BEST PRACTICES FOR HIGH COTTON YIELDS IN EGYPT

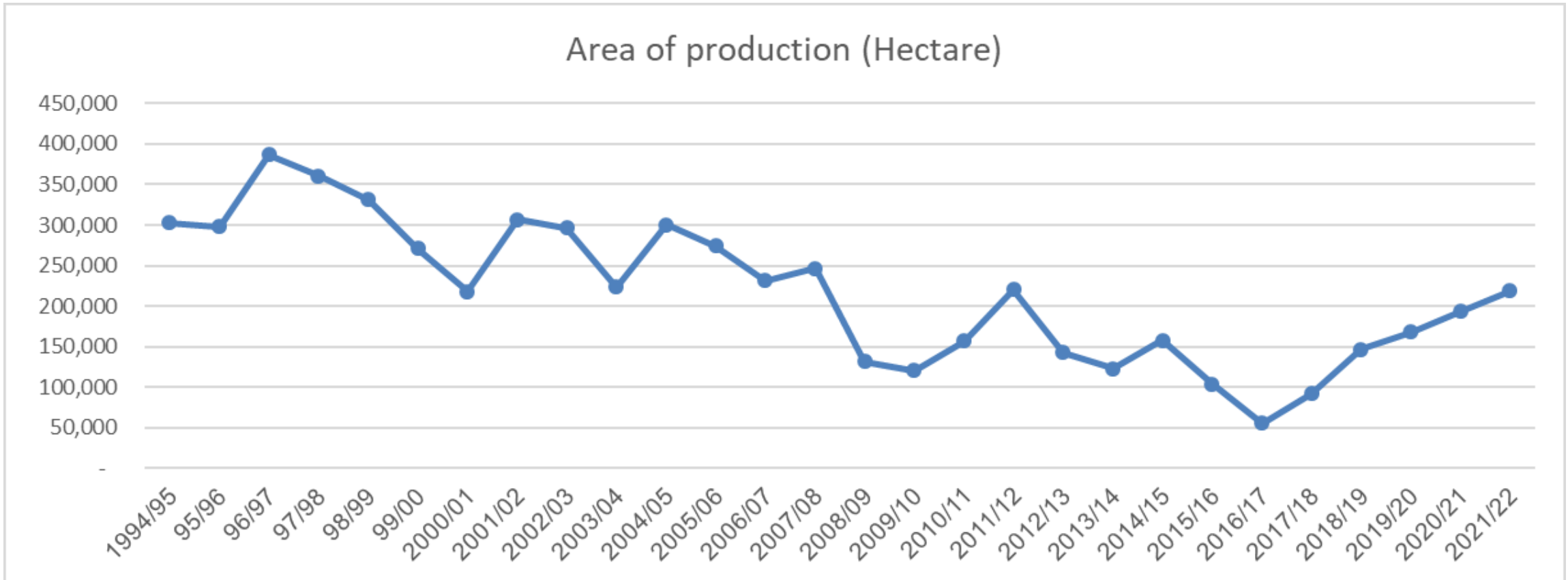
DR. MOHAMED A. NEGM

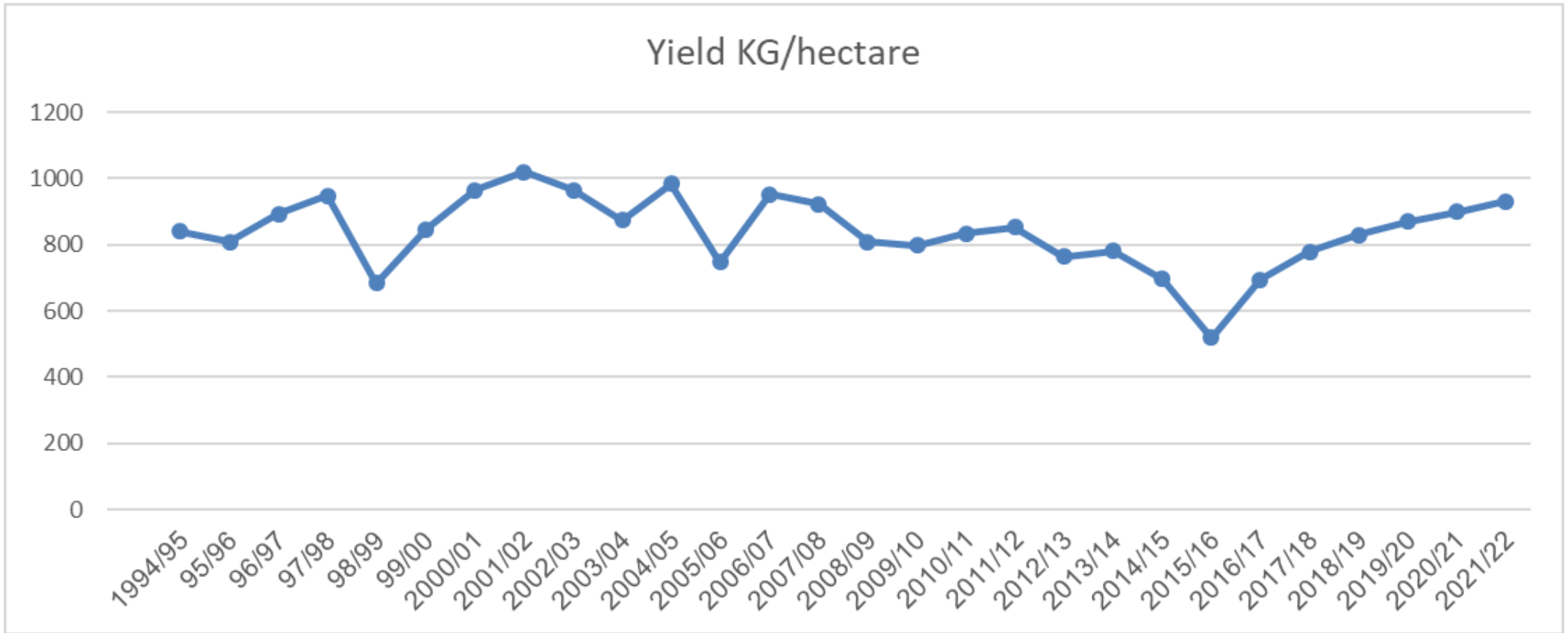
COTTON RESEARCH INSTITUTE-AGRICULTURAL RESEARCH CENTER

GIZA-EGYPT

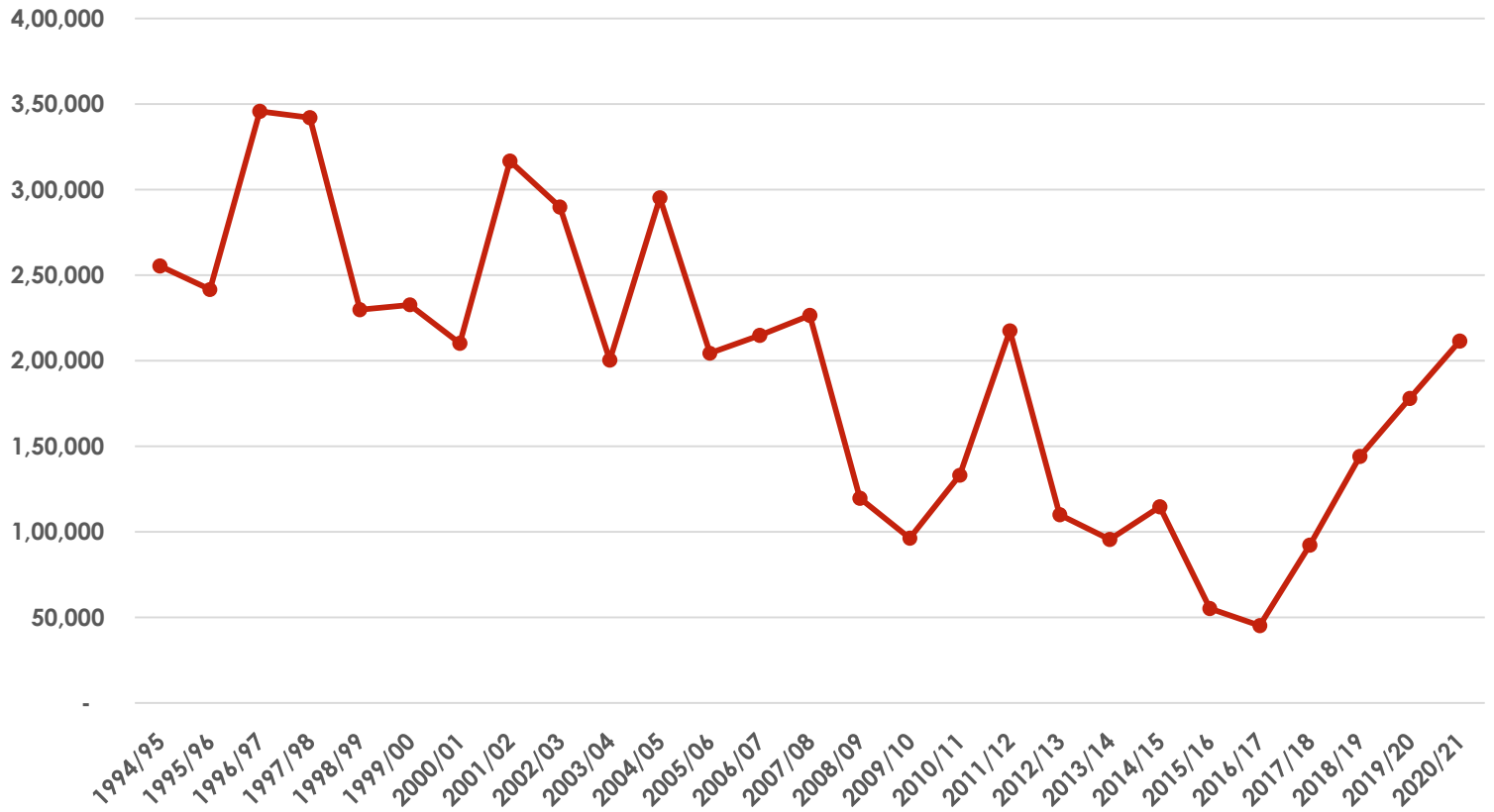
INTRODUCTION

- Egypt exclusively produces *Gossypium barbadense*, a type of extra fine cotton that generally has a longer and finer staple than Upland cotton.
- The current productivity is 3.45 bales/ha and the expected increase in yields to 4.4 bales/ha.
