



Light Pollution

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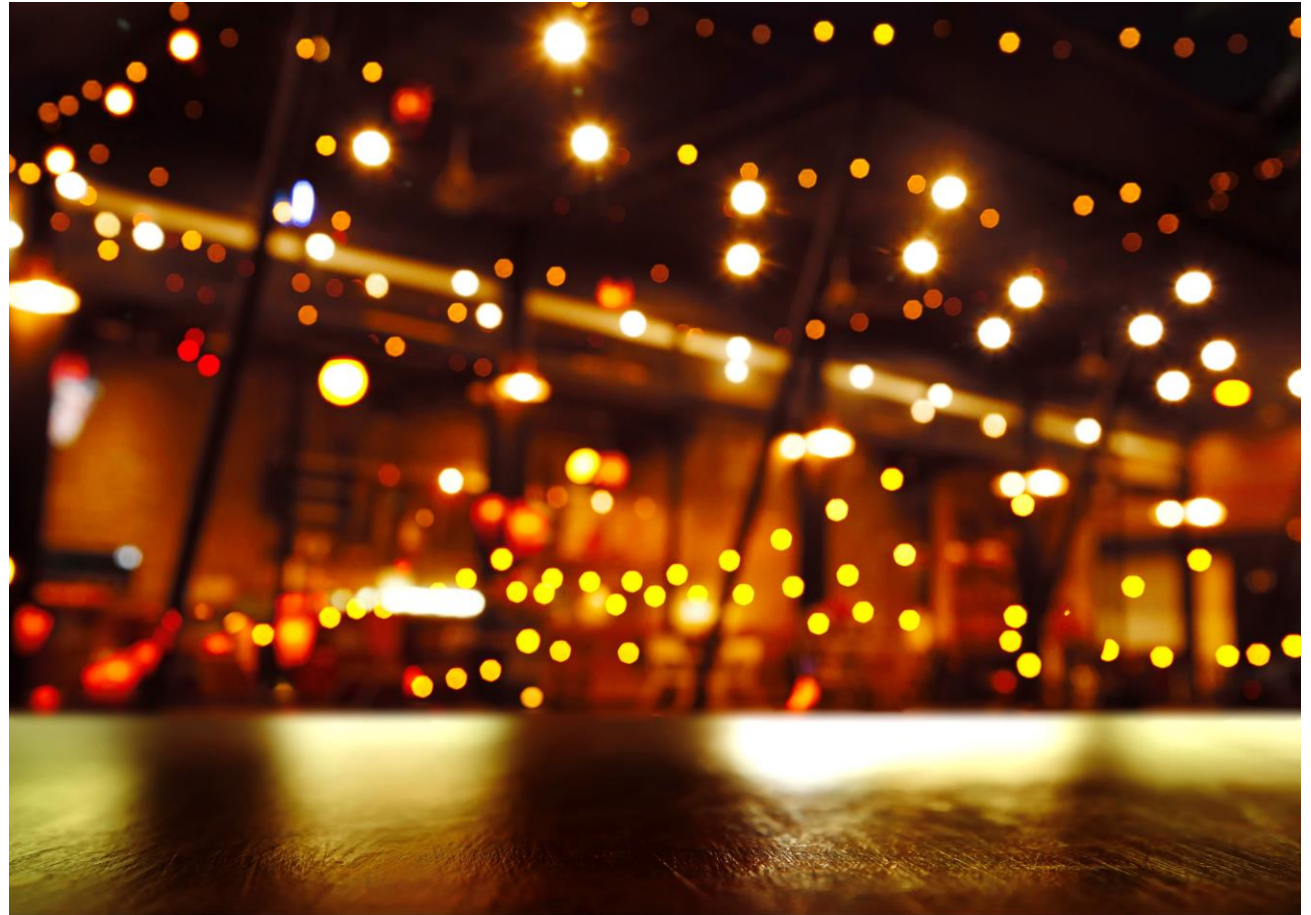
2021 GLOBE Virtual Meeting for Europe and Euroasia, October 5. - 7. 2021.



