with a dense mat of vegetation that chokes out yield-threatening weeds.

"We wanted something that had rapid germination, didn't get too tall and did not compete very long," explains Robb De Haan, who worked on the project at the University of Minnesota in St. Paul. The researchers got what they wanted by crossing two subspecies of *Brassica campestris* — a species whose members include turnips, Chinese cabbage and bok choy.

In initial field tests last year, the researchers broadcast seeds of the new cultivar over rows of planted corn. The resulting broad-leaved carpet reached a height of 8 inches and stayed green for about five weeks. More important, Wyse notes, it protected the corn from about 80 percent of the weeds — an effect comparable to that of many chemical herbicides — without diminishing crop yields. In this year's field trials, the team seeks to verify that weed-smothering efficiency and determine whether the novel herbicide itself might become a weed in the fields where it's sown.

## Quackgrass extract slugs it out

Anyone who gardens in moist soil risks losing prized (and pricey) plantings as ravenous slugs feast away. Lately, farmers attempting to eschew chemical herbicides with no-till techniques have also found fields of alfalfa and corn plagued by the slimy nocturnal creatures.

The one federally approved chemical for slug control "is relatively expensive" and poses a toxic threat to pets and livestock, note Roger D. Hagin and Suzanne J. Bobnick of Cornell University in Ithaca, N.Y. In the January *JOURNAL OF AGRICULTURAL AND FOOD CHEMISTRY*, they describe a promising alternative extracted from quackgrass.

Field trials with the natural chemical, known as 6-HT $\beta$ C-3-COOH, show that it's "highly toxic" to slugs, including *Arion subfuscus* — a species that "has the potential to become the most serious slug pest in North America," the researchers say. But the slug-slaying compound spares earthworms and snails, and shows "little mammalian toxicity," they report.

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## Douching linked to cervical cancer

Women who douche more than once a week may increase their risk of cervical cancer as much as fourfold compared with women who douche less often, according to a new epidemiologic study. But douching less than once a month carries no more risk than never douching, the researchers found.

"Douching more than once a week is certainly not recommended," concludes study coauthor John W. Gardner of the Uniformed Services University of the Health Sciences in Bethesda, Md. "But I don't know if there is any medical reason to douche regularly anyway."

Gardner and his colleagues compared the past douching habits of 266 Utah women who had cervical cancer and 408 healthy women selected randomly from the Utah population. They conducted the study in Utah because more than two-thirds of the state's residents are members of the Church of Jesus Christ of Latter-Day Saints (Mormons). Mormon beliefs proscribe extramarital sex and cigarette smoking, two known risk factors for cervical cancer.

In populations with multiple risk factors, the effect of frequent douching would probably appear less striking, Gardner notes. Among the 28 percent of the study participants who reported having had more than six sexual partners in their lifetime, those who douched frequently showed only double the cervical cancer risk of those who did not, he says.

Gardner speculates that frequent douching might set the stage for cervical cancer by removing normal vaginal secretions and killing helpful bacteria. The type of douching preparation made little difference in cancer risk among the women studied, although those who douched with vinegar and water had slightly higher cancer rates than those who used commercial preparations, plain water or a mixture of water and baking soda. Only eight women reported douching with household cleaning solutions, such as Lysol and Pine-Sol, which were widely used in the 1940s and '50s until scientists strongly linked them with cervical cancer. Four of those women had cervical cancer, the researchers report in the Feb. 15 *AMERICAN JOURNAL OF EPIDEMIOLOGY*.

## Smoking boosts risk of tubal pregnancy

Women smokers who become pregnant run a 40 percent greater risk of tubal pregnancy than their nonsmoking counterparts, reports a team led by Andy Stergachis of the University of Washington in Seattle.

The researchers, who describe their work in the Feb. 15 *AMERICAN JOURNAL OF EPIDEMIOLOGY*, compared the smoking histories of 274 women who had tubal pregnancies and 727 randomly selected women of reproductive age, some of whom were pregnant. Tubal pregnancies occur when a fertilized egg becomes implanted in the wall of one of the fallopian tubes instead of descending to the uterus.

The investigators postulate that the nicotine in cigarettes may interfere with the mechanisms that normally transport a fertilized egg to the womb. They cite previous studies in animals and humans showing that nicotine impairs tiny hair-like structures in the fallopian tubes that normally sweep eggs into the uterus.

Interestingly, the researchers found that heavy smokers had a smaller chance of having a tubal pregnancy than light smokers. They surmise that this may reflect the lower pregnancy rates of smokers, particularly heavy smokers.

In four previous studies, other researchers had found that the risk of tubal pregnancy was 50 to 130 percent greater in smokers than in nonsmokers. The new work confirms this hazardous link with a more stringently controlled study, says Delia Scholes of the Group Health Cooperative of Puget Sound in Seattle, who helped conduct the recent research.

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