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Agri-Learn

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Agribank's Agri Advisory Services Division (AASD)

The AASD offers mentorship and training services to farmers in an effort of enhancing their knowledge, skill and attitude in order to improve their farm productivity and income.

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DELAYED WEEDING REDUCES YIELD PER UNIT AREA

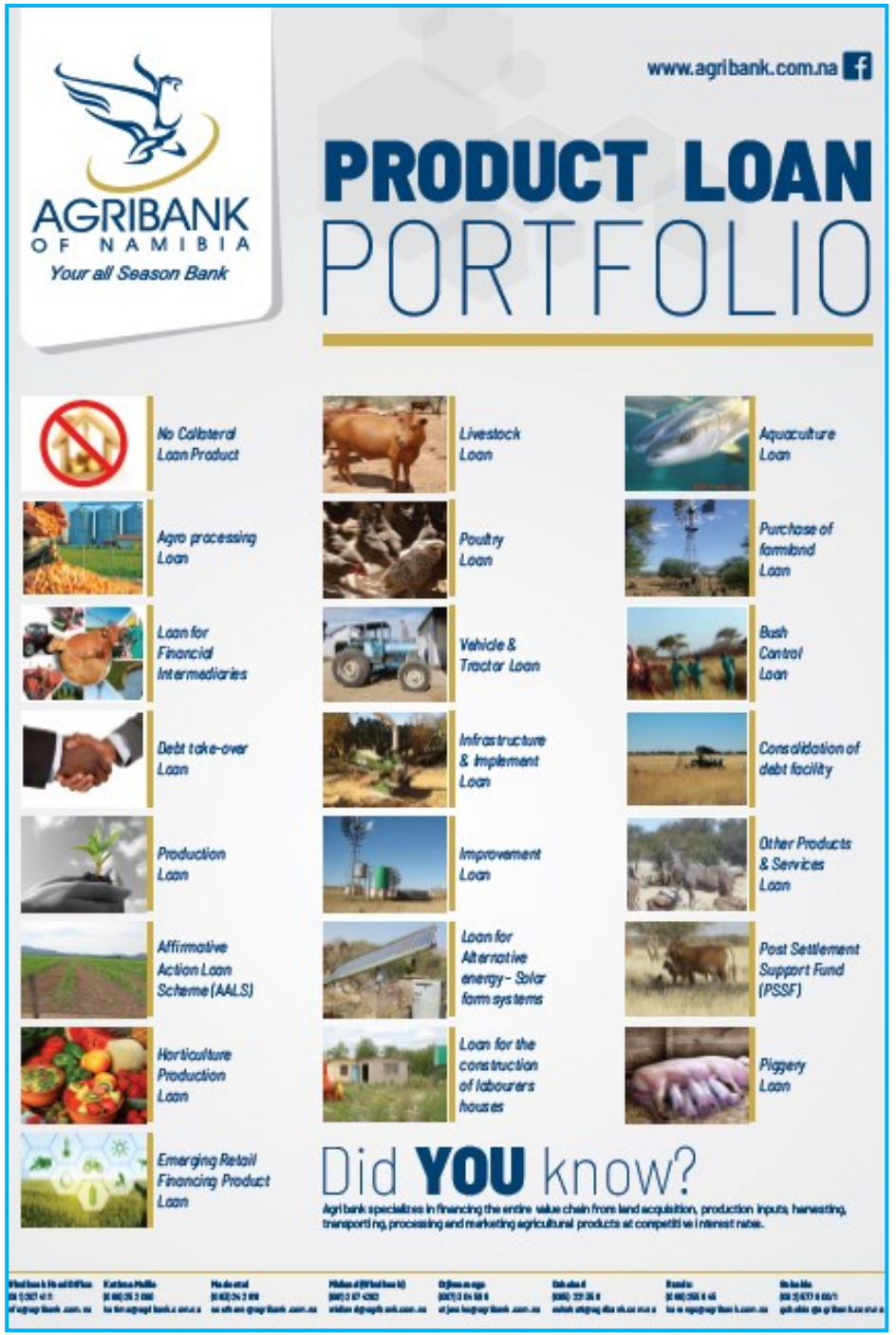
- **Emilie Abraham**

The proper scheduling of husbandry activities in crop enterprises is key to enhancing yield per unit area. Crop husbandry practices involve all the mandatory processes carried out on a crop farm, from the beginning of the planting season to the end. This includes pre-planting, planting and post planting operations. Among the post planting operations, weeding is considered one of the key operations that influence the yield of crops per unit area.

Weeding can be understood as the removal of unwanted plants that grow amongst planted crops. Generally, weeds compete with crops for limited environmental resources and can harbor pests and diseases that are harmful to crops. Such competition is usually revealed through reduced crop growth and yield. Thus, timely weeding is essential if crop yield is to be increased. It is unfortunate to see that most crop fields, particularly this planting season are heavily infested with weeds. This situation in economic terms will mean decreased returns to scale. Moreover, it is observed that most small-scale grain farmers are still lagging in terms of yield per hectare (on average 0.8 - 1 t per ha) due to the problems associated with poor weed management practices amongst other factors. It is therefore worthwhile to note that the goal of any crop farmer should be to achieve maximum yield per unit area in order for the crop enterprise to be sustainable. Farmers are therefore advised to prioritize effective weed management practices in order to achieve this goal. To this end, this article seeks to articulate the paramount value of prompt weeding.

Critical weed infestations

Weeds can be edible (e.g. volunteer crop and wild spinach etc.) or inedible. However, farmers tend to ignore edible weeds without realizing the impact they have on crop yields. Therefore, irrespective of the edibility, weeds should be eliminated at all cost to avoid yield losses. It should be noted that,



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weed invasions at a critical stage could reduce crop growth and yield which invariably make crop farming physically strenuous and economically unrewarding in nature. The critical period refers to the point in time when the yield potential is affected. Once the critical period is breached, crop yield is lost, and the removal of the weeds will not recover this lost yield. Thus, farmers should take cognizance of two critical periods. The first involves weeds that emerge with the crop and are left to compete until postemergence weed control is done. The second involves weeds that emerge after the crop is established, typically after control practices are complete and secondary weeding is not done. Weeds differ in their physiological nature and therefore have varying effects on crops. For instance, weeds that grow above the crop canopy will cause greater yield losses than those that remain below the crop canopy.

However, irrespective of the types of weeds, understanding the interaction between crops and weeds is pivotal and can assist farmers in designing appropriate weed management programs with minimal risk of yield loss. Apart from direct competition for resources such as nutrients, water and sunlight, etc. there are other interactions that can influence crop responses to the presence of weeds. For example, the plants are able to sense the presence of neighboring plants and may alter their growth patterns in response to these neighbors, even in the absence of limited resources. This is known as a shade avoidance response. The shade avoidance response entails increased stem elongation to allow one plant to gain a height advantage over others. Furthermore, this may be responsible for yield losses that occur when weeds compete early in the growing season when there are enough resources available to satisfy the needs of both the crop and weed. Farmers are therefore advised to consider thinning when weeding to allow for the removal of weak and extra seedlings from the sand, particularly when more seedlings germinate than required as this can intensify the competition. Thus, timely weeding is prudent to increase returns to scale.

Weed control strategies

Common strategies used to reduce or avoid weed infestation include hand weeding (hoeing), animal drawn weeding and chemicals. Farmers are advised to use the method that best suits their farming operation and conditions. For instance, hand weeding can be very effective and efficient for small scale farmers, however, the opposite is true for large scale farmers as the hand

weeding method may prove time consuming and costly. Thus, the application of herbicides is desirable. Herbicides can be applied pre-emergence (before the weeds emerge) or post emergence (after the weeds merge). Common herbicides include Sarcosine, Octagon plus (e.g. application rate 2liter/ha) amongst others. However, the following should be considered when selecting chemical methods; correct herbicides should be selected based on crop and weed spectrum present (e.g. sedges weeds, broad leaved etc.).

It must be applied at a specific rate, at the correct time and only under specific environmental conditions amongst others. Thus, adherence to instructions on the labels is important to ensure effectiveness. Irrespective of the weed control method, application/weeding should be done at the initial and early growth stage, which will result in lower weed counts and reduce the total dry weight of weeds at harvest.

Timing is key

Prompt weeding is very rewarding to a farmer and thus farmers should ensure weeding commences in the very first week to realize maximum yield and profit per unit area. It is worthwhile to note that weeding can be a time-consuming task and if not well planned, it can result in delayed weeding while depriving crops of crucial nutrients, water and air. Thus, for farmers that use hand weeding, the activity should be budgeted for as the cost of delayed weeding outweighs the cost of hiring seasonal workers to complete the task. On average, weeding takes between 100 -140 hours per ha including thinning and requires about 10 -14 people to finish one crop field ha in a day.

Thus, it may cost a farmer N$ 600 - N$ 1200.00 on average to complete the field depending on the negotiated rate per hour. For instance, a 3ha crop field will require 30 - 42 people on average to weed in a day or 300 - 420 hours to complete. Furthermore, it is advisable for farmers to operate their farming enterprises businesses and this starts with attaching value to all farm activities to inform the enterprise budget.

In conclusion, good crop management is essential for successful crop enterprises and farmers are advised to explore all available avenues to ensure that weeds are eliminated as early as possible. It is undisputable that weeds directly compete with crops and reduce yield. To this end, this places the ultimate goal of a crop farmer, to achieve better yield. Consequently, it is imperative for farmers to develop effective weeding programs in order to increase returns on investment.

is when this pH level drops below 5.5. This causes abdominal pain, loss of appetite, and dehydration. In acute stages, both bloat and acidosis can be deadly.

Improper mixing of feeds poses danger to animals especially when certain ingredients in the rations contain potent substances. The most common feed ingredient during the dry season is urea used as a protein source for the rumen microbes so that they efficiently digest the feed. Urea can poison the animal if ingested in large amounts. This can happen when an animal picks up pieces of urea that are concentrated at one spot in the feed. On the other hand urea dissolves easily in water, thus, when a urea lick gets wet (e.g. from rain), an animal can be poisoned when it drinks the standing water in the lick trough. Urea containing feeds should be properly mixed, and should contain sufficient energy component (e.g. maize) for effective utilization or fermentation of urea by the rumen microbes.

Spoiled feeds are also a health hazard which can be attributed to improper storage of feeds. Feed storage is drought preparedness practice as farmers are acquiring feeds in bulk in order to build up their fodder banks (feed reserves). Amongst others, feeds spoilage can be attributed to inappropriate storage facilities (e.g. poor ventilation), storing wet feeds which could become mouldy and toxic (e.g. Listeriosis), dusty feeds which can cause respiratory problems, and storing feeds with other potentially harmful substances (e.g. herbicides).

The risks associated with livestock feeding can be avoided. During a period of feed scarcity, animals will always have an increase in feed intake and a craving to meet their daily nutritional demand. On that they will try to utilize any available feed resources at their disposal. It is very important that the animals are allowed to adapt to any new feed before they have full access (ad libitum). Urea containing feeds should not mix with water, and should be properly mixed according to the instructions from the feed manufacturers. Always seek advice before purchasing and mixing the feeds, thus, consulting with animal nutritionists, veterinarians and other agricultural experts is vital.

livestock to survive until when the grazing conditions are favourable. There are various feed resources in the form of crops and their residues, commercially formulated feeds, and processed forage feeds which include bush, pods and pasture amongst others.

The feed resources that are being used now may have detrimental effects if processed, stored or used inappropriately. A number of farmers are already reporting abnormal animal behaviours or symptoms that are suspected to result from feeding. Some of the observed symptoms can be suspected on health conditions such as; bloat acidosis, pulpy kidney, listeriosis, and urea poisoning amongst others. These can result mainly from overfeeding, improper processing and mixing, and feed spoilage.

Overfeeding is when an animal excessively eats a particular feed at an instant. Amongst others, the main predisposing factors leading to overfeeding include, hunger, free access and oversupply of feed. Given the drought conditions, and insufficient forage materials, animals will have higher feed intake than normal when introduced to supplementary feeds.

The most common disease affecting goats and sheep as result of overfeeding or a sudden change in their diet is Enterotoxaemia (pulpy kidney, bloednier, Okatikitira). The diseases is caused by a bacteria (Clostridium perfrigins type D) living in the animal's digestive tract already. The bacteria proliferate and produce toxins poisoning the animal. The symptoms include; depression, abdominal pain, convulsions, and lying on the side amongst others. Treatment with antitoxin may not be successful, but an annual vaccination is necessary for prevention. The other health conditions resulting from overfeeding include bloat and acidosis.

Bloat occurs when the ruminal gas accumulates at a rate more than it can be released causing the stomach to distend or swell. Bloat can result from overeating lush feeds or fresh legumes (e.g. lucerne), wet grass pastures, or finely ground grains (e.g. maize). This is a painful condition, the symptoms include; restlessness, abdominal discomfort, excessing salivation, respiratory distress, and belly kicking amongst others. On the other hand, the causes of bloat are also associated with Acidosis. Acidosis (acid stomach, grain overload, Suurpens) is a metabolic disorder resulting from overeating of grain feeds or easily digestible feeds which in turn increases the acidity of the stomach (lower pH). The normal range of stomach acid (pH) level is 6.5 – 7.0; acidosis

AN UNREALISTIC BUSINESS PLAN PROMPTS FAILURE IN AGRIBUSINESS

- **Emilie Abraham**

A business plan simply refers to a farming business roadmap. It is frequently observed that most farmers consider preparing a business plan for the purpose of successfully negotiating start-up loans with lending institutions. However, it is worth noting that although a business plan can be a pre-requisite and an attractive tool to a funder or financier, farmers equally need it.

In essence, a business plan guides current and future decision making in farming operations. It is therefore imperative that farmers have a written business plan in place to record the rationale of key business decisions and to guide farming operations.

Moreover, business plans vary depending on the enterprise and farm establishment, however, irrespective of differences in farming enterprise or nature of the business, a good business plan is a fundamental requirement. In a nutshell, there are critical aspects that should be considered when formulating business plans, these include, a proper structure, realistic, logical, specific, and reliable objectives, market definition to provide funders insight on the potential customers of the service or products, its prospects, suppliers, and competitors just to mention a few. In addition, a sound business plan saves money and provides a clear strategy and objectives to stakeholders involved in the enterprise, whether they are external stakeholders such as funders or internal stakeholders such as management and

workers. Employees specifically need to understand clearly what the business seeks to achieve and what is required from them to stay productive and focused.

To this end, the business plan should contain realistic and credible business assumptions and forecasts that describe how the business will achieve its goals and continue to compete effectively in turbulent and rapidly changing markets. Therefore, this article seeks to enlighten farmers on the importance of a business plan and key aspects that farmers should consider when preparing the farm business plan.

Key questions

All business plans are designed with the assumption that the business will succeed. At times unrealistic assumptions are formulated which eventually result in business failure and loss of money. Farmers are therefore advised to consult and conduct research on similar businesses in order to benchmark and establish acceptable standards.

It is imperative to set achievable goals. Thus, begin small and expand. The following guiding questions could assist a farmer when developing a business plan:

Who are you, what is the farming idea (define the line of business), where is the farming business (location)? when will the enterprise start etc.? Who will manage the farming business/ enterprise and what are her/ his strengths? What is the farming business objective and how will success be achieved? How much will it cost you to develop the enterprise (e.g. 1 hectare of a crop or fruit tree enterprise (s)?).

How much will the supporting infrastructure (e.g. greenhouse), fencing and implements cost and where will it be procured? At what age will seedlings be procured (trees or crop), and at what price? How many plants will be planted per hectare and what is the projected yield?

When will the production start after planting (e.g. harvesting), where will you sell the produce (client profile/ offtake agreement) and what will the potential income be (projected income)? If financing is needed, why is it needed, how much is needed, and how do you intend to repay the loan or benefit investors or financiers?

It should be noted that larger loans require financial obligations and farmers are advised to take the risk if the business idea can generate a sufficient return on investment. Generally,

also used to cover the soils surface (mulching) to minimize excessive water loss (evaporation) from the soil, and as compost to improve soil humus or organic matter in order to enhance soil fertility.

Poultry (e.g. chickens, ducks) can be used as cleaners in orchards or vegetable gardens, removing rotten fruits, vegetables, pests, and weeds, while adding manure/fertilizer to the soil.

An Integrated Farming System is not just keeping animals and crops, but a comprehensive system that includes sustainable resources utilization such as soil and water conservation which is key to a healthy system.

Compared to the common monoculture practices (single enterprise farming), IFS is an important tool to minimize farm production costs and associated risks. The advantages of IFS include; increased farm production and income with limited inputs, recycling of farm by-products, and use of organic materials amongst others. On that, IFS can be increase farmers' resilience to adverse effects associated with climate change, or minimize the losses brought about by drought, disease out breaks, and pest attacks amongst others.

THE RISK: DROUGHT FEEDING STRATEGY TO DROUGHT FEEDING TRAGEDY

- **Erastus Ngaruka**

Most farming areas in Namibia are faced with severe forage scarcity, especially grazing materials due to overgrazing and drought, and the situation is getting worse as the normal dry season has set in, and with still several months of uncertainty ahead. Since there is very little or no options of alternative grazing areas for many farmers, the most obvious option is to feed the animals. Farmers are now battling to source all kinds of feed stuffs for their

INTEGRATED FARMING SYSTEM IS KEY TO SUSTAINABLE AGRICULTURE

- **Erastus Ngaruka**

Agricultural production in Namibia is very vulnerable to dangers of climate change amongst others, and this in turn is threatening food security and sustainable livelihood. This vulnerability can be lessened by adopting appropriate farming systems aimed at achieving sustainable agriculture. Sustainable agriculture is simply to continue producing food under appropriate farming practices that will not compromise the production environment. An integrated farming system is one such system to achieve sustainable agriculture.

An Integrated Farming System (IFS) is the practice of having both crop and livestock on the farm such that on one hand they complement each other in terms of resource utilization, and on the other hand the farm has diversified sources of income. Common IFS include a combination of; crops (e.g. cereal, fruits, vegetables etc.), chickens, cattle, goats and sheep.

Each of the components will have a role to supply and receive an input resource for the system to function efficiently. This simply means, a waste material from one component is an input material for another.

For example; the role of livestock in the system is to supply manure as fertilizer for the crops. Their dung/manure is collected from kraal or they are allowed onto the fields to eat crop residues while dropping manure onto the soil. They trample or incorporate litter materials (e.g. dead leaves) with their hoofs into the soil to improve soil organic matter content. In addition, animals are also breaking soil surface layer to facilitate water infiltration. In particular, cattle can also be used for ploughing the crop fields.

On the other hand, crops (e.g. Maize, Mahangu) residues will be used as livestock feeds. These can be collected and processed (milled) to improve digestibility. Commonly, farmers allow animals to eat them while standing in the field. The crop or plant materials are

financiers or funders will loan money to businesses based on an adequate return on investment, to reflect the risks of defaulting and costs involved (e.g. administrative cost, etc.). It is therefore advisable to take the loan amount as per the business/ enterprise needs and requirements to ensure affordable instalment repayments and a healthier cashflow. This should start with realistic assumptions in the business plan that ultimately saves money and enhances the sustainability of your farming business venture.

Unrealistic assumptions riskier

Assumptions, in simple terms, can be understood to mean belief that a certain event is likely to happen. In business, this simply means business events that are likely to occur such as cash inflows and outflows amongst others. Unrealistic assumptions do not only present risks to lending institutions but are even riskier to farmers creating a financial burden to a farmer and trouble in the repayment of the loans, which may eventually lead to liquidation.

Farmers are therefore advised to support their business ideas by consulting the right people (experts) and asking the right questions in order to formulate realistic assumptions and avoid exaggerating or underestimating figures. It should be noted that funders/ financiers' fear investing in businesses that promise unrealistic returns in a short period of time such as returns to be realized in weeks, or a few months after investment.

It should be noted that sustainable success in a business is measured in the long term and the long term can range between 3 to 5 years. Thus, a realistic assumption should seek a breakdown of the first 3-5 years of farming operations. Short term sustainable success can sound exciting on paper, but this comes forth as unrealistic and misguiding to the farming operation and funders.

It is interesting to note that most successful farming enterprises break even on their first 2-5 years, profitability is then expected after the break-even period. Thus, patience is key in farming. Farmers are therefore advised to make credible assumptions to prompt funders to run with the business plan.

RE-SEEDING OF VALUABLE PERENNIAL GRASSES

- **Erastus Ngaruka**

In the previous articles, I emphasized on the efforts of rehabilitating the degraded grazing areas in the country, especially in communal areas where unpalatable grass species are dominating.

A grazing area will degrade faster than it can recover, thus grazing managers (farmers) should not only wait for "Mother Nature" to correct everything. Therefore, farmers have to adopt and apply appropriate techniques of rehabilitating their grazing areas by re-introducing the valuable perennial grass species such as Schmidtia pappophoroides, Anthephora pubescens and Brachiaria nigropedata amongst others.

These valuable grass species can be re-introduced by cultivating them in cultivation fields or backyard gardens and by re-seeding them in the grazing areas. The seeds and the grasses need protection, and thus, the planting techniques should ensure that.

The harvested seeds should be mixed with wet cattle dung (picture 1) or the soil from the termite mount and can be rolled into balls/cakes. The use of the planting mediums (e.g. cattle dung) is for the purpose of protecting the seed from being eaten by insects and rodents, as well as from wind. On the other hand, the dung is fertilizer and keeps the seed moist.

Pic: 1 Mixing grass seeds with cattle dung

These seed balls are then planted in the garden (picture 2), or under bush canopies (picture 3) in the grazing area.

The role of the bush canopies is to protect the seedlings and allowing the grass to grow to maturity before being grazed. The canopy also improves the soil surface condition by creating a favorable microclimate for grass germination and growth by providing shade, retaining moisture and allowing soil and organic matter deposition/ accumulation.

These grasses should be allowed to grow to maturity until they produce seeds before utilization so that they regenerate by themselves as well. The bush canopies can be removed and used as wood.

Cultivating grass is a form of establishing a fodder bank (fodder reserves) for your