

AgGrow Vision, Inc. Presents

**The BioPlus
System**



**Product User Information to
Maximise Agricultural Profits**

**Soil
Biological
Activator**

Use BioPlus Products to Reduce Production Costs & Increase Profits

Dear Mr. Farmer:

You're in business to make money ... *And who isn't?*

But, with fertilisers, herbicides and pesticides made from petrochemical bases consistently increasing in price, you have a tough row to hoe, and there seems to be no hope for a decline in the future. Each year your burden of production costs gets heavier.

We, the manufacturers and distributors of **BioPlus**, understand your dilemma and the serious conditions farmers are facing, but there is a solution.

We have been actively involved for more than 33 years in helping farmers incorporate biological technology into their present fertilisation programs, for this is the answer to some of the problems facing you today. We do not claim to have the answers to all of your problems, but we have been able to help many farms cut their fertilisation costs while maintaining or increasing their yields and net as much as \$250 per hectare.

These farmers have found that, when the biological activity in the soil increases, it takes less fertiliser, herbicides and pesticides. Their results and tests show that, biological activity in the soil helps unlock existing nutrients, making them more available to the plant. They observe and report to us . . . "faster seed germination, better root growth, faster growth and healthier, stronger plants, more uniform stands, less soil erosion, better water retention in the soil and availability to plants, higher protein and energy levels in crops and more net profits".

Biological stimulation of your soil provides hope for your fertilisation program. We feel **BioPlus** has the best biological products on the market and hope you will take a few minutes to read this booklet to help you get the most out of them.

Thank you for giving **BioPlus** products a try on your farm.

Sincerely,

The manufacturers and distributors of **BioPlus** products

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### Definitions:

- **Bio** means life.
- **BioPlus** means life plus other life promoting programs.
- **Bio-catalysts** are activators of biological systems.
- **Probiotics** means promoting and supporting life and living organisms.

# INTRODUCTION

## WHAT IS THE BIOPLUS SYSTEM?

**The BioPlus System** is a probiotic program incorporating stabilised NATURAL BIO-CATALYST COMPLEXES essential for promoting biological activity in soils and for plant germination, growth and production. Some of these Bio-Catalyst Complexes include: Adenine, Indolebutyric acid, Indoleacetic acid, Gibberellins plus many enzymes, co-enzymes, vitamins, hormones, amino acids, nucleic acids, chelating compounds, micro-nutrients and other catalytic agents, some of whose functions are still unknown.

BioPlus products containing Bio-Catalysts are called Bio-Activators because this is their basic action. The individual and the cumulative effects of these various factors stimulate or activate growth processes of plants and of microorganisms in the soil.

## HOW DOES THE BIOPLUS SYSTEM WORK?

**BioPlus Products** work in two basic ways:

- 1. Promotes multiplication & activity of beneficial soil micro organisms.** Many of the beneficial microorganisms in most soils are dormant or inactive. This has resulted in poor residue decomposition, the tie up of nutrients and a deterioration of the soil condition and tilth. Activation of the beneficial soil organisms reverses these conditions.
- 2. Promotes germination, growth and production of plants.** A lack of the biological growth factors may be a limiting factor in crop production in biologically deficient soils. Very small amounts of these factors are needed for optimum growth and production of crops.

# GENERAL INFORMATION

## BioPlus – A Vital Part of Soil and Crop Management Programs

According to scientists, the production potential for corn is over 30T/ha and the record for wheat is over 15T/ha. Few farmers or researchers have even come close to reaching the maximum yield potentials or the maximum economic yield potentials because of various **LIMITING FACTORS**. The average production for most crops is far short of the potential.

Some of the factors to consider that may be limiting production include: unsuitable crop varieties, poor seed quality, unfavorable weather conditions; improper fertilisers, poor soil fertility and tilth; inadequate or excessive moisture; inadequate control of toxic factors, weeds, insects and diseases and other economic and management factors.

What is your production potential? What factors can you control? What is missing in your soil fertility program? The total soil fertility management program should include:

- I. **Proper tillage** for weed control, aeration, drainage and seedbed preparation to aid the physical environment for the crop and biological functions in the soil.
- II. **A balanced fertiliser program** to supply a balance of nutrients needed by the plants and soil organisms, that are not available from soil reserves.
- III. **A good biological program** to stimulate and nourish the soil organisms and biological functions in the soil for maximising residue decomposition, nitrogen fixation, availability of nutrients and soil tilth, fertility and productivity of the soil.

As a result of the development and many years' use of cheap chemical fertilisers, the importance of humus and the

biological functions in the soil have been virtually ignored and suppressed. Over the years, these factors have diminished in most soils to the point that the effectiveness and efficiency of fertilisers and other chemicals are declining and soil tilth and condition deteriorating despite the development of new chemicals and better tillage equipment.

A thorough check of the physical, chemical and biological condition of your soil is important for good management!

**The BioPlus System of Probiotic Products** are biological management tools comparable to fertilisers, tillage equipment, etc. They can help you, the farmer, to manage the biological activity in the soil to reduce input costs by improving residue decomposition, seedbed preparation, fixation of atmospheric nitrogen for crop use, increasing availability of soil mineral reserves and the efficiency and effectiveness of fertilisers, reduce erosion, improve soil structure, tilth, aeration and water management, increase root development and maintain top fertility and productivity of the soil.

The BioPlus System, however, does not replace the need for proper tillage and supplying deficient nutrients or other aspects of good management. Use the BioPlus System with a good total management program including soil and crop testing and proper balanced fertilisation for maximum benefits.

## **Benefits of the BioPlus System**

Results on farm tests have shown:

- **BioPlus** has increased fertiliser efficiency and saved on fertilisation costs.
- **BioPlus** has improved residue decomposition, soil tilth and has made tillage easier – saving fuel and equipment maintenance costs.

- **BioPlus** has improved water absorption, retention and drainage in the soil – increasing water efficiency and reducing irrigation costs and losses due to drought.
- **BioPlus** has reduced some of the risks from weather stresses, drought, lodging, nitrate toxicities in livestock and fertiliser burning of crops.
- **BioPlus** has improved germination and seedling survival insuring better, more uniform stands.
- **BioPlus** has increased plant vigor and resistance to insects and diseases and has increased competitiveness of crops against weeds for easier control.
- **BioPlus** has increased yields and in wheat, corn, soybeans, milo, cotton, alfalfa, pastures, fruits, vegetables and other crops.
- **BioPlus** has improved crop quality by increasing test weight, protein, oil, sugar and mineral levels of various crops – increasing market values and keeping quality.
- **BioPlus** has helped many farmers increase their net profits or reduce their losses.
- **BioPlus** has helped keep many farmers in business.

# RECOMMENDATIONS FOR BIOPLUS PRODUCTS

- **SBA-709** (soil bio-activator complex)
- **MaxAmend Plus** (bio-adjuvant, soil surfactant, spreader-sticker)
- **Inner G+** (foliar bio-nutrient complex)

## General Recommendations

BioPlus Products are designed for use on all types of crops and soils. The relative effectiveness of BioPlus Products, as with other products and systems, will depend somewhat on other variables of management and production including time, rate and methods of application.

