

LL017F24 – a novel plant extract fortifying plants: three case studies

Cristina Sudiro¹⁺, Rossella Bortolaso¹, Salvatore Grasso², Pietro Santangelo², Adriano Altissimo¹

¹LANDLAB srl, Via Quintarello 12/A, 36050 Quinto Vicentino -VI ²LANDLAB south Europe srl ⁺ Corresponding author: c.sudiro@landlab.net

Phytophthora infestans (known as late blight) is a potentially devastating pathogen on potatoes, and it is also a serious pathogen on tomatoes in cooler climates. The name is derived from the Greek: *Phyto* = plant, *phthora* = destroyer. *Plasmopara viticola* (known as downy mildew) is a highly destructive disease of grapevines in all grape-growing areas of the world with spring and summer rainfall at temperatures above 10°C. The use of plant protection products is fundamental for crop cultivation. However, as all pesticides, fungicides may cause point source or diffuse pollution of soils, ground and surface waters. They are currently subject to increasing resistance, thus losing effectiveness (FRAC). Researches show that 2-8,7% of edible plants tissues display pesticide residues above the legal threshold (MRL). Although very little is known on the factorial effect on human health, consumers and their retailers tend to required "Zero residues" food, only achievable by boosting the plant's self defences. LL017F24 is a novel plant extract that activates the primary and secondary metabolism of the plant leading to a strong enhancement of the crops comfort and therewith its defence systems called CFE (Crop Fortification Efficacy).



