

Can You dig It?

Schann Nelson, our garden columnist, is taking this week off while she recovers from a misstep that twisted a joint in the wrong direction. Schann should be back at her computer for *The INDEPENDENT'S* July 19 issue.

Meanwhile, this seems like a good opportunity to remind readers of the great information available from Oregon State University's Extension Service. It's all available on line at <http://extension.oregonstate.edu/>

HOW TO MAKE THE MOST OF THE WATER ALREADY IN THE SOIL, NATURALLY

By Davi Richards

Looking ahead to what may become drastic climate changes, most gardeners already recognize their responsibility to conserve water and energy. Since energy is needed both to treat and distribute water, cutting down on the water you use in the garden also saves energy.

One source of water that's often overlooked by gardeners is the moisture that's naturally stored in the soil. To make the most of this water, it helps to understand how it gets there and how it moves through the soil.

"Think of the soil as a storage medium," said James Cassidy, soil scientist at Oregon State University. "Precipitation is periodic, but plants need water all the time. As a plant uses up the moisture near it, more water stored in the soil moves in."

How does this happen? Liquids move naturally into tiny spaces even against the force of gravity. Think of how the blood from a pinprick in your finger moves up through the little glass tube at the doctor's office. This force is called "capillary force." It's what causes moisture in the soil to move into the minute spaces where the soil is drier. As long as there is "connectivity" in the soil, that is, as long as the spaces in the soil are connected to form tiny capillaries that the water can rise into, moisture will continue to move toward the surface to replace water that's lost there through plant use and evaporation.

Different kinds of soil provide different conditions for this movement. Clay soils, made up of extremely fine particles, have numerous and extremely fine capillaries. So clay soils hold water well and dry out more slowly than sandy soils, with their larger particles and larger spaces. Generally, water moves more slowly through clay soils and faster through sandy soils.

Ideally, if you live where the soil is deep and uninterrupted by rocky layers, your soil can be kept moist all summer as water migrates upward from the water table (the depth at which the soil is saturated.) As your plants use the moisture near the surface and as moisture evaporates from the surface soil, more water wicks upward by the capillary force and naturally waters your plants. In ideal conditions, this water can be enough to see some plants through the growing season.

"Dry farming, farming without irrigation, is more common in parts of the world where there's some precipitation during the growing season to supplement the moisture stored in the soil. In parts of the Midwest, for instance, where summer storms are usu-

al, it's becoming a more common practice as water and energy become scarcer.

In the Pacific Northwest, where most of our precipitation comes in the winter and where summers in areas of rain shadow can be very hot and dry, it's more of a challenge. But even here there are ways to take advantage of the moisture stored in the soil if you know some basics, says Cassidy.

While there's not a lot you can do about the soil conditions deeper than a foot or at most a few feet where you garden, there's a lot you can do at and near the surface, where all the evaporation takes place.

The most obvious and effective step is to apply a generous layer of mulch, which moderates the temperature of the surface soil by shielding it from the direct sun. The lower the temperature is, the slower the rate of evaporation.

Because there's reduced connectivity between the mulch and soil, the moisture in the soil doesn't wick well across that interface to reach the surface of the mulch, where it would evaporate more rapidly. Moisture vapor still moves upward through the mulch, but this process is much slower than migration through capillaries.

Plus, over time, organic mulches improve the overall quality of the soil.

The best time to apply mulch, says Cassidy, is at that time in the spring when the net movement of water entering the soil from the winter precipitation is about to become less than the moisture leaving by evaporation and plant use. Since home gardeners need to guess at this time, he recommends being on the safe side and putting mulch down before the surface of the soil dries out completely.

Tilling can also affect water migration and evaporation in several ways. On the one hand, tilling encourages the topmost layer of soil to dry out quickly. On the other hand, once you have a thin layer of fine dry soil, it may itself act as a "dust mulch" by breaking the connectivity with the lower soil and moderating its temperature. Repeated tilling can cause a condition called "plow pan," in which the layer of soil just at the bottom reach of the tilling equipment becomes compacted and no longer readily absorbs water from either irrigation or precipitation.

Cassidy recommends tilling as little as possible. Start vegetables indoors and transplant them outside when they're big enough. People who till an entire bed sufficiently for very small seeds to germinate well, are probably wasting time and energy, encouraging evaporation, and making the whole process more complicated than it needs to be.

Finally, stay off your gardening spaces. That footprint in the soil of your garden bed not only looks careless. It also establishes good connectivity in the soil at that spot, so water may reach the surface and evaporate more quickly.

For information on a wide variety of garden topics, go to the OSU Extension Service website: <http://extension.oregonstate.edu/>

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NEHALEM VALLEY BIBLE CHURCH

Gary Taylor, Pastor
Grant & North Streets, Vernonia
503 429-5378
Sunday School 10:00 a.m.
Morning Worship 11:00 a.m.
Nursery available
Wednesday Service 7:00 p.m.

SEVENTH DAY ADVENTIST

John Aitken II, Pastor, 396-1856
2nd Ave. and Nehalem St., Vernonia
503 429-8301
Morning Worship, 9:15 a.m.
Bible Study 10:30 a.m.

VERNONIA COMMUNITY CHURCH

Grant Williams, Pastor
957 State Avenue, Vernonia
503 429-6790
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Morning Worship 9:45 a.m.
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Youth Group 6:00 p.m.
Preschool Tues. & Thurs. 9:00 a.m.
Wednesday Prayer 7:00 p.m.
Friday Adult Volleyball 7:00 p.m.

ST. MARY'S CATHOLIC CHURCH

Rev. Luan Tran, Administrator
960 Missouri Avenue, Vernonia
503 429-8841
Mass Schedule
Sunday 12:00 Noon
Religious Education
Sunday 10:30 a.m.

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Carl Pense, Pastor
850 Madison Avenue, Vernonia
503 429-1103
Sunday Worship Service: 10:30 a.m.
Children's Sunday School

FIRST BAPTIST CHURCH

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503 429-5190
Sunday School 9:45 a.m.
Sunday Worship Service 11:00 a.m.
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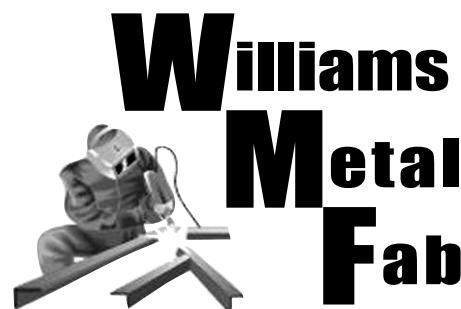
Wayne and Maureen Marr
662 Jefferson Ave., Vernonia,
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Morning Worship 11:00 a.m.

VERNONIA CHRISTIAN CHURCH

Sam Hough, Evangelist
410 North Street, Vernonia
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Morning Worship 11:00 a.m.
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Ladies' Worship 10:00 a.m.
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1350 E. Knott Street, Vernonia
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