**BioPlus SBA-709**, soil bio-activator nutrient complex, is recommended for soil application at the standard rate of 378ml/ha (1 L covers 2.65ha – 3.78 L (1 gallon) covers 10 ha).

Optimum rates may vary with soil conditions, timing and methods of applications and crops. In the row applications with starter fertilisers or on the seed, and multiple applications at reduced rates may produce additional benefits.

**BioPlus MaxAmend Plus**, bio-adjuvant, soil surfactant, is recommended as a supplement to SBA-709 for tight soil conditions to improve water penetration and drainage. Recommended rates are 1170 to 2350ml/ha (approx 1L per 0.5-1ha). Use the higher rate for more severe conditions.

**MaxAmend Plus** is also a high quality spreader-sticker adjuvant to improve coverage, absorption and effectiveness of foliar applied nutrients, herbicides, pesticides, and fungicides. Mix 150 to 390ml to each 500L of tank mix. Mix well and apply in normal approved manner. Always test compatibility before mixing with any chemicals.

**BioPlus innerG+**, foliar bio-nutrient complex, is recommended for foliar or soil application to give plants a boost at all stages of growth, and in times of plant stresses to increase vigor and resistance and improve recovery from stresses and damage. Recommended rate is 940ml/ha (3.78 L (1 gallon) covers 4 ha). Additional benefits may be achieved with multiple applications at reduced rates during growing season.

## Times of Application

For residue decomposition and soil improvement, **BioPlus SBA-709** can be applied anytime for general soil treatment. Ideal times to use BioPlus SBA-709 on crop residues are in the fall or spring to help improve and prepare the soil for the next crop, to improve the seedbed and reduce crop and chemical residues that could otherwise adversely affect the crop.

**SBA-709** can be applied before, during or after residues are incorporated into the soil. If residues are heavy and are not going to be incorporated until much later or in no-till, it is recommended that sufficient water be used in applying BioPlus to allow it to get onto the soil.

**BioPlus SBA-709** can be applied in most conditions – hot, cold, wet or dry. In dry conditions, it should be incorporated in the soil for best results, but not plowed down deep. The product can be applied on frozen soils, however, in very cold conditions, the product and biological system in the soil will remain somewhat dormant or inactive until it begins to warm up. In very wet conditions, aeration to the soil may be necessary before some of the benefits will be seen.

For crop production, apply before, during or after planting up to bloom or boot stage, depending on the type of crop, for maximum benefits. **SBA-709** can also be applied at planting in the row with the seed (see Rates and Methods of Application). Apply before planting or in the row at planting

for benefits on germination, emergence and early root and plant development. Multiple applications at reduced rates during the growing season may also be beneficial to maximise results for high production crops.

**BioPlus innerG+** liquid foliar nutrient booster is an advanced nutrient complex formulated with bio-catalysts designed for foliar or soil application at all stages of plant growth to enhance germination, plant root growth, nutrient uptake, plant vigor and resistance. Also apply in times of plant stress to speed recovery from crop stresses and damage. It can be applied as a soil treatment prior to planting, or in the row with starter fertilisers or on the seed at planting, and as a foliar throughout the growing season.

## Rates of Application

**BioPlus SBA-709** is formulated to be applied at a standard rate of 378ml/ha (1 L covers 2.65ha – 3.78 L (1 gallon) covers 10 ha) for soil treatment and crop production.

For broadcast spray application on the soil in the fall or spring apply at the standard rate of 378ml/ha or 1 L per 2.65ha.

For narrow band application in the row on wide row (i.e. 750mm) crops, the rate applied in the band should be reduced to  $\frac{1}{4}$  to  $\frac{1}{2}$  the standard rate. It is recommended that the total soil area also be treated for full benefits.

For band applications on narrow row (i.e. 180mm) drilled crops apply at the standard rate.

For multiple applications of more than 2 times on a crop, the rate per application can be reduced to  $\frac{1}{2}$  the standard rate. The more frequent the applications, the more the rate per application can be reduced.

**BioPlus is non-toxic** to plants when used as directed. Excessive or improper use may cause over stimulation and produce unfavorable plant growth and reduce instead of increase the desired effects.

**BioPlus MaxAmend Plus** is recommended to be applied at the rate of 1170ml/ha to improve water uptake on lighter sandy or silt loam soils as a supplement to the SBA-709. For heavier tight soils the rate may be increased to 2340ml/ha and in some conditions multiple applications may be beneficial to speed up soil correction.

**BioPlus innerG+** is recommended to be applied as a foliar at the rate of 940ml/ha (1L/ha). Additional benefits may be achieved with additional applications at critical growth stages and in times of crop stresses. Rates may be reduced with frequent multiple applications. Dilute 1 part innerG+ with minimum of 9 parts water before foliar application.

For soil broadcast spray applications, or in the row band application at planting on narrow row (ie. 180mm) drilled crops, apply at standard rate of 940ml/ha. For in the row band application on wide row (i.e. 750mm) crops reduce rate to 470ml/ha.

*Avoid overuse. Over-stimulation may cause excess growth and undesirable effects on plants.*

## Methods of Application

**BioPlus SBA-709** can be applied to the soil by spraying with ground sprayer, airplane, injected through sprinkler systems and furrow or flood irrigation. Dilute in sufficient water to get uniform coverage of the soil (a minimum of 100L of water per hectare for most ground spray rigs). Aerial applicators may apply as little as 20L or 30L liquid per hectare effectively, but must avoid hot or windy conditions.

**BioPlus SBA-709** can be mixed and applied with most liquid fertilisers, herbicides and pesticides. It is usually best to mix the product in last after the other chemicals have already been diluted. Check the compatibility before mixing the product in the tank by taking a small sample, such as a quart of the tank mix, and mix in a small amount of SBA-

709 to check for flocculation. If flocculation or gelling occurs, do not mix the product into the tank.

**BioPlus SBA-709** soil bio-activator in its original container is a stable liquid complex of bio-catalysts and other factors soluble in water. Apply within 24 hours after mixing for best results.

**BioPlus SBA-709** can also be mixed with most dry fertilisers for application. It is best to apply the mixed product as soon as possible after mixing to insure stability and effectiveness.

**Incorporation of BioPlus SBA-709** in the surface soil is recommended if the soil is very dry. This is often done when handling or incorporating fertilisers and herbicides or disking in residues. Do not plough it down in a deep layer. Most of the soil's biological activity occurs in the top soil.

Use of a wetting agent (surfactant), such as **BioPlus MaxAmend Plus with SBA-709** may be beneficial to improve soil coverage and absorption in some soil and water conditions.

For information on use of other chemical products and on sprayers, injection or mixing equipment, check with the manufacturing companies and their representatives.

## Recommendations on Crops

Years of testing **BioPlus Products** in the lab and on farms and crops in United States and many foreign countries have proven **BioPlus SBA-709** to be a revolutionary advancement in farming technology. **Check the benefits of BioPlus SBA-709** on your farm by leaving control checks and observing the results. Keep field records for future reference on the forms included in this booklet. Use with a good soil testing and balanced fertiliser program.