Define the
challenge

Identify the
suitable SMP*

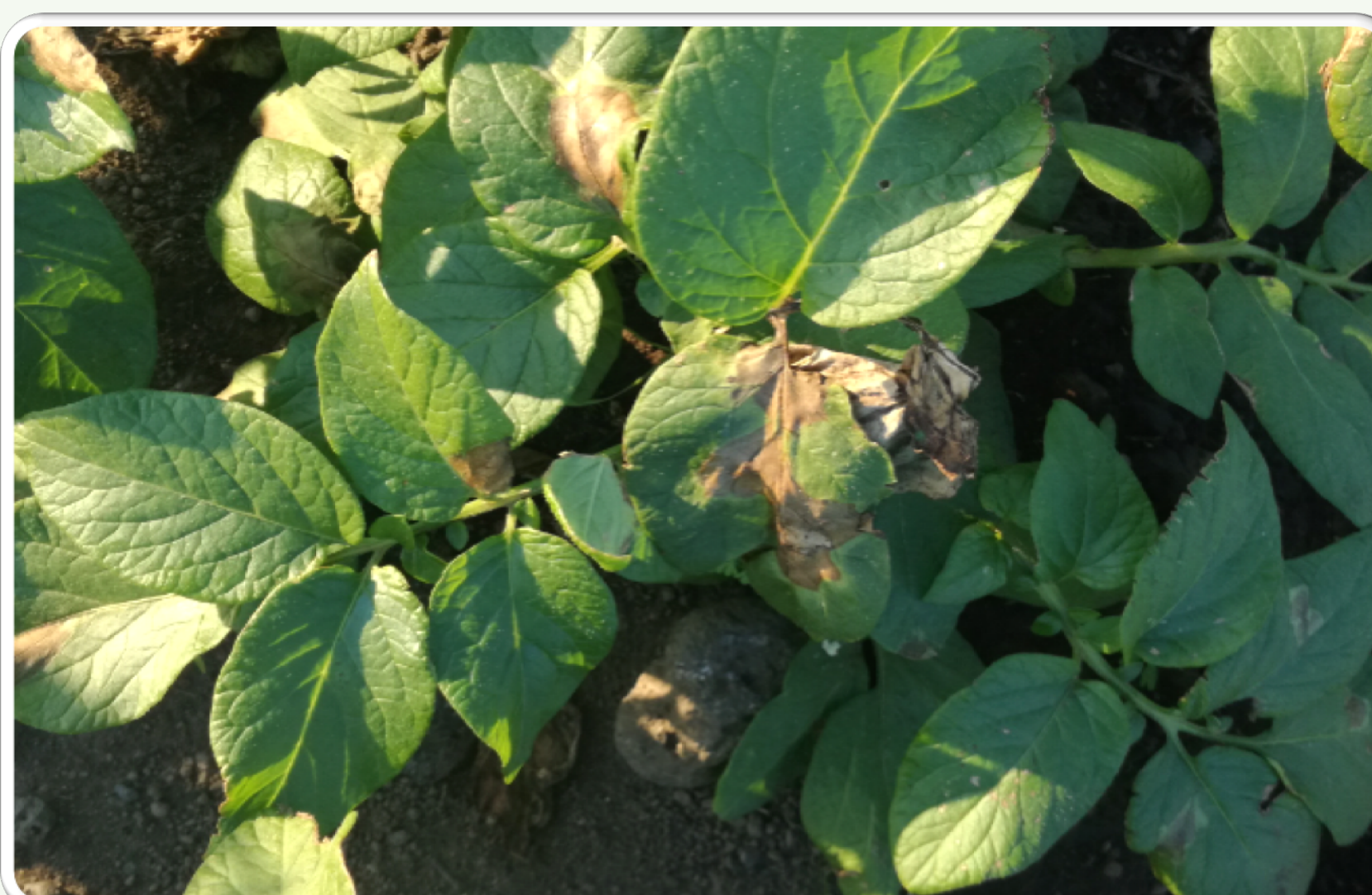
Scout for the
source

Set up the
extraction
method

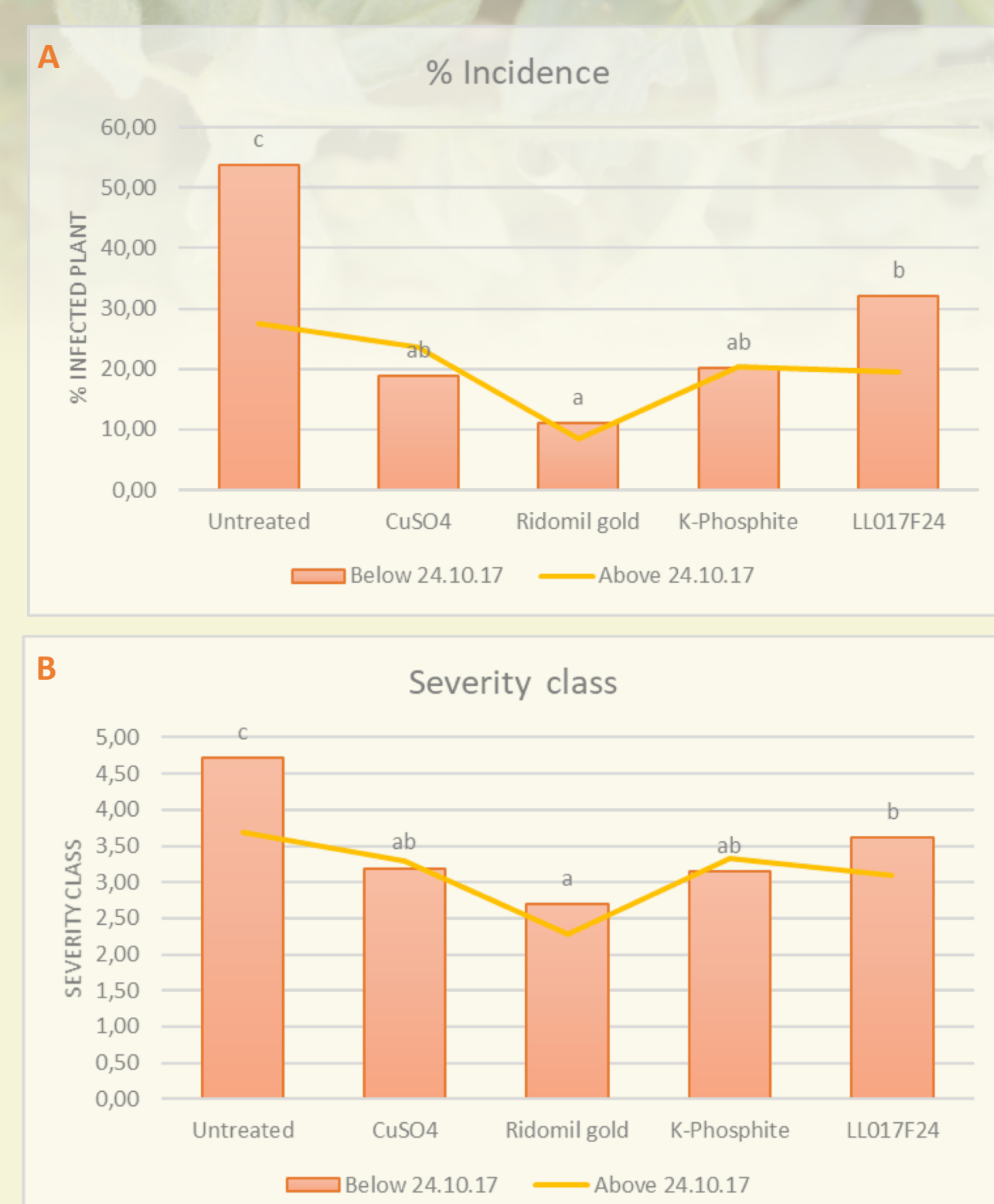
Formulation

With a
strong
green soul

* Standardized Metabolites Phytocomplex



Tomato



Materials and methods

The products were sprayed with weekly interval on tomato plants. Three treatments were performed before artificial inoculation with *Phytophthora infestans* spores. A warm and humid environment was kept through the use of a mist system and plastic covering during the night. Assessments were performed every 7 days by counting the n° of diseased leaflets and by assessing the severity of the infection (classes from 0 = no infection to 6 = 75-100% infection). Division between below and above