*Introduction and explanation
of the topic*

Light pollution

- ♦ adversely affects human health
- ♦ endangers night traffic
- ♦ endangers plants and animals
- ♦ threatens the natural balance
- ♦ consumes energy



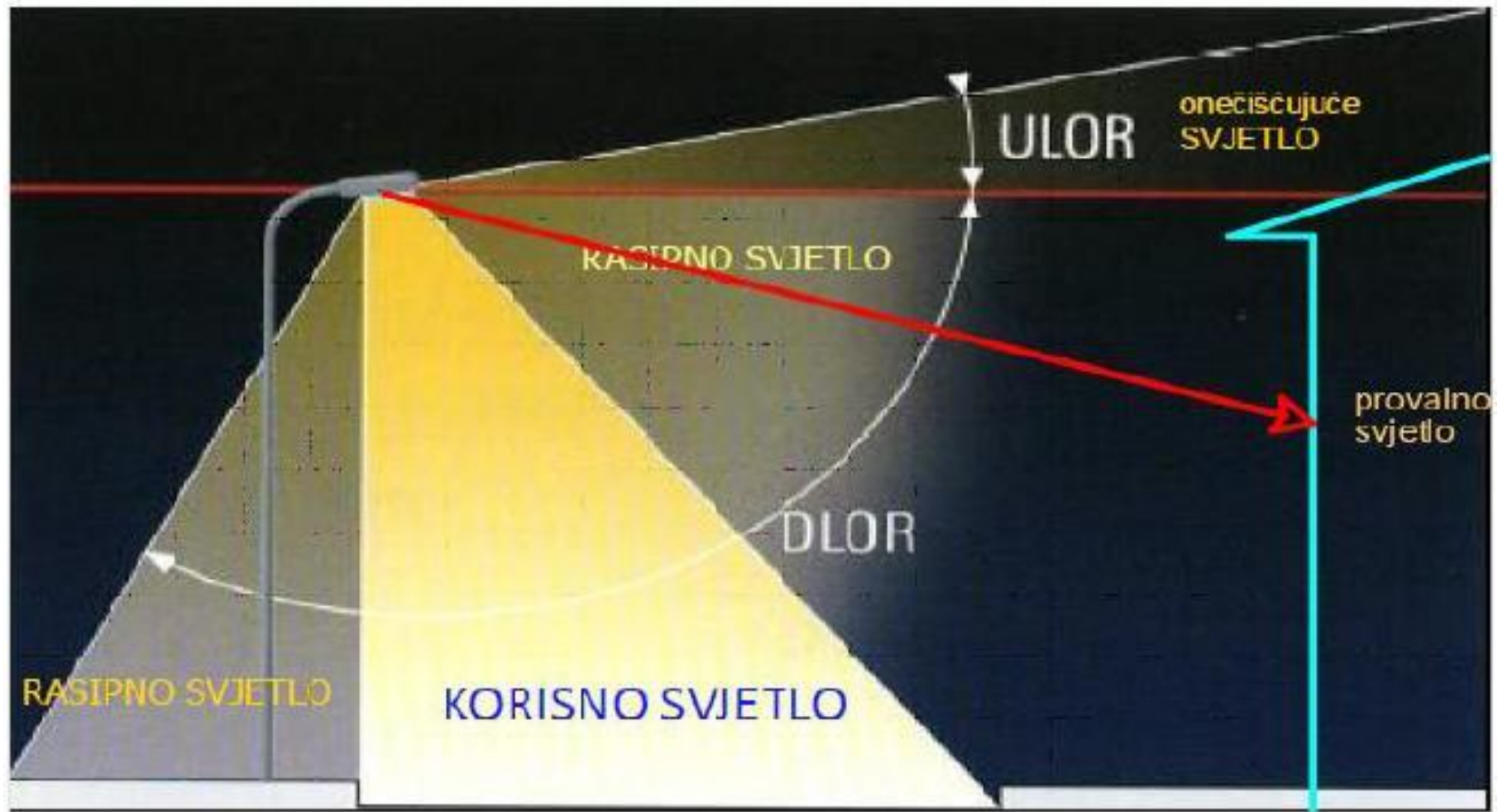


Figure 1 Types of lighting (www.narodne-novine.nn.hr , 2020.)



AIM

to determine the percentage of good installation of public lighting in the area of the town Omiš and examine how artificial light affects bean germination and growth

HYPOTHESES:

1. In the city of Omiš, there is a part of street lighting lamps that have an unacceptable form of light scattering, and that is polluting and scattering light.
2. Beans seeds illuminated by artificial light will germinate faster than those seeds that are illuminated by natural light.
3. Bean plants illuminated by artificial lights will grow faster and will result in faster flower yield.
4. The higher the light scattering angle of the lighting fixtures, the higher the percentage of germinated seeds and the higher the increment of the bean stalk.

Research methods



Research time: from Decembre 2020. to March 2021.