**CORN:** Follow the general recommendations in this booklet. The bio-catalysts in **BioPlus SBA-709** have resulted in increased fertiliser efficiency on many farms.

Avoid excess nitrogen fertilisation on high production corn. Use with a good soil testing and balanced fertiliser program. The action of **SBA-709** has increased nitrogen availability in the soil. Cutting nitrogen back 25% to 50% or more at the higher rates has resulted in some of the greatest benefits with **BioPlus**. On irrigated crops, avoid over-watering where **SBA-709** has been applied. Increased soil biological activity increases water absorption, retention and efficiency requiring less irrigation. Over-watering can cause stress on the crop.

**Multiple applications of BioPlus SBA-709** to boost biological activity on high production crops may produce additional benefits over single applications. As soil conditions and fertility improve, farmers are often able to reduce fertilisers, herbicides and pesticides with increased effectiveness. **BioPlus SBA-709** treated crops usually mature earlier and dry down faster reducing drying costs. Increases in feed quality have allowed livestock producers to reduce protein supplements in rations.

**FIELD PEAS:** Follow the general recommendations as on other crops. **BioPlus SBA-709** can also be applied as a seed treatment at planting time with Rhizobium Inoculant, but this does not replace the need for the Rhizobium inoculant. For seed treatment, apply 11ml/10kg of seed to benefit germination, emergence and early plant development. The soil application is also needed for full benefits.

**WHEAT AND OTHER SMALL GRAINS:** Apply **BioPlus SBA-709** in early fall on winter wheat. Late applications may not show benefits until spring when it begins to warm up. A second application in early spring has proven beneficial in many areas. Grazing **BioPlus** treated winter wheat in the southern states has resulted in increased gains in grazing livestock and increased grain yields at harvest.

**MALTING BARLEY:** **BioPlus** treatment with reduced nitrogen rates have produced higher quality premium malting barley.

**PASTURE AND HAY CROPS:** Follow general recommendations. Apply **BioPlus SBA-709** early in the spring at standard rate before growth begins. After initial treatment rate may be reduced to 1/2 for applications after each cutting to stimulate re-growth. Use sufficient water (100-200L or more per hectare in most cases) when applying to get good coverage on the soil. A wetting agent, **BioPlus MaxAmend Plus** may be beneficial to improve coverage through vegetative cover.

**POTATOES:** Follow general recommendations. Avoid excess nitrogen. Excess nitrogen will produce excess vegetative growth and reduce tuber yield and quality. Test surface and subsoil nitrogen. **BioPlus SBA-709** increases root development and depth and increases nitrogen availability and may also reduce irrigation requirements. Reduce nitrogen rates and irrigation accordingly.

**SUGAR BEETS:** Same as for potatoes. **BioPlus SBA-709** increases sugar production. Excess nitrogen will inhibit sugar levels from coming up in beets. Avoid excess nitrogen.

**SUNFLOWERS:** Follow general recommendations as for other crops.

**VEGETABLE CROPS:** Follow general recommendations.

**FRUIT AND NUT TREES:** Follow general recommendations. For setting out new trees, spray or soak roots in a solution of 1 part **BioPlus SBA-709** to 10,000 parts water (approximately 2 drops/L). On established trees, apply **SBA-709** at 378ml/ha to soil in the early spring before

growth begins to for soil benefits and to enhance the initial growth stages and bloom when the trees come out of dormancy. **Foliar** application of **BioPlus innerG+** (940ml/ha) may be beneficial after fruit set to enhance production and quality.

**LAWNS AND GARDENS:** Apply **BioPlus SBA-709** at the same rate as for other crops 378ml/ha or approximately 1 teaspoon per 90 sq.m. Apply the full rate for the first application. Rate may be reduced for multiple applications, as for pasture and hay.

**NURSERY AND HOUSE PLANTS:** Mix 1 part **BioPlus SBA-709** to 10,000 parts water (approximately 2 drops/L). Use about 1 to 2 tablespoons of diluted solution per 0.1m sq. of soil area, or 1 to 2 teaspoons for small potted plants (150mm dia). Mix solution fresh. Apply once every 4 to 8 weeks. Use for transplanting and on cuttings.

*Avoid overuse. Over-stimulation may cause excess growth and undesirable effects on plants.*

# SOIL TESTING

## Importance of Soil Testing

**BioPlus products** were developed recognising the need for **TOTAL SOIL MANAGEMENT PROGRAMS** in building and maintaining fertile soils for profitable crop production. With the advent of chemical farming technology, the biological aspects of soil management have largely been forgotten or ignored. **BioPlus** scientists and consultants have always emphasised the need for good soil and crop testing to fine tune soil and crop management programs for maximum results.

We have used various labs for soil, plant and other testing. For more information on soil testing, including:

## Proper Soil Sampling Procedures

Which soil tests are recommended and why?

How to Interpret test results, etc?

We refer you to the following lab:

**Perry Agricultural Lab**

PO Box 418

State Highway 54 East

Bowling Green, MO 63334

Telephone: 573-324-2931

Fax: 573-324-5558

# QUESTIONS AND ANSWERS

**BioPlus products** provide biological tools to promote more efficient and economically profitable soil and crop management. Their effectiveness has been demonstrated on all the major crops and conditions when used as a part of a sound management program. The following are questions most frequently asked concerning the use of BioPlus products:

## **Q: HOW DOES BIOPLUS SBA-709 WORK?**

**A:** BioPlus - Soil Biological Activator (SBA-709) works in two basic ways:

- 1. Bio-catalysts in SBA-709 promote the multiplication and activity of beneficial organisms in the soil.**  
The beneficial organisms in many soils are often inactive or dormant, which results in poor residue decomposition, the tie-up of fertiliser nutrients and a deterioration of the soil condition and tilth. The **ACTIVATION** and **MULTIPLICATION** of the beneficial soil organisms helps to reverse these conditions.
- 2. The bio-catalysts also promote germination, growth and production of plants.** A lack of these biological growth factors can be limiting factors in crop production in biologically deficient soils. Very small amounts of these factors produced by soil microorganisms and in **BioPlus Products** are needed for optimum growth and production of crops.

## **Q: HOW CAN SO LITTLE DO SO MUCH?**

**A:** Bio-catalysts such as enzymes, hormones and vitamins activate and greatly accelerate biological reactions without being used up in the process. Without small amounts of bio-catalysts many metabolic reactions would occur too slowly or not at all to sustain life. For example, a single enzyme

molecule may activate (catalyze) thousands or even millions of reactions of other molecules per second to provide for the growth processes of living systems.

Hormones are bio-chemical regulators that govern metabolic rate, growth, maturation and reproduction. A single hormone molecule can dramatically alter cell metabolism and function by turning on the production of a number of enzymes in cells. Thus, a tiny amount of a hormone (or growth regulator) can govern the activity of an enormous number of cells or organisms.

**Q: IF A LITTLE IS GOOD, IS MORE BETTER?**

**A:** Often not! Plant hormones can produce a variety of effects, depending on their concentration as well as the plant species, stage of growth, etc. For example, auxin (Indoleacetic acid - IAA) concentrations of  $10^{-8}$  to  $10^{-6}$  gm/L were shown to promote root growth, whereas higher concentrations inhibited root growth, probably because of feedback mechanisms stimulating production of other hormones in the plant to counter the effects of IAA on root growth.