- Cotton was the main summer crop in Egypt, but nowadays it comes third, after maize and rice, regarding the cultivated area. However, because it occupies the land for about 6-7 months while maize occupies it for about four months.


Area of production (Hectare)
450,000
400,000
350,000
300,000
250,000
200,000
150,000
100,000
50,000
-
1994/95
95/96
96/97
97/98
98/99
99/00
2000/01
2001/02
2002/03
2003/04
2004/05
2005/06
2006/07
2007/08
2008/09
2009/10
2010/11
2011/12
2012/13
2013/14
2014/15
2015/16
2016/17
2017/18
2018/19
2019/20
2020/21
2021/22


Yield KG/hectare
1200
1000
800
600
400
200
0
1994/95
95/96
96/97
97/98
98/99
99/00
2000/01
2001/02
2002/03
2003/04
2004/05
2005/06
2006/07
2007/08
2008/09
2009/10
2010/11
2011/12
2012/13
2013/14
2014/15
2015/16
2016/17
2017/18
2018/19
2019/20
2020/21
2021/22

Production of Egyptian Cotton (Tons)



- In the past two years, the government has taken control over the production and distribution of cottonseed, which used to be handled by the private sector, to restore seed purity and cotton quality. The government was forced to intervene as Egyptian cotton's reputation and quality had deteriorated significantly, due to seed cotton companies "traders' lack of effective quality assurance systems that resulted in inferior, mixed variety output.