Assessment of the state of public lighting in the Omiš city

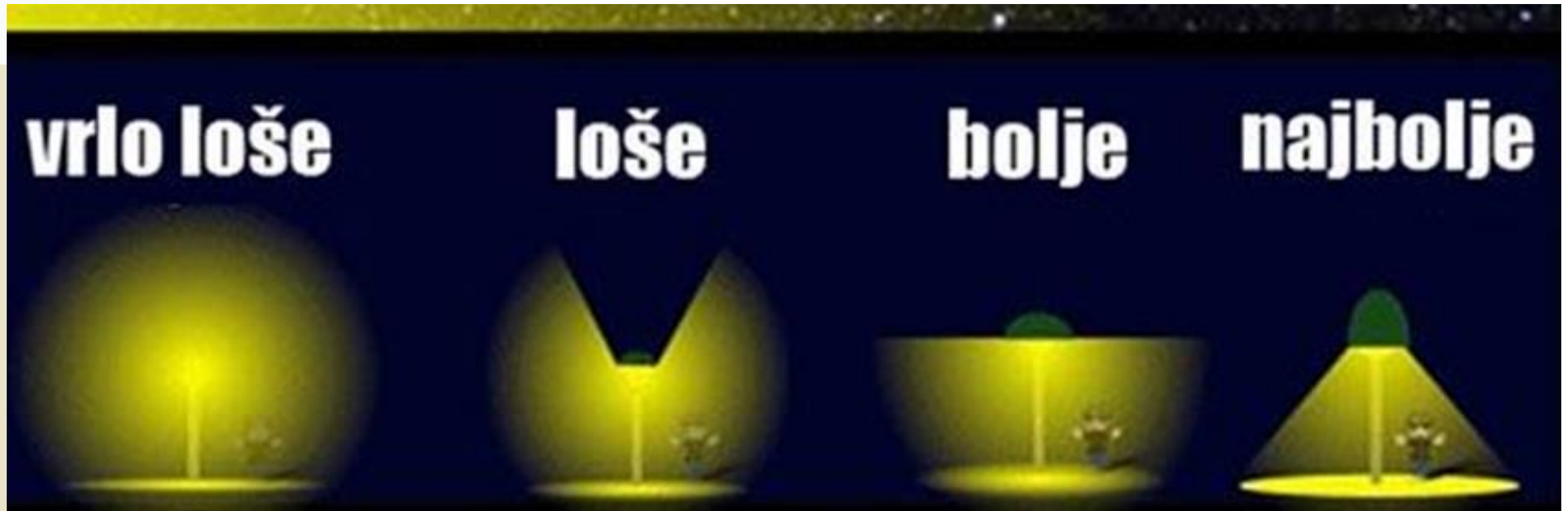


Figure 2 Types of lighting fixtures (www.pikaiprijatelji.com , 2017.)