**Q: DOES BIOPLUS SBA-709 CARRY OVER?**

**A:** Bio-catalysts in SBA-709 eventually break down during the normal season. However, the effects of **BioPlus SBA-709** will generally produce benefits in the soil that will carryover to benefit succeeding crops.

**Q: DOES BIOPLUS SBA-709 NEED TO BE APPLIED AGAIN IN FOLLOWING YEARS?**

**A:** **BioPlus SBA-709** stimulates the growth cycle of microorganisms in the soil and the plant. Results show growth factors do not build up appreciably in the soil under intensive cropping methods. Field tests have shown that benefits from the use of **BioPlus SBA-709** can be expected to continue or improve each year with a good soil management program.

## **Q: WILL BIOPLUS SBA-709 DEplete THE SOIL?**

**A:** **BioPlus SBA-709** does help increase the availability of minerals and the decomposition of organic matter (OM) in soils. This could eventually lead to using up reserves of some nutrients or depleting OM in the soil if they are very low or not replenished.

Most soils, however, have large amounts of reserve minerals (approx. 4500T/ha to a 0.3m depth of soil) that are mostly unavailable for crop production. Even most fertiliser minerals are lost to use by crops as a result of tie-up in the soil or by erosion and leaching. Tests have shown **BioPlus SBA-709** helps make these minerals available for crop use and reduces their erosion and leaching.

**BioPlus SBA-709** also has increased the root feeding area of plants by improving soil tilth and stimulating better root development enabling plants to use mineral and water reserves in the deeper layers of soil.

**BioPlus SBA-709** has reduced dependence on high levels of nitrogen fertilisers by increasing the efficiency of use and apparently by stimulating nitrogen-fixing organisms in the soil.

**BioPlus SBA-709** will help build soil fertility levels when used with good soil management and a balanced fertility program, which includes returning adequate amounts of organic matter or crop residues to the soil each year. (DON'T BURN YOUR RESIDUES.)

## **Q: WHAT FACTORS OR CONDITIONS LIMIT THE EFFECTIVENESS OF BIOPLUS SBA-709?**

**A:** The bio-catalysts in **BioPlus SBA-709**, stimulate vital biological functions in soil organisms and plants. However, benefits can be reduced by other limiting factors and conditions.

**LIMITING CONDITIONS:** Various soil conditions cause problems that limit crop production. Some of these conditions can limit the results from BioPlus Products.

**Low Soil Temperatures** in the winter and early spring may slow down beneficial biological activity and benefits from **BioPlus products**. This is a temporary condition and will correct itself when the soil warms up. Cultivation practices such as ridging the soil can help the soil warm up faster. Increased biological activity stimulated by BioPlus product treatment has also helped soils warm up earlier.

**Poor soil Aeration** (anaerobic conditions) in the soil caused by flooding, over-irrigation, poor drainage, tight soil or crusting depresses beneficial biological activity and sometimes reduces or interferes with the beneficial effects of BioPlus products. Proper tillage, improved drainage or cutting back on irrigation will generally solve this problem. Use of **BioPlus products** have improved soil condition, loosened soils and improved water absorption, retention and drainage. In heavier soils several years use may be necessary for major improvements.

**Deficiencies and Excesses of Soil Minerals** often adversely affect crop production and biological functions in the soil. High levels of ionized aluminum may be toxic to crops and soil microorganisms and interfere with the benefits of BioPlus products. A good liming program will solve this problem.

Excessive levels of nitrogen (especially with low sulfur and other minerals) are costly and may cause excessive vegetative growth, lowered resistance to diseases and insects, delayed maturity, lodging of grains, lower quality of fruit and grain and may result in accumulation of toxic levels of nitrates and cause livestock losses. Results have shown that **BioPlus SBA-709** improves efficiency of nitrogen use. Excess levels of nitrogen counteract some of the benefits of BioPlus and has in some cases resulted in decreased yields. Using a good soil testing program to balance the fertiliser program and sometimes reducing rates of nitrogen fertilisers up to 25% to 50% will generally solve this problem and also result in cost savings. Since **BioPlus**

**SBA-709** stimulates deeper root development, it may be advisable to check the subsoil for accumulations of leached nitrogen in intensively fertilised crops such as potatoes, sugar beets, etc.

When problems exist, test soils and plants and correct for pH, and deficiencies or imbalances of minerals.

**Herbicide Damage:** Herbicide residue damage to crops is becoming a major problem in many cropping areas partly due to inadequate biological activity in many soils needed to eliminate the residues. Some damage has been seen in BioPlus treated crops when plant roots reach these herbicide residues. Good soil management using **BioPlus SBA-709** on crop residues in the fall, proper tillage, reducing herbicide rates and other steps necessary to improve the biological condition of the soil will help eliminate the problem of herbicide carry over.

**Excess BioPlus:** Excessive or improper use of BioPlus Products may cause over-stimulation of plants and result in unfavorable plant growth and reduce instead of increase the desired effects, especially in imbalanced soil conditions. These effects are temporary. The growth factors in BioPlus SBA-709 are totally biodegradable in the soil and will be corrected rapidly by the increased microbial activity. There is no problem of harmful residues.

**Application Problems: BioPlus SBA-709** needs to get on the soil to benefit the soil. Check applicator equipment, dilution, mixing and application for even distribution. Use sufficient water for good coverage. Apply product within 24 hours of dilution or mixing.

**PRODUCT STORAGE:** Store BioPlus products in a cool place. Do not store plastic bottles in direct sunlight. **BioPlus products** contain stabilized enzymes, vitamins, hormones, and other biological factors that may be sensitive to temperatures of over 50°C. (120°F.) in storage.

# SUPPLEMENTAL INFORMATION

University and company research data are useful in evaluating new products and practices, but the only way you can tell what a particular practice, seed variety, fertiliser or other product will do, is doing or what the optimum rates are on your farm under your management practices is to test it. If test plots are set up, they should be managed the same as the commercial acreage so you have a fair basis for comparison. Only the method, product or rates being tested should be varied from the standard practice.

## Setting Up Field Trials

1. Select a field or fields for the trials that represent the conditions for which the product or practices are to be used. Determine the variables to be tested, ie. with and without **BioPlus products** and any other variables such as crop varieties, fertiliser rates, etc.
2. **Field Trial Methods:** Field trial methods may vary from a simple field demonstration to complex replicated tests with multiple variables. As a rule, a farm test should be kept as simple as possible to insure its success.
  - a) **Simple Field Demonstration:** The entire field is treated and the results are compared to past results and results from the surrounding area.
  - b) **Field Demonstration with Control Check:** Part of the field is treated and results are compared to the control strip or plot that has not been treated. If more than one variable is being tested, a test strip is set up for each variable. This is the most practical test for most farms, but beware that variations in the field can cause errors in the results.
  - c) **Replicated Tests:** Replicated tests are set up with two

or more plots or strips for each trial treatment and control to allow a more scientific analysis of the results. When more than one variable is being tested, the number of plots doubles with each variable. This can easily become very complex and time consuming. Keep it simple!