indicates assessments on leaves grew respectively before and after pathogen inoculation. Location: Landlab - Vicenza (IT)

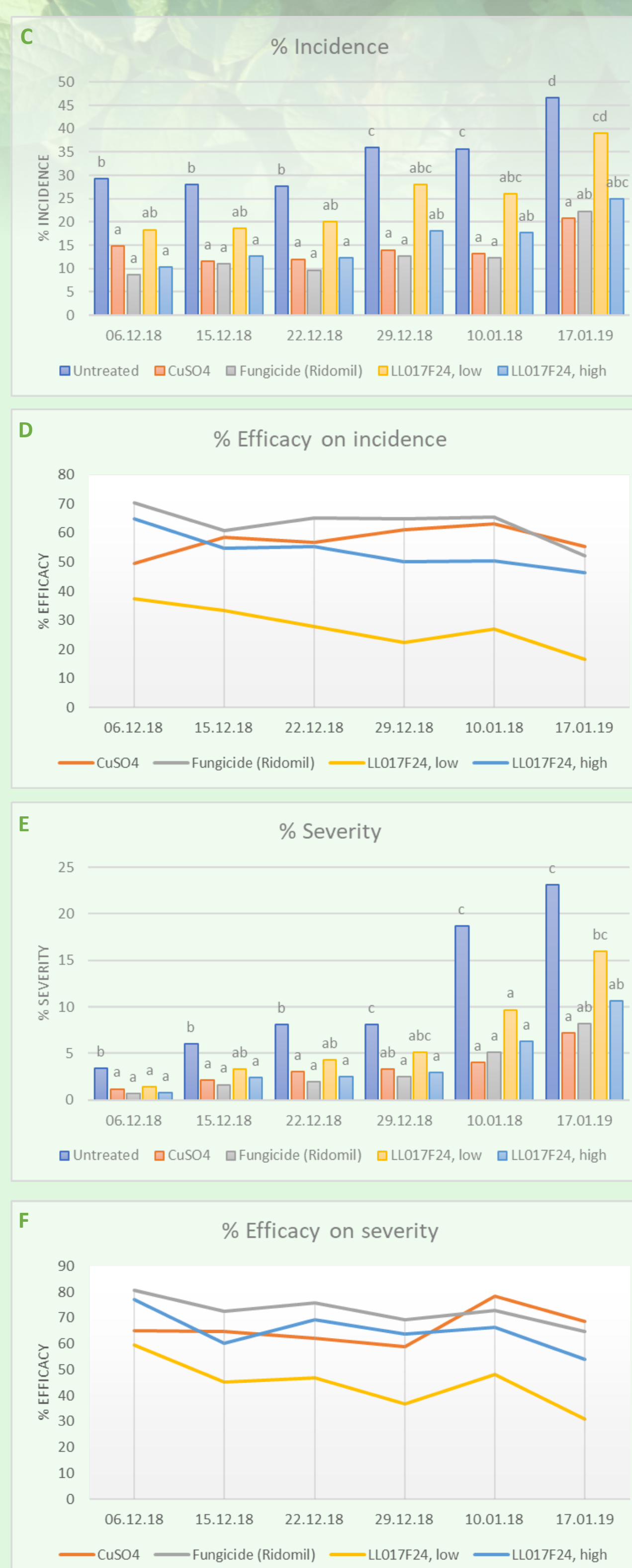
Results

The pathogen strain was very infective, killing the untreated plants in few days. In the charts above, the last assessment is presented before the death of the untreated plants. **Treatments with LL017F24 decreased both fungal incidence (A) and severity (B)**, with an efficiency only slightly lower than copper and phosphite.

Conclusions

The use of LL017F24 increased plants resistance to biotic stress in three crop: potato, tomato and grape vine. A combined strategy with conventional fungicides may be used to effectively decrease the use of this chemicals in favor of a "greener" solution to plants diseases.

