AGRICO UK Ltd.

Markies

Husbandry Management Profile

Husbandry Guidelines for Maincrop Production

Markies is a relatively new variety with outstanding processing quality. It is suitable for processed products, and the production of French fries.
The variety will produce medium tuber numbers per plant but has the potential for high yields. It has late foliage maturity. Tuber shape is oval, uniform, medium to shallow eyes, with consistently high dry matter content and pale fry colours.

Markies is moderately susceptible to foliage blight, but has a higher degree of resistance to tuber infection. Good resistance to damage and bruising. Resistant to PCN (Ro1) & (Ro4).

Markies has late foliage maturity, similar to Cara
Tuber numbers are generally akin to Estima.
Markies requires a long growing season.

Markies has a strong rooting system, and is tolerant to drought stress.
Dormancy is longer than Maris Piper
Mini chitting will encourage earlier emergence and advance crop maturity.

Nematode control: **Markies** is resistant to *Globodera rostochiensis* (pathotype 1) and (pathotype4) but susceptible and fairly tolerant to *G. pallida.* Where PCN is thought to be a problem, soils should be tested and species identified, and where necessary the use of nematicides should be considered even where the count is low.

Spraing: Early data indicates that **Markies** has a good resistance to spraing caused by tobacco rattle virus, transmitted by free living nematodes.

Crop Nutrition

All nutrition applications must be determined in association with an approved soil Analysis. Correct nutrition is critical.

If too much N is used, maturity and bulking will be delayed, reducing the field yield.

ORGANIC MANURE

Most agricultural soils other than organic soils (peats) are depleting in organic matter (OM) and hence manures are applied to build OM. Available nutrients and application rates are unreliable. Care should be taken to test applied manures for nutrient content and availability and these more accurate figures used to reduce artificial inputs.

NITROGEN

Is essential for good haulm development. **Markies** has strong, vigorous foliage characters. High levels of Nitrogen may delay tuberisation and therefore delay maturity and reduce yield.

Guideline applications for Nitrogen (Kg/Ha) base dressing

Soil Index	0	1	2
Markies	120	80	50

On light soils and irrigated soils **Markies** may respond to top dressing (40-50 Kg N) between emergence and tuber initiation. Where heavy irrigation is used regular feeding with folia Nitrogen is also advised. For highly fertile silts and Black Fens soils use nitrogen index of 2.

PHOSPHATE

P_2O_5 will help to encourage and develop tuber numbers, but the response is less from high soil indices. **Markies** will naturally produce moderate tuber numbers. Foliar applied phosphorus applied singly or split before and at tuber initiation is recommended.

All base phosphate should be applied in the seedbed just prior to planting.

Guideline application rates for Phosphate (Kg / Ha P_2O_5)

Soil Index	0	1	2	3	4
Markies	270	230	180	130	50

Phosphate of any grade will lock up 10-20 days after application. The finer the particle to start with then, in theory, the faster will be the conversion back from Appatite to plant available phosphate

POTASSIUM

Potato plants absorb large quantities of K, therefore adequate amounts of the nutrient need to be supplied. K_2O will help increase tuber size and high applications may reduce dry matter content according to some sources.

Potash should be applied in the Autumn / early Spring or at least 6 weeks prior to planting on low index soils. Limit the amount of Muriate of Potash (MoP) at planting to 150 - 200 kgs/Ha depending on soil index. High rates of MoP applied late can cause damage to sprouting seed especially if soil conditions encourage salinity.

Guideline applications for Potassium (Kg/Ha K_2O)

Soil Index	1	1+	2- to 2	2+	3- to 3	3+
Ppm	<90	90-120	120-180	180-240	240-320	320-400
Markies	375	360	350	325	250	240

MAGNESIUM

Is an essential element for good crop production. Check levels by soil tests and apply as necessary at planting. Early application of Kieserite ($MgSO_4$) is preferred. In periods of heavy rain or irrigation Mg may be leached from soils. Foliar Mg applied with blight sprays is an effective way of supplying Mg in the appropriate formulation.

Guideline applications for Magnesium (Kg/Ha MgO)

Soil Index	0	1	2	3
Markies	150	75	50	25

Best results are achieved using Kieserite close to planting.

CALCIUM

Potatoes remove little Ca from the soil, however there can be a high requirement in the growing plant, particularly at the later growth stage.

SULPHUR

Decreases in pollution has caused a major reduction of industrial S deposition. Check on recent history and levels of S in the growing crop. Symptoms appear as early senescence.

Deficiencies can be rectified by prior application of foliar SO_4 products such as $MnSO_4$ and MgSO4. Sulphur can also be included in the base fertiliser in maintenance quantities.