- a) After the fields, crops and trial method are selected, the next step is to **draw a map** of the fields and plots to show:
- b) **Dimensions and locations** of the fields and plots.
- c) **Layout** of the trials and control areas.

Maps can be traced to scale from aerial photos.

Alternatively, you could use images from Google Earth (dependent on quality of aerial images taken on the day).

It is recommended that the size of plots or tests be set up to utilise the standard farm equipment and be large enough to be worth the effort to harvest and weigh separately to provide accurate yield data.

**4. Keep a notebook to record** all information, procedures, soil tests, fertilisers used, costs, planting dates, crop varieties, irrigations, sprays, observations, etc., that pertain to the outcome of the tests. Take pictures for visual records.

**5. Harvest trial plots separately** at harvest to obtain accurate yields. Check quality - moisture, test weights, etc., of the crop. When possible, have extension personnel or other qualified persons assist in the trials. Record the data on the field record forms in this booklet as a reference for future management decisions.

## Calculating Plant Populations

**BioPlus SBA-709** helps improve germination often resulting in higher plant populations. To determine plant population in a field, count the number of plants in 3m or more of row space in 3 or more representative areas of the

field. Divide the total number of plants into the total centimeters of rows measured: i.e. 50 plants per 9m of row space equals 18cm average plant spacing. To determine plant population per hectare, multiply plant spacing times row width and divide this into 100,000,000 (sq. cm per ha).

$$\text{Plant Population per ha} = \frac{100,000,000 \text{ (sq. cm.)}}{\text{row width (cm)} \times \text{plant spacing (cm)}}$$

## Estimating crop yields

On small plots or when it is not possible to get yields on test strips with the conventional harvesting equipment, it may be necessary to estimate yields by hand harvesting representative samples.

Harvest about 3m or more of row from 3 or more representative areas of the field or plot and weigh samples to the nearest gram (gm). To convert to gms per ha, multiply gms times 100,000,000 sq.cm. and divide answer by the length of row harvested in cm times row width in cm. To convert gms to kg divide by 1000. To convert kg to metric tonnes divide again by 1000. To convert direct from gms to Tonnes/ha use following formula: ie. Harvest = 2200 gms X 100 divided by 30 cm row width X 900 cm row length equals 8.15 tonnes per ha. This same formula can be used on large strips or plots harvested with conventional equipment.

$$\text{Tonnes per ha (metric)} = \frac{\text{gms of sample harvested} \times 100}{\text{row width (cm)} \times \text{row length (cm)}}$$

Beware of sampling and weight errors. The smaller the sampling area, the greater the error potential.

Quality factors such as moisture percentage, test weight, etc., should be considered and evaluated along with yield in all yield comparisons if possible.

# WHAT TO LOOK FOR ON BIOPLUS-TREATED FIELDS & CROPS

**BioPlus** has helped improve seed germination; root development and plant growth; increase vigour and resistance of plants to stresses, disease and drought; increase fruit set and production; stimulate multiplication of beneficial soil organisms which speed up decomposition of residues, increase availability of and chelate soil and fertiliser nutrients, dissolve hardpans, improve moisture intake, retention and drainage and make soils easier to work. Some or all of these functions have been observed in fields at various times of the season.

## Make Comparisons of Treated and Untreated Fields

### Check soil conditions at various times for:

- Residue decomposition and humus formation.
- Soil tilth & structure - Check for hardpans, clods, granulation, ease of tillage.
- Moisture absorption, retention and drainage.
- Soil odor - for indications of biological activity.
- Analyse soils for available nutrients and balance.

### Check crops at various times for:

- Seed germination. emergence, survival and vigor.
- Uniformity of stand.
- Root development - size, branching, depth.
- Plant growth, vigor and appearance.
- Resistance to insects, diseases, weather stresses.
- Weed competition and control.
- Analyse plants for nutrient levels and balance.
- Check bloom and seed or fruit set and filling.
- Time of maturity, uniformity of maturing.
- Yield and quality.
- Cost and return comparisons - NET PROFIT!

Excess nitrogen may give a false appearance of a healthy crop and may counteract some of the benefits of **BioPlus SBA-709**.

## FARM FIELD RECORDS & NOTES

| <u>BioPlus</u>                         | <u>Conventional</u> |
|----------------------------------------|---------------------|
| <b><u>Field #, Hectares</u></b>        |                     |
| <b><u>Crop Variety</u></b>             |                     |
| <b><u>Planting Date</u></b>            |                     |
| <b><u>Rate/acre</u></b>                |                     |
| <b><u>Fertilisers</u></b>              |                     |
| <b>Rates</b>                           |                     |
| <b>Costs</b>                           |                     |
| <b><u>Chemicals</u></b>                |                     |
| <b>Herbicides</b>                      |                     |
| <b>Pesticides</b>                      |                     |
| <b>Other</b>                           |                     |
| <b>Costs</b>                           |                     |
| <b><u>Tillage &amp; Fuel Costs</u></b> |                     |
| <b><u>Irrigations -</u></b>            |                     |
| <b>Power Reading</b>                   |                     |
| <b>Costs</b>                           |                     |

|                        |  |
|------------------------|--|
| <b>Harvest - Date</b>  |  |
| <b>Yield/ha</b>        |  |
| <b>Test Weight</b>     |  |
| <b>Moisture %</b>      |  |
| <b>Other Qualities</b> |  |
| <b>Gross Return/ha</b> |  |
| <b>Costs/ha</b>        |  |
| <b>Net Return/ha</b>   |  |

**Other Mgt. Factors:**

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**General - Weather & Moisture Conditions:**

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

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**Crop Damage & Losses:**

Weeds - Insects - Diseases - Drought - Flooding - Storms  
- Other

---



## FARM FIELD RECORDS & NOTES

| <u>BioPlus</u>                        | <u>Conventional</u> |
|---------------------------------------|---------------------|
| <u>Field #, Hectares</u>              |                     |
| <u>Crop Variety</u>                   |                     |
| <u>Planting Date</u>                  |                     |
| <u>Rate/acre</u>                      |                     |
| <u>Fertilisers</u><br>Rates           |                     |
| <u>Costs</u>                          |                     |
| <u>Chemicals</u><br>Herbicides        |                     |
| Pesticides                            |                     |
| Other                                 |                     |
| <u>Costs</u>                          |                     |
| <u>Tillage &amp; Fuel Costs</u>       |                     |
| <u>Irrigations -</u><br>Power Reading |                     |
| <u>Costs</u>                          |                     |

|                        |  |
|------------------------|--|
| <b>Harvest - Date</b>  |  |
| <b>Yield/ha</b>        |  |
| <b>Test Weight</b>     |  |
| <b>Moisture %</b>      |  |
| <b>Other Qualities</b> |  |
| <b>Gross Return/ha</b> |  |
| <b>Costs/ha</b>        |  |
| <b>Net Return/ha</b>   |  |

**Other Mgt. Factors:**

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**General - Weather & Moisture Conditions:**

