

Nordimpianti, 66100 Chieti (CH), Italy

# Solutions for maximizing the harvest using modern agricultural concrete components

**Efficient modern agriculture requires care and nurture of the natural resources as well as state-of-the-art technology to attain optimum results. One of the most important parts in wine and food growing is the vertical trellis support structure of which the main structural component is the engineered concrete post. These posts can be produced using a slipformer machine. On long production beds the machine forms the posts that are later cut to the appropriate size - an efficient and sustainable way to produce concrete posts for agricultural use that have the strength and durability to withstand all stresses of installation and use.**

The fact that the world's population has grown from 1 billion in 1800 to 7 billion in 2012 and to 7.8 billion in 2020 makes it easy to understand why agricultural development is an important economic factor for every country. Traditional cultivation technology no longer provides the high yields necessary to attain positive profitability and quick returns on investment, therefore the global trend is to invest more and more in efficient agricultural technologies.

Efficient modern agriculture requires many different things, the correct choice of the best plant varieties suited to the local soil conditions, the care and nurture of that soil, the sensible control of pest and diseases together with high levels of mechanization of the production process.

One of the most important parts in many agricultural systems such as in wine or fruit growing is the vertical trellis support structure. This structure plays a vital role in the quality and quantity of the crop by:

- Even distribution of the plants
- Supporting the weight of the fruits
- Allowing efficient exposure to the sun
- Allowing easy plant maintenance
- Enabling machines to work on the plants

The main structural component of the trellis system is the concrete post. As with any other structural component it has to be engineered to provide the strength and durability in withstanding the stresses of installation and use. It must also be made of materials resistant to weathering and the formation of plant diseases as well as being able to be produced at low cost. Posts can be made in two ways.

## Manufacture of posts using fixed moulds

Originally concrete posts were produced using fixed moulds. This system is usually used for small production runs or when there is no facility to house long production beds.

Production with fixed moulds involves the use of a wet mix concrete with a high cement content per cubic meter. With this method it is not easy to make the holes for the support wires and it means that special steel accessories mounted directly on the poles during installation have to be used.

This type of manufacture has very definite disadvantages. Every different profile cross section requires its own dedicated mould. It requires concrete with a high cement/water ratio typically  $> 0.5$  and means that the posts require long drying times and are relatively weaker when compared to others manufactured by more modern methods.



*The main structural component of the trellis system is the concrete post.*



*Poles showing metal fixing accessories used when no holes for support wires are present*

## Manufacture of posts using a moving Slipformer machine

A much more efficient method of production uses a Slipformer machine that produces pre-stressed concrete posts on long production beds 80 to 150 m in length. The posts are then cut to size. This system is best suited to medium and large-scale production situations and where a wide range of different products is required for different applications.

The use of Slipformer machines gives major significant advantages:

- High production volumes at low production costs
- Able to work on dry concrete mix with a low cement/water ratio typically 0.32-0.35
- Significantly less man hours required
- Reduced curing time
- The ability to make holes in the posts for the support wires with drilling machines
- Stronger and more durable end product

In recent years, the production of pre-stressed concrete posts with rounded shape profiles has taken place. These are particularly suitable for harvesting fruit with automatic systems. These kinds of shapes can only be obtained with the use of Slipformer machines since with a fixed mould it would be impossible to remove the product.



*Pre-stressed concrete posts for agricultural use*

Nordimpianti - the knowledge base of Slipformer technology  
For nearly 50 years the Italian company Nordimpianti has been manufacturing Slipformer machines and has gained vast knowledge and experience in this field. In fact, Nordimpianti not only supplies the machines but the entire plant required to manufacture a wide range of pre-stressed concrete elements including posts for agricultural purposes. Obviously, Italy produces some of the best wines in the world and the need for agricultural posts in Italy and throughout southern Europe is significant. Nordimpianti has supplied two

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SLIPFORMER



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NORDIMPIANTI's casting machines can produce a wide range of prestressed concrete products such as hollow core slabs for flooring and walls, inverted T and I-beams, vineyard posts and lintels, prestressed slabs, U slabs, inverted double T slabs etc.

Prestressed products made by NORDIMPIANTI's Extruder, Slipformer, Wet Casting, and Extruder Nano machines offer many advantages that make them a success all over the world.

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*Rounded shape profile agricultural posts produced by the Nordimpianti Slipformer WF*

different types of Slipformer technologies to two Italian companies to help meet these needs.

### **F.LLI Gallone Snc and the Slipformer SF**

Situated in the southern Italian region of Puglia F.LLI Gallone Snc use Nordimpianti's Slipformer SF to produce agricultural posts amongst other products. This type of Slipformer is the



*Nordimpianti's SF Slipformer in action*



*Nordimpianti's cutting saw*

most widely used in pre-stressed element production due to its versatility in being able to produce many different types of prestressed concrete elements, not just agricultural posts, depending on the forming insert fitted to the Slipformer.

The Slipformer was supplied with the forming inserts to make vine posts in the following profiles: 60 x 60 mm, 70 x 70 mm, 90 x 90 mm, 180 x 250 mm and 250 x 250 mm. This gives a good idea as to the variety of products that can be manufactured by this machine.

Other equipment supplied included a production bed cleaning machine, a machine to stress the wires with a force of up to 200 tons, a cutting saw with an element clamp, and a diesel driven lifting machine to lift the finished products from the production bed and deposit them in the stocking area.

The total capacity of the plant is an incredible 11,200 metres/day making it an efficient production facility.

### **Prefabbricati Primavera and the Slipformer WF**

In the nearby region of Abruzzo, and from where Nordimpianti itself is based is Prefabbricati Primavera. This company manufactures vineyard posts using a different slipformer technology, the Slipformer WF. This type of slipformer is a



*Large profile agricultural posts in the stockyard*



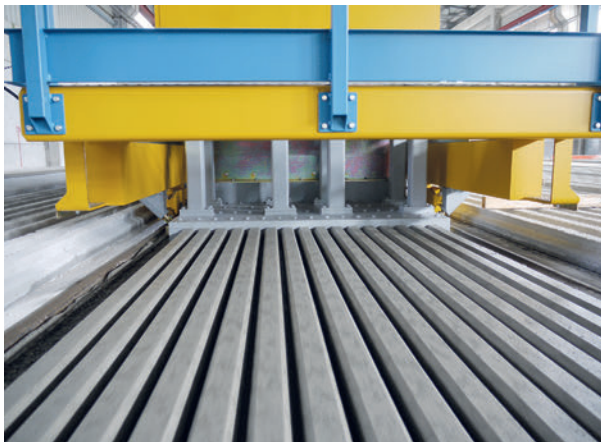
*Nordimpianti's lifting machine*





*Nordimpianti's  
Slipformer WF Wet  
casting machine*

*Agricultural posts  
with rounded  
edges being cast  
from the Nordim-  
pianti WF wet cast-  
ing Slipformer*



wet casting type machine meaning that the mix is wetter, but it is able to produce more complex shapes such as those of the rounded vine posts.

Different profiles can be attained by substituting easily interchangeable moulds. Prefabbricati Primavera produces posts with the following rounded profiles: 60 x 60 mm, 70 x 70 mm, 90 x 90 mm.

The plant has also been supplied with other auxiliary machines required for production. In all the plant has a production capacity of approximately 12,000 metres/day.

Nordimpianti has been chosen by both companies because Nordimpianti has been able to offer a superior level of efficiency backed up by years of experience and technical know-how.

Not unlike a fine wine, Nordimpianti gets better with age and is further committed to be a major part of this important sector in pre-stressed concrete element production. ■

#### FURTHER INFORMATION

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