- In early 2017, the government announced a new policy that aims to reverse Egypt's cotton industry's decline. The policy, which consists of 19 steps, already implemented with the 2017 planting season. This includes:
- Encourage contract farming to solve marketing bottlenecks.
- Provide high quality seeds to increase yields and quality.
- Identify the areas suitable for each cotton variety.

PLANTING DATE

- Cotton practices for requires much plan-ning and timely action throughout the season. Best Practices are agricultural practices which optimize the three pillars of sustainability: social responsibility, environmental integrity and economic viability by binding together, the financial requirements for agriculture, such as high yield with environmental and social concerns, such as water and pesticide use.
- The largest proportion of cotton cultivated area is planted after temporary berseem, a sizeable proportion after broad beans, smaller areas after potatoes and other minor crops, and sometimes some farmers grow cotton after wheat.

- Delta and Nile valley are suitable for growing cotton if irrigation and fertilization is provided properly. Growing cotton in these soils have the advantage of early maturity, however yield is relatively higher.
- In new lands, where the soils are generally sandy, cotton could be grown successfully only if modern irrigation systems, especially drip irrigation , are used.
- Land preparation and weed control is important to reach yield potential.

- There is magnitude of loss in cotton yield incurred by delayed sowing.
- Recent experiments carried out by the Cotton Research Institute, demonstrated the magnitude of loss in yield due to delaying sowing date in Middle and Delta Egypt. In Middle Egypt, one month delay in date of sowing resulted in about 30% loss in yield, while another one month delay in sowing brought yield down by about 50%.

- In the Delta, when sowing was delayed further for another 30 days till 1st of June, the loss amounted to about 57%. It appears that varieties, and probably regions, differ in their response to delayed sowing. It seems that delaying has more deleterious effects on yield in Delta and Upper Egypt, probably because of difference in climatic conditions.

- Because large number of seeds per hole is usually used , when germination is normal , there will be a large number of seedlings per hill which makes thinning to a required number of 2-3 plants per hill a necessity.
- CRI recommended 75cm distance between ridges and 45 cm distance between hills. when leaving two or three plants per hill after thinning, these distances give approximately plant densities of 8-10 plants per square meter, i.e. 85.000-100.000 plants per Hectare.

- The cotton plant daily water requirements start from the moment the seedlings emerge on soil surface and continues until shortly before picking the crop. However, it varies in quantity according to many factors but mainly growth stage and air temperature and humidity which affect transpiration.

NPK FERTILIZATION

- Nitrogen fertilization is the limiting nutritional factor for cotton production in Egypt. The increase in yield due to phosphorous fertilization is moderate but is economical when phosphorous is used at moderate rates, while potassium fertilization showed no sizeable effect in most of the experiments.
- On of the average, the optimum rate for nitrogen application is 140 Kg /ha, however some varieties respond positively to higher rates up to 180 Kg/ha.

- phosphorous fertilization is recommended at the rate of 36 Kg P**2** O**5** / h.
- However, varieties differ substantially with regard to yield potential, their response to fertilization did not show similar wide difference.
- Response to fertilization varies according to differences in soil productivity. Response to nitrogen was higher in soils of lower productivity than in soils of higher productivity.

WEED CONTROL

- Under Egyptian conditions, weed control in cotton fields is a must, otherwise a substantial proportion of the yield might be lost.
- Cotton in Egypt is normally handpicked.
- Cotton transplanting is known to be possible from the technical point of view as transplanted seedlings could revive and grow into normal cotton plants.

- Intercropping “cotton (a summer crop) - onion (a winter crop)” has been practiced by small cotton farmers in the Delta for reversal decades.
- Successful cotton production in Egypt relies, on the effectiveness of plant protection against the various insects and diseases that attack it throughout its lifetime and cause a good deal of losses.