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

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**Crop Damage & Losses:**

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## FARM FIELD RECORDS & NOTES

| <u>BioPlus</u>                        | <u>Conventional</u> |
|---------------------------------------|---------------------|
| <u>Field #, Hectares</u>              |                     |
| <u>Crop Variety</u>                   |                     |
| <u>Planting Date</u>                  |                     |
| <u>Rate/acre</u>                      |                     |
| <u>Fertilisers</u><br>Rates           |                     |
| <u>Costs</u>                          |                     |
| <u>Chemicals</u><br>Herbicides        |                     |
| Pesticides                            |                     |
| Other                                 |                     |
| <u>Costs</u>                          |                     |
| <u>Tillage &amp; Fuel Costs</u>       |                     |
| <u>Irrigations -</u><br>Power Reading |                     |
| <u>Costs</u>                          |                     |

|                        |  |
|------------------------|--|
| <b>Harvest - Date</b>  |  |
| <b>Yield/ha</b>        |  |
| <b>Test Weight</b>     |  |
| <b>Moisture %</b>      |  |
| <b>Other Qualities</b> |  |
| <b>Gross Return/ha</b> |  |
| <b>Costs/ha</b>        |  |
| <b>Net Return/ha</b>   |  |

**Other Mgt. Factors:**

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**General - Weather & Moisture Conditions:**

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

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**Crop Damage & Losses:**

Weeds - Insects - Diseases - Drought - Flooding - Storms  
- Other

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## FARM FIELD RECORDS & NOTES

| <u>BioPlus</u>                        | <u>Conventional</u> |
|---------------------------------------|---------------------|
| <u>Field #, Hectares</u>              |                     |
| <u>Crop Variety</u>                   |                     |
| <u>Planting Date</u>                  |                     |
| <u>Rate/acre</u>                      |                     |
| <u>Fertilisers</u><br>Rates           |                     |
| <u>Costs</u>                          |                     |
| <u>Chemicals</u><br>Herbicides        |                     |
| Pesticides                            |                     |
| Other                                 |                     |
| <u>Costs</u>                          |                     |
| <u>Tillage &amp; Fuel Costs</u>       |                     |
| <u>Irrigations -</u><br>Power Reading |                     |
| <u>Costs</u>                          |                     |

|                        |  |
|------------------------|--|
| <b>Harvest - Date</b>  |  |
| <b>Yield/ha</b>        |  |
| <b>Test Weight</b>     |  |
| <b>Moisture %</b>      |  |
| <b>Other Qualities</b> |  |
| <b>Gross Return/ha</b> |  |
| <b>Costs/ha</b>        |  |
| <b>Net Return/ha</b>   |  |

**Other Mgt. Factors:**

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**General - Weather & Moisture Conditions:**

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

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**Crop Damage & Losses:**

Weeds - Insects - Diseases - Drought - Flooding - Storms  
- Other

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## FARM FIELD RECORDS & NOTES

| <u>BioPlus</u>                         | <u>Conventional</u> |
|----------------------------------------|---------------------|
| <b><u>Field #, Hectares</u></b>        |                     |
| <b><u>Crop Variety</u></b>             |                     |
| <b><u>Planting Date</u></b>            |                     |
| <b><u>Rate/acre</u></b>                |                     |
| <b><u>Fertilisers</u></b>              |                     |
| <b>Rates</b>                           |                     |
| <b>Costs</b>                           |                     |
| <b><u>Chemicals</u></b>                |                     |
| <b>Herbicides</b>                      |                     |
| <b>Pesticides</b>                      |                     |
| <b>Other</b>                           |                     |
| <b>Costs</b>                           |                     |
| <b><u>Tillage &amp; Fuel Costs</u></b> |                     |
| <b><u>Irrigations -</u></b>            |                     |
| <b>Power Reading</b>                   |                     |
| <b>Costs</b>                           |                     |

|                        |  |
|------------------------|--|
| <b>Harvest - Date</b>  |  |
| <b>Yield/ha</b>        |  |
| <b>Test Weight</b>     |  |
| <b>Moisture %</b>      |  |
| <b>Other Qualities</b> |  |
| <b>Gross Return/ha</b> |  |
| <b>Costs/ha</b>        |  |
| <b>Net Return/ha</b>   |  |

**Other Mgt. Factors:**

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**General - Weather & Moisture Conditions:**

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

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**Crop Damage & Losses:**

Weeds - Insects - Diseases - Drought - Flooding - Storms  
- Other

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## 2010

### January

| Su | Mo | Tu | We | Th | Fr | Sa |
|----|----|----|----|----|----|----|
| 31 |    |    |    |    | 1  | 2  |
| 3  | 4  | 5  | 6  | 7  | 8  | 9  |
| 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| 24 | 25 | 26 | 27 | 28 | 29 | 30 |

### April

| Su | Mo | Tu | We | Th | Fr | Sa |   |
|----|----|----|----|----|----|----|---|
|    |    |    |    |    | 1  | 2  | 3 |
| 4  | 5  | 6  | 7  | 8  | 9  | 10 |   |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 |   |
| 18 | 19 | 20 | 21 | 22 | 23 | 24 |   |
| 25 | 26 | 27 | 28 | 29 | 30 |    |   |

### July

| Su | Mo | Tu | We | Th | Fr | Sa |   |
|----|----|----|----|----|----|----|---|
|    |    |    |    |    | 1  | 2  | 3 |
| 4  | 5  | 6  | 7  | 8  | 9  | 10 |   |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 |   |
| 18 | 19 | 20 | 21 | 22 | 23 | 24 |   |
| 25 | 26 | 27 | 28 | 29 | 30 | 31 |   |

### October

| Su | Mo | Tu | We | Th | Fr | Sa |
|----|----|----|----|----|----|----|
| 31 |    |    |    |    | 1  | 2  |
| 3  | 4  | 5  | 6  | 7  | 8  | 9  |
| 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| 24 | 25 | 26 | 27 | 28 | 29 | 30 |

### February

| Su | Mo | Tu | We | Th | Fr | Sa |   |   |   |   |
|----|----|----|----|----|----|----|---|---|---|---|
|    |    |    |    |    | 1  | 2  | 3 | 4 | 5 | 6 |
| 7  | 8  | 9  | 10 | 11 | 12 | 13 |   |   |   |   |
| 14 | 15 | 16 | 17 | 18 | 19 | 20 |   |   |   |   |
| 21 | 22 | 23 | 24 | 25 | 26 | 27 |   |   |   |   |
| 28 |    |    |    |    |    |    |   |   |   |   |

### May

| Su | Mo | Tu | We | Th | Fr | Sa |
|----|----|----|----|----|----|----|
| 30 | 31 |    |    |    |    | 1  |
| 2  | 3  | 4  | 5  | 6  | 7  | 8  |
| 9  | 10 | 11 | 12 | 13 | 14 | 15 |
| 16 | 17 | 18 | 19 | 20 | 21 | 22 |
| 23 | 24 | 25 | 26 | 27 | 28 | 29 |

