

Ancient Agriculture -
Part VII: Roman Practice

by C. Mundigler

In this final article of the series on ancient agriculture, we will go beyond the economic and political aspects of Roman farming and ranching to concentrate on the everyday practice and produce of agriculture and livestock in the ancient Roman world.

As Dionysius of Halicarnassus tells us from the first century BC, "What grain lands can compare with the plains of Campania, which yield three crops a year?...There are good pastures for sheep and goats, wonderful grazing for horses and cattle...". Other ancient sources from the second century BC to the fourth century AD, such as Strabo, Varro, Columella, Pliny and Cato tell a similar story: the rich volcanic soils of the Italian landscape produced exceptionally fertile farmland for both crops and grazing. These soils were perfectly suited for the production of corn, grains, vines, olives and orchard trees as well as the ranching and transhumance or movement of horses, cattle, goats and sheep from winter lowland pasture to summer hillside grazing.

As the Roman economy evolved, so too did Roman agricultural practices away from small-scale subsistence farming towards wider-based market farms for specialized agricultural production and large-scale livestock ranching. The lowland areas of the Italian peninsula began producing millet, maize, wheat, oats and barley as well as the usual vegetables found throughout Italy—all in such abundance that towns everywhere held markets for the exchange, barter, trade and sale of grains, vegetables, fruits and livestock on a regular basis. As

mentioned earlier, regions such as Campania were so fertile that they produced three successive crops a year, but as we shall see, there were limitations to even this productivity. At the same time as the techniques of cultivation progressed, however, it was found that the production of vines and olives, as well as the rearing of cattle, sheep and goats on the large plantations, or *latifundia*, was far more profitable than the staple grain crops. This was, to a large extent, responsible for Italy's eventual dependence on imported grain supplies from its allies and provinces, such as Egypt, from the second century BC onward.

Economic factors were not the only cause for the decline in productivity of Italy's once-fertile soils. By late Republican times, deforestation for lumber to accommodate the increasing population had added to the erosion of the already thin topsoil, allowing the rains to wash away the fertile soil into rivers and valley swamps. Although literary evidence shows us that the Romans were well aware of efficient agricultural techniques, in actuality they largely ignored farming practices which could have had far-reaching benefits for them.

While early Roman farmers made use of the wooden plough, it never really progressed beyond the stage of the so-called *ard*—a simple wooden device for furrowing the earth in preparation for planting seeds and, for the most part, incapable of turning over the soil as deeply as the modern plough does. This *ard* was a definite asset to early farming but it did nothing to revitalize the soil which, after two or three years, was so depleted of necessary nutrients that it was almost useless.

Although the Romans may not have taken agricultural techniques to the sophisticated level that we, in hindsight, see as their logical progression, they did make the best of what they had available to them at the time. To help countermand the depletion of the soil by continued furrowing, the Romans began to cross-plough their fields with their simple ards. This technique of ploughing furrows in one direction and then cross-ploughing at 90 degrees helped produce a fine enough soil for most grains.

Anyone who has been to a farm with livestock can well imagine the next step that the Romans must have taken—even if that step had to be taken carefully in the fields. The Romans must have noticed that manure, a natural by-product of the livestock on a farm, was especially beneficial to the crops which they raised on their property as well. We now know that animal manure, in particular from chickens and sheep, is especially rich in the three main nutrients necessary for healthy plant growth—nitrogen, phosphorus and potassium. These three elements, which plants utilize and deplete from the soil during normal growth, must be added back into the soil each year if land is to be kept rich and productive year after year. These necessary elements are supplied through the nitrogen, phosphates and potash found in the manure of farm animals raised by the ancient Romans—chickens, cattle, sheep and horses—just as they are today. We may think we are doing something revolutionary these days by composting all of our household and garden refuse, but the Romans knew the benefits of compost and manure for their crops long before they thought it was an environmentally sound form of recycling.

There were at least two other forms of soil enrichment for agricultural crops known to the Romans—nitrogen-fixing and crop rotation. Many people today still plant a nitrogen-rich ground cover in their gardens every year to supersaturate the soil with nitrogen, and again the Romans knew of this technique long before modern farmers did. Cover crops such as rye, beans and clover, planted and ploughed into the fields between regularly harvested crops, removed essential nitrogen from the air and supplied it to the soil in a form that the next crop of grains or vegetables could use.

The enriching of soil through fertilizers and nitrogen-fixing was further enhanced by the technique of crop rotation to ensure that the land would not be depleted of all its nutrients by the same crop year after year. By planting successive crops of wheat, oats, cover crop followed by a season where the land was left fallow, the Roman farmers extended the "life" of their farmland by many years and maybe even generations. Different crops use different nutrients and by rotating crops and reintroducing nutrients into the soil by means of fertilizers, the Romans advanced agricultural techniques to almost

modern standards, even though they may not have known exactly *why* all of this helped their land.

Crop rotation also helps farmers and farmland in another important way today, as it probably did in Roman times as well. By not growing the same crop in the same area year after year, the Romans had at their disposal an easy and effective way to help control pests which could otherwise decimate crops. These unwanted pests could bring devastating results not only to small landholders who depended on their harvests for subsistence, but also to large landlords who depended on the economic benefits which large harvests brought to their clients and tenants. Pesticides as we know them today are perhaps the most effective way to control agricultural pests, but these substances are by no means new to farmers. While man-made chemical pesticides as we have them now were unknown to early civilizations, the ancient Romans burned sulphur to control insect pests effectively and the ancient Chinese used arsenic and pyrethrum (still used today around the world) to battle insect attacks on their crops. All of this is but another example of how ancient "modern" agricultural techniques really are.

Fertilizers, nitrogen-fixing, crop rotation, fallow fields and pesticides may all sound very practical and efficient to us today, but to what extent they were used or ignored by the ancient Romans is still a matter of speculation and debate over literary and archaeological evidence. While this may be the last in the series on ancient agriculture, in subsequent issues we will look at the products of this agricultural evolution we have been investigating—products which we know a great deal about from literary and physical evidence: ancient flour, wine and olive-oil production.