Potato



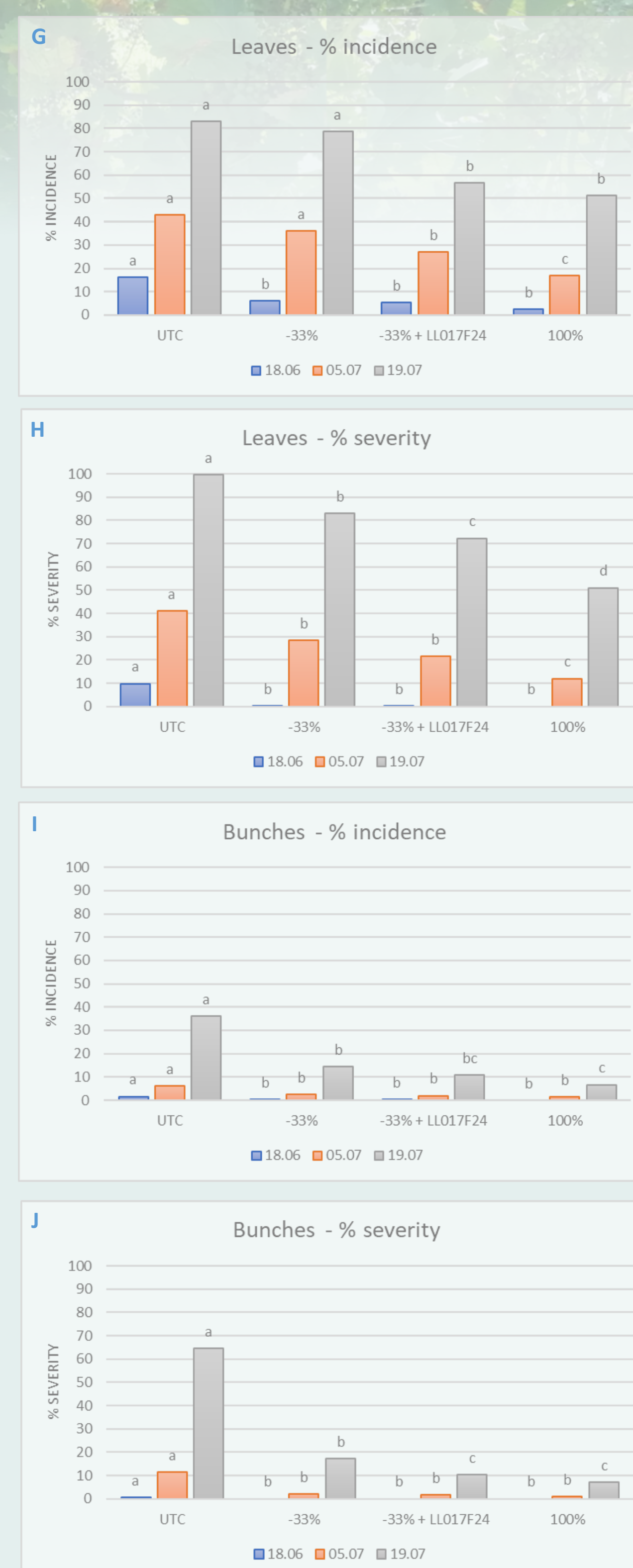
Materials and methods

The products were sprayed with weekly interval on potato plants. Two dosages of LL017F24 were used, with the highest one corresponding to the dosage used for tomato plants. Assessments were performed every 7 days from symptoms start. Location: Landlab South Europe- Catania (IT)

Results

Treatments with LL017F24 decreased both fungal incidence (C) and severity (E), with a dose rate effect and with an efficiency comparable to the chemicals (D, F), in particular with a lower disease pressure (less than 50% incidence with low severity).

Grape



T	Date	COD 2 LL Aironc	COD 3 LL Aironc	COD 4 LL Aironc
A	13.05	1500	1500	2000
B	20.05	1500	1500	2000
C	28.05	1500	1500	2000
D	4.06	1000	1000	2000
E	11.06	1000	1000	2000
F	18.06	1000	1000	2000
G	24.06	1500	1500	2000
H	5.07	1500	1500	2000
I	12.07	1500	1500	2000

Materials and methods

The product was sprayed following the table on the left (T DEF) together with a low dose of fungicide. Location: Cuneo (IT)

Results

Treatments with LL017F24 allowed the decrease of conventional PPP by 33% reaching a comparable level of protection as the full dose (100%) of the fungicide, both in leaves (G, H) and in bunches (I, J).

Acknowledgements: Sumitomo Chemical Italia for kindly hosting this trial