### August

| Su | Mo | Tu | We | Th | Fr | Sa |
|----|----|----|----|----|----|----|
| 1  | 2  | 3  | 4  | 5  | 6  | 7  |
| 8  | 9  | 10 | 11 | 12 | 13 | 14 |
| 15 | 16 | 17 | 18 | 19 | 20 | 21 |
| 22 | 23 | 24 | 25 | 26 | 27 | 28 |
| 29 | 30 | 31 |    |    |    |    |

### November

| Su | Mo | Tu | We | Th | Fr | Sa |   |   |   |   |
|----|----|----|----|----|----|----|---|---|---|---|
|    |    |    |    |    | 1  | 2  | 3 | 4 | 5 | 6 |
| 7  | 8  | 9  | 10 | 11 | 12 | 13 |   |   |   |   |
| 14 | 15 | 16 | 17 | 18 | 19 | 20 |   |   |   |   |
| 21 | 22 | 23 | 24 | 25 | 26 | 27 |   |   |   |   |
| 28 | 29 | 30 |    |    |    |    |   |   |   |   |

### March

| Su | Mo | Tu | We | Th | Fr | Sa |   |   |   |   |
|----|----|----|----|----|----|----|---|---|---|---|
|    |    |    |    |    | 1  | 2  | 3 | 4 | 5 | 6 |
| 7  | 8  | 9  | 10 | 11 | 12 | 13 |   |   |   |   |
| 14 | 15 | 16 | 17 | 18 | 19 | 20 |   |   |   |   |
| 21 | 22 | 23 | 24 | 25 | 26 | 27 |   |   |   |   |
| 28 | 29 | 30 | 31 |    |    |    |   |   |   |   |

### June

| Su | Mo | Tu | We | Th | Fr | Sa |   |   |   |
|----|----|----|----|----|----|----|---|---|---|
|    |    |    |    |    | 1  | 2  | 3 | 4 | 5 |
| 6  | 7  | 8  | 9  | 10 | 11 | 12 |   |   |   |
| 13 | 14 | 15 | 16 | 17 | 18 | 19 |   |   |   |
| 20 | 21 | 22 | 23 | 24 | 25 | 26 |   |   |   |
| 27 | 28 | 29 | 30 |    |    |    |   |   |   |

### September

| Su | Mo | Tu | We | Th | Fr | Sa |   |   |
|----|----|----|----|----|----|----|---|---|
|    |    |    |    |    | 1  | 2  | 3 | 4 |
| 5  | 6  | 7  | 8  | 9  | 10 | 11 |   |   |
| 12 | 13 | 14 | 15 | 16 | 17 | 18 |   |   |
| 19 | 20 | 21 | 22 | 23 | 24 | 25 |   |   |
| 26 | 27 | 28 | 29 | 30 |    |    |   |   |

### December

| Su | Mo | Tu | We | Th | Fr | Sa |   |   |
|----|----|----|----|----|----|----|---|---|
|    |    |    |    |    | 1  | 2  | 3 | 4 |
| 5  | 6  | 7  | 8  | 9  | 10 | 11 |   |   |
| 12 | 13 | 14 | 15 | 16 | 17 | 18 |   |   |
| 19 | 20 | 21 | 22 | 23 | 24 | 25 |   |   |
| 26 | 27 | 28 | 29 | 30 | 31 |    |   |   |

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## 2011

### January

| Su | Mo | Tu | We | Th | Fr | Sa |
|----|----|----|----|----|----|----|
| 30 | 31 |    |    |    |    | 1  |
| 2  | 3  | 4  | 5  | 6  | 7  | 8  |
| 9  | 10 | 11 | 12 | 13 | 14 | 15 |
| 16 | 17 | 18 | 19 | 20 | 21 | 22 |
| 23 | 24 | 25 | 26 | 27 | 28 | 29 |

### April

| Su | Mo | Tu | We | Th | Fr | Sa |
|----|----|----|----|----|----|----|
|    |    |    |    |    | 1  | 2  |
| 3  | 4  | 5  | 6  | 7  | 8  | 9  |
| 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| 24 | 25 | 26 | 27 | 28 | 29 | 30 |

### July

| Su | Mo | Tu | We | Th | Fr | Sa |
|----|----|----|----|----|----|----|
| 31 |    |    |    |    | 1  | 2  |
| 3  | 4  | 5  | 6  | 7  | 8  | 9  |
| 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| 24 | 25 | 26 | 27 | 28 | 29 | 30 |

### October

| Su | Mo | Tu | We | Th | Fr | Sa |
|----|----|----|----|----|----|----|
| 30 | 31 |    |    |    |    | 1  |
| 2  | 3  | 4  | 5  | 6  | 7  | 8  |
| 9  | 10 | 11 | 12 | 13 | 14 | 15 |
| 16 | 17 | 18 | 19 | 20 | 21 | 22 |
| 23 | 24 | 25 | 26 | 27 | 28 | 29 |

### February

| Su | Mo | Tu | We | Th | Fr | Sa |   |   |   |
|----|----|----|----|----|----|----|---|---|---|
|    |    |    |    |    | 1  | 2  | 3 | 4 | 5 |
| 6  | 7  | 8  | 9  | 10 | 11 | 12 |   |   |   |
| 13 | 14 | 15 | 16 | 17 | 18 | 19 |   |   |   |
| 20 | 21 | 22 | 23 | 24 | 25 | 26 |   |   |   |
| 27 | 28 |    |    |    |    |    |   |   |   |

### May

| Su | Mo | Tu | We | Th | Fr | Sa |
|----|----|----|----|----|----|----|
| 1  | 2  | 3  | 4  | 5  | 6  | 7  |
| 8  | 9  | 10 | 11 | 12 | 13 | 14 |
| 15 | 16 | 17 | 18 | 19 | 20 | 21 |
| 22 | 23 | 24 | 25 | 26 | 27 | 28 |
| 29 | 30 | 31 |    |    |    |    |

### August

| Su | Mo | Tu | We | Th | Fr | Sa |
|----|----|----|----|----|----|----|
| 1  | 2  | 3  | 4  | 5  | 6  |    |
| 7  | 8  | 9  | 10 | 11 | 12 | 13 |
| 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| 21 | 22 | 23 | 24 | 25 | 26 | 27 |
| 28 | 29 | 30 | 31 |    |    |    |

### November

| Su | Mo | Tu | We | Th | Fr | Sa |   |   |   |
|----|----|----|----|----|----|----|---|---|---|
|    |    |    |    |    | 1  | 2  | 3 | 4 | 5 |
| 6  | 7  | 8  | 9  | 10 | 11 | 12 |   |   |   |
| 13 | 14 | 15 | 16 | 17 | 18 | 19 |   |   |   |
| 20 | 21 | 22 | 23 | 24 | 25 | 26 |   |   |   |
| 27 | 28 | 29 | 30 |    |    |    |   |   |   |

### March

| Su | Mo | Tu | We | Th | Fr | Sa |   |   |   |
|----|----|----|----|----|----|----|---|---|---|
|    |    |    |    |    | 1  | 2  | 3 | 4 | 5 |
| 6  | 7  | 8  | 9  | 10 | 11 | 12 |   |   |   |
| 13 | 14 | 15 | 16 | 17 | 18 | 19 |   |   |   |
| 20 | 21 | 22 | 23 | 24 | 25 | 26 |   |   |   |
| 27 | 28 | 29 | 30 | 31 |    |    |   |   |   |

### June

| Su | Mo | Tu | We | Th | Fr | Sa |   |   |
|----|----|----|----|----|----|----|---|---|
|    |    |    |    |    | 1  | 2  | 3 | 4 |
| 5  | 6  | 7  | 8  | 9  | 10 | 11 |   |   |
| 12 | 13 | 14 | 15 | 16 | 17 | 18 |   |   |
| 19 | 20 | 21 | 22 | 23 | 24 | 25 |   |   |
| 26 | 27 | 28 | 29 | 30 |    |    |   |   |

### September

| Su | Mo | Tu | We | Th | Fr | Sa |   |
|----|----|----|----|----|----|----|---|
|    |    |    |    |    | 1  | 2  | 3 |
| 4  | 5  | 6  | 7  | 8  | 9  | 10 |   |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 |   |
| 18 | 19 | 20 | 21 | 22 | 23 | 24 |   |
| 25 | 26 | 27 | 28 | 29 | 30 |    |   |

### December

| Su | Mo | Tu | We | Th | Fr | Sa |   |
|----|----|----|----|----|----|----|---|
|    |    |    |    |    | 1  | 2  | 3 |
| 4  | 5  | 6  | 7  | 8  | 9  | 10 |   |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 |   |
| 18 | 19 | 20 | 21 | 22 | 23 | 24 |   |
| 25 | 26 | 27 | 28 | 29 | 30 | 31 |   |

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# 2012

## January

| Su | Mo | Tu | We | Th | Fr | Sa |
|----|----|----|----|----|----|----|
| 1  | 2  | 3  | 4  | 5  | 6  | 7  |
| 8  | 9  | 10 | 11 | 12 | 13 | 14 |
| 15 | 16 | 17 | 18 | 19 | 20 | 21 |
| 22 | 23 | 24 | 25 | 26 | 27 | 28 |
| 29 | 30 | 31 |    |    |    |    |

## April

| Su | Mo | Tu | We | Th | Fr | Sa |
|----|----|----|----|----|----|----|
| 1  | 2  | 3  | 4  | 5  | 6  | 7  |
| 8  | 9  | 10 | 11 | 12 | 13 | 14 |
| 15 | 16 | 17 | 18 | 19 | 20 | 21 |
| 22 | 23 | 24 | 25 | 26 | 27 | 28 |
| 29 | 30 |    |    |    |    |    |

## July

| Su | Mo | Tu | We | Th | Fr | Sa |
|----|----|----|----|----|----|----|
| 1  | 2  | 3  | 4  | 5  | 6  | 7  |
| 8  | 9  | 10 | 11 | 12 | 13 | 14 |
| 15 | 16 | 17 | 18 | 19 | 20 | 21 |
| 22 | 23 | 24 | 25 | 26 | 27 | 28 |
| 29 | 30 | 31 |    |    |    |    |

## October

| Su | Mo | Tu | We | Th | Fr | Sa |
|----|----|----|----|----|----|----|
|    | 1  | 2  | 3  | 4  | 5  | 6  |
| 7  | 8  | 9  | 10 | 11 | 12 | 13 |
| 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| 21 | 22 | 23 | 24 | 25 | 26 | 27 |
| 28 | 29 | 30 | 31 |    |    |    |

## February

| Su | Mo | Tu | We | Th | Fr | Sa |
|----|----|----|----|----|----|----|
|    |    |    |    | 1  | 2  | 3  |
|    |    |    |    | 4  | 5  | 6  |
| 7  | 8  | 9  | 10 | 11 | 12 | 13 |
| 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| 21 | 22 | 23 | 24 | 25 | 26 | 27 |
| 28 | 29 |    |    |    |    |    |

## May

| Su | Mo | Tu | We | Th | Fr | Sa |
|----|----|----|----|----|----|----|
|    |    |    | 1  | 2  | 3  | 4  |
|    |    |    | 5  | 6  | 7  | 8  |
| 9  | 10 | 11 | 12 | 13 | 14 | 15 |
| 16 | 17 | 18 | 19 | 20 | 21 | 22 |
| 23 | 24 | 25 | 26 | 27 | 28 | 29 |
| 30 | 31 |    |    |    |    |    |

## August

| Su | Mo | Tu | We | Th | Fr | Sa |
|----|----|----|----|----|----|----|
|    |    |    |    | 1  | 2  | 3  |
|    |    |    |    | 4  | 5  | 6  |
| 7  | 8  | 9  | 10 | 11 | 12 | 13 |
| 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| 21 | 22 | 23 | 24 | 25 | 26 | 27 |
| 28 | 29 | 30 | 31 |    |    |    |

## November

| Su | Mo | Tu | We | Th | Fr | Sa |
|----|----|----|----|----|----|----|
|    |    |    |    |    | 1  | 2  |
|    |    |    |    |    | 3  | 4  |
| 5  | 6  | 7  | 8  | 9  | 10 | 11 |
| 12 | 13 | 14 | 15 | 16 | 17 | 18 |
| 19 | 20 | 21 | 22 | 23 | 24 | 25 |
| 26 | 27 | 28 | 29 | 30 |    |    |

## March

| Su | Mo | Tu | We | Th | Fr | Sa |
|----|----|----|----|----|----|----|
|    |    |    |    |    | 1  | 2  |
|    |    |    |    |    | 3  | 4  |
| 5  | 6  | 7  | 8  | 9  | 10 | 11 |
| 12 | 13 | 14 | 15 | 16 | 17 | 18 |
| 19 | 20 | 21 | 22 | 23 | 24 | 25 |
| 26 | 27 | 28 | 29 | 30 | 31 |    |

## June

| Su | Mo | Tu | We | Th | Fr | Sa |
|----|----|----|----|----|----|----|
|    |    |    |    |    |    | 1  |
|    |    |    |    |    |    | 2  |
| 3  | 4  | 5  | 6  | 7  | 8  | 9  |
| 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| 24 | 25 | 26 | 27 | 28 | 29 | 30 |

## September

| Su | Mo | Tu | We | Th | Fr | Sa |
|----|----|----|----|----|----|----|
| 30 |    |    |    |    |    | 1  |
| 2  | 3  | 4  | 5  | 6  | 7  | 8  |
| 9  | 10 | 11 | 12 | 13 | 14 | 15 |
| 16 | 17 | 18 | 19 | 20 | 21 | 22 |
| 23 | 24 | 25 | 26 | 27 | 28 | 29 |

## December

| Su | Mo | Tu | We | Th | Fr | Sa |
|----|----|----|----|----|----|----|
| 30 | 31 |    |    |    |    | 1  |
| 2  | 3  | 4  | 5  | 6  | 7  | 8  |
| 9  | 10 | 11 | 12 | 13 | 14 | 15 |
| 16 | 17 | 18 | 19 | 20 | 21 | 22 |
| 23 | 24 | 25 | 26 | 27 | 28 | 29 |

Designed by Anny, annystudio.com

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