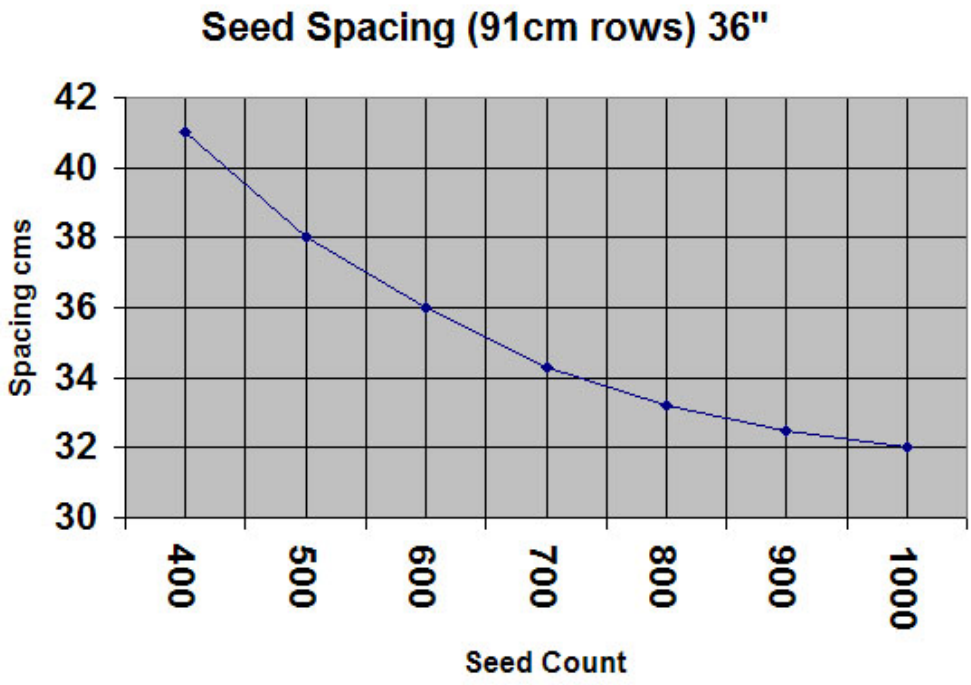
MANGANESE

Historic experience will show if the plant needs Mn

Growing Conditions

SEED SPACING

Under normal growing conditions (with irrigation) where large ware yields in the region of 19 to 25 tonnes/acre are anticipated, the following plant populations are recommended.



PLANTING:

Ensure **Markies** is planted into a warm seedbed and good growing conditions prevail. Seed temperatures should be colder than soil. Tuber greening is not normally a problem and therefore normal planting depths should be applied. i.e. 5-6 inches (12-15 cms) from a settled ridge to the top of the seed. There should be at least two inches of loose soil below the seed. Seed depth needs to be regularly checked to ensure consistency. It is important to avoid desprouting chitted seed.

WEED CONTROL:

No adverse effects have been observed to date with Sencorex applied as pre-emergence or post emergence. However, there is currently no recommendation listed for post emergence weed control.

FUNGICIDES:

Markies is moderately susceptible to foliage blight.
Nevertheless great care should be taken over blight control.
Particularly in the early application of foliage chemicals to act as a preventative measure, and late season as a curative action to **reduce the risk of tuber infection**.

Do not rely on blight warnings before applying blight fungicides, these are often too late and inaccurate.

Apply minimum 200 litres per acre increasing to at least 300 litres at 100% crop cover – always ensure good foliage coverage

Markies is susceptible to Early Blight (altenaria). Modern plant protection fungicides are now targeting late blight and as such altenaria is appearing on more varieties. Use products which will control altenaria from an early stage and from then at least every other blight spray.

APHID CONTROL:

This is advised if any number of aphids are observed on the crop. Leaves of **Markies** may be susceptible to direct aphid damage but is yet unknown. Ensure that, for the moment, a good aphid control insecticide is used to reduce numbers.

IRRIGATION:

Markies will respond to uniform applications of water during the growing season.
Consistent uniformly applied irrigation is essential on light soils
Irrigation regimes should be aimed to apply 25mm of water at 35-50mm SMD depending on soil type. Careful crop monitoring and irrigation scheduling will be required throughout the season.
We would advise the use of irrigation for this variety.

HAULM DESTRUCTION:

Good desiccation will make way for easy harvesting and reduce the risk of disease infection of tubers and should be timed to achieve optimum yield, medium to high dry matters, and uniform tuber size.

Crops destined for storage should not be burnt off until the crop has started to senesce. **Markies** reaches maturity prior to senescence.

Products available include: sulphuric acid, Harvest , Reglone (do not use in dry conditions) and Spotlight. Sulphuric acid will give the best results, but is very toxic and requires application by specialist contractors.

Ensure blight control continues until all haulm is dead.

HARVESTING:

Should begin when skin set is complete.

Many modern harvesters have the capacity to handle large tonnages of potatoes without causing damage. However, damaged potatoes will greatly reduced the crop value. Primary cultivation's at planting can have a big effect on damage levels. It is important to assess harvested potatoes for damage and levels of bruising.

Key areas

- Share angle, depth and transition to web.
- Maintain web speed to forward speed ratio close to 1:1
- Minimise agitation, keep 1st web full of loose soil.
- Ensure haulm rollers are set correctly (i.e. not causing crop damage).
- Cover 2nd web (if in use).
- Ensure Dahlman rollers are set up correctly.
- Make sure trailers are of a suitable standard, and drivers correctly trained.
- Layer load trailers.
- Do not damage crop when grading.
- Ensure drops are kept to a minimum (less than 20 cms).

STORAGE:

Markies has moderate dormancy; low reducing sugar accumulation, and providing crops have reached full maturity is well suited for long term storage.

- Dry cure potatoes as they go into store.
- Bring temperature down no faster than **0.4°C/day**.
- Minimum storage temperature 7.5°C.
- Potatoes must be kept **DRY** and free from condensation during loading and throughout the storage period.
- Ventilate as necessary.

Sprout suppressants should be applied early in the storage period, 2-3 weeks after loading, provided that the crop is dry.
Storage temperatures must remain **constant** throughout the storage period.

SUMMARY

- Advance crop maturity
- Correct amount of N – not too high
- Ensure correct fertiliser balance
- Correct seed spacing for variety
- Consistent irrigation is recommended
- Prevent foliage blight
- Avoid damage at harvest
- Store dry
- Use sprout suppressant early

Please give special attention to detail at all stages of crop management and production.

Produced by James Thompson
Technical Manager March 05
jamesthompson@agrico.co.uk www.markies.info