Influence of the artificial light on germination and bean growth



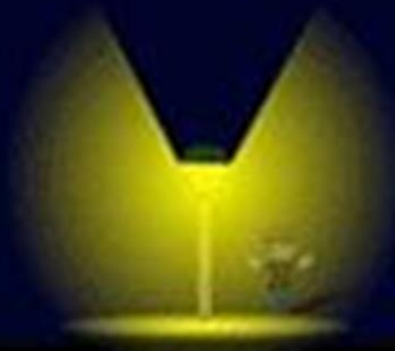
Results and discussion

Scattering of street lighting in the Omiš city

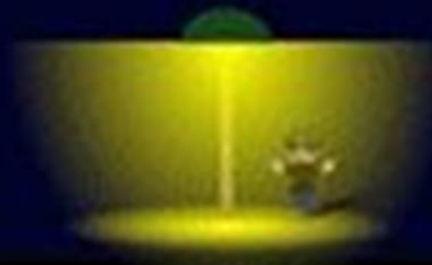
vrlo loše



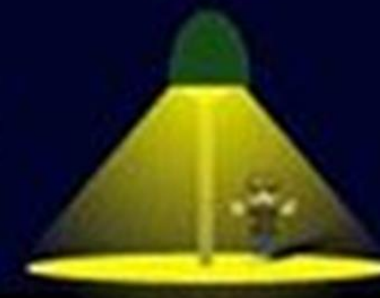
loše



bolje



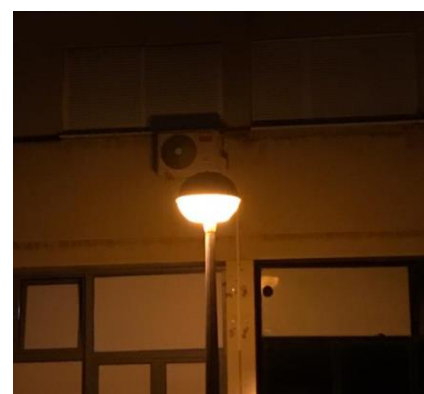
najbolje



69
17,38%



46
11,59%



178
44,84%



104
26,19%

28,97 %

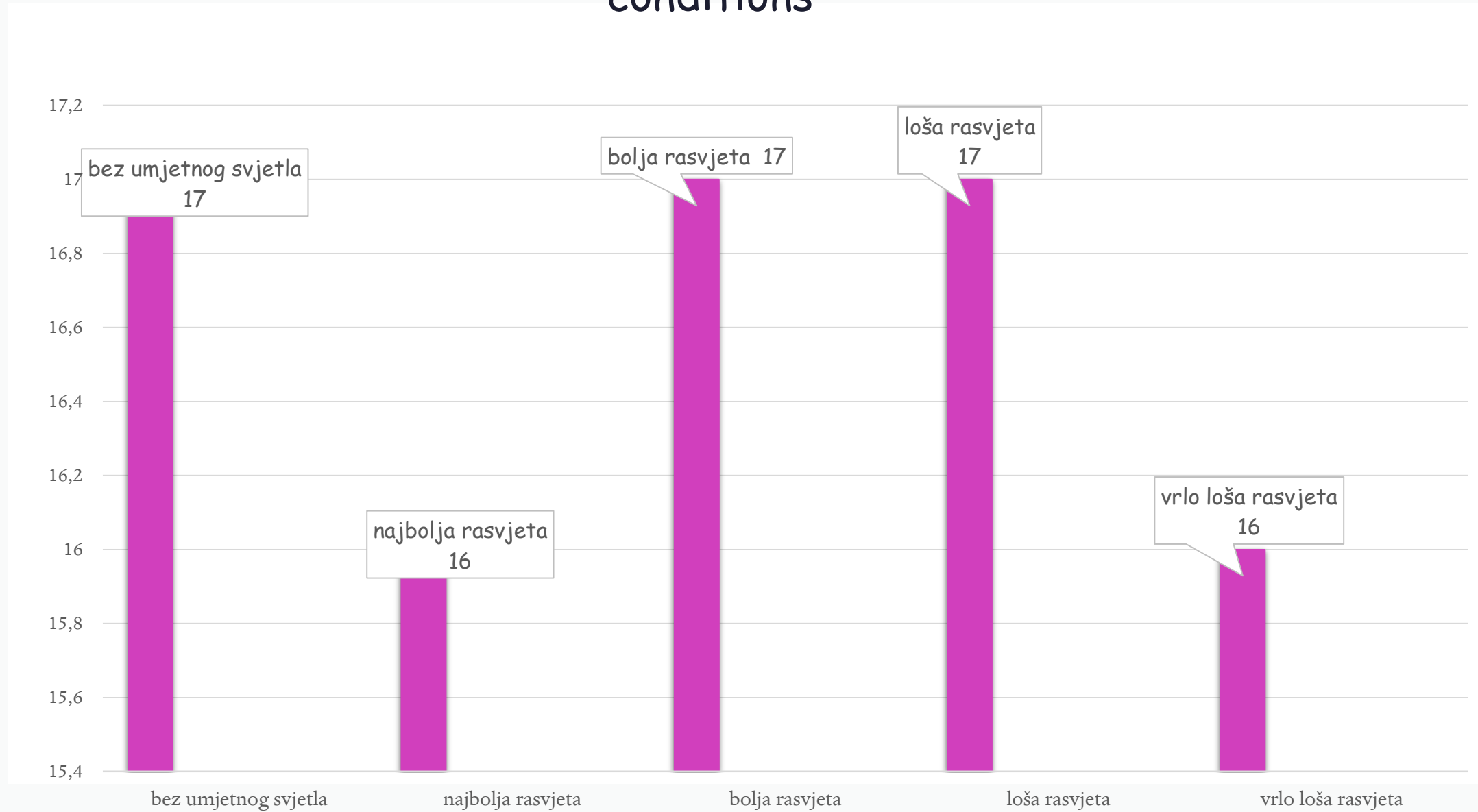


17,38%

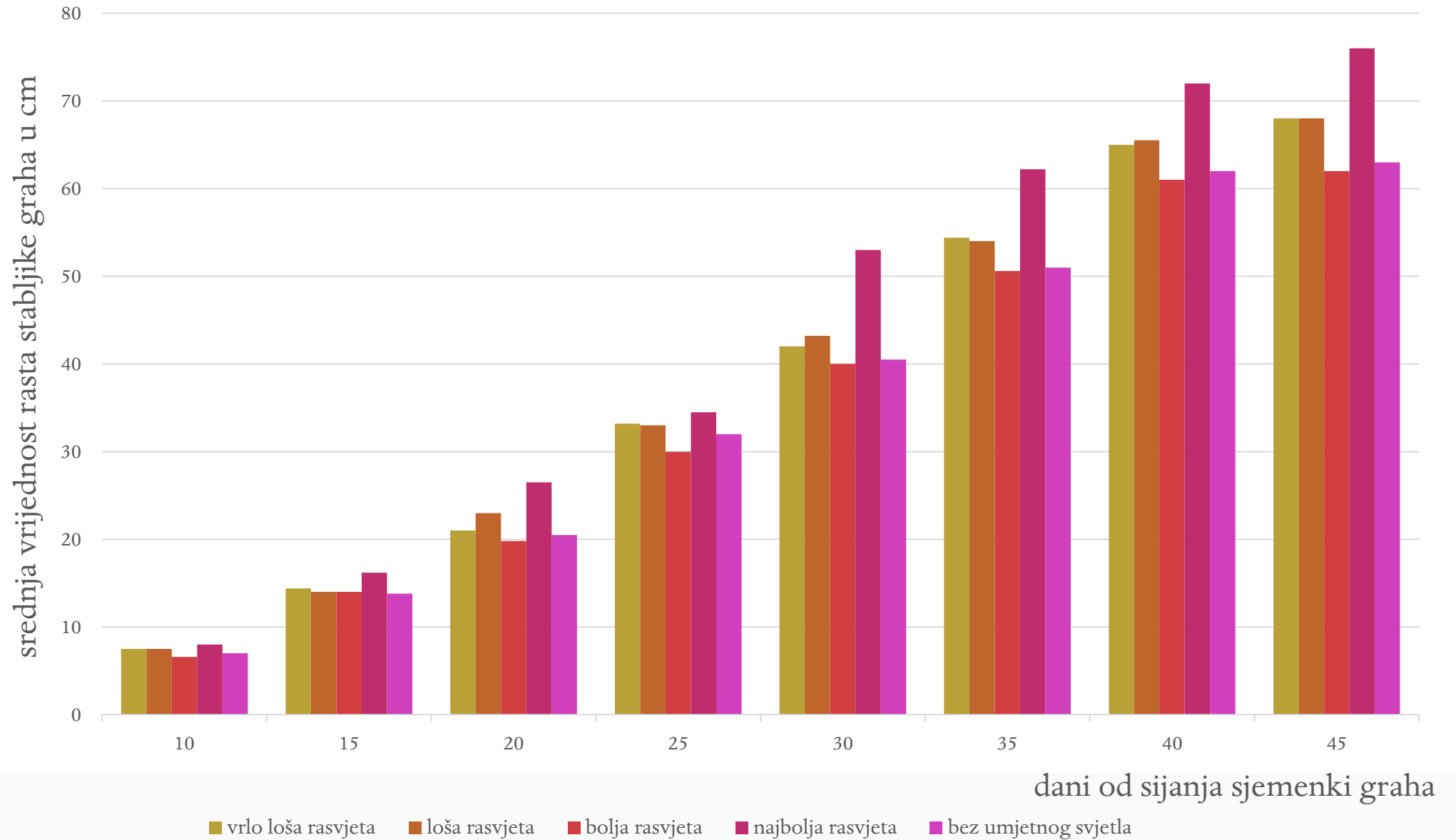
Influence of artificial lighting on the beginning of germination

Germination conditions	Germination day
1. Very poor lighting	6.
2. Poor lighting	6.
3. Better lighting	7.
4. The best lighting	6.
5. Without artificial light	6.

Number of germinated seeds in different lighting conditions



Influence of the artificial light on bean stem growth



Influence of artificial light on flowering of bean plant

Uvjeti rasta graha	Cvjetanje (dan od sijanja)
1. Very poor lighting	58.
2. Poor lighting	60.
3. Better lighting	58.
4. The best lighting	48.
5. Without artificial light	60.



Conclusions

1. In the Omiš city 28,97% of street lighting lamps have an unacceptable form of light scattering which contributes to light pollution of atmosphere.
2. The start of the germination and the percentage of germination of the bean seeds does not depend on artificial lighting and the angle of scattering light of lighting fixtures.



3. Bean plants illuminated with artificial light have a higher stem growth compared to bean plants exposed to daylight.

The highest growth has plants that are lit by lamps that have a lowest angle of light scattering.

4. Bean plants illuminated with artificial light bloom earlier than plants that are not additionally illuminated.



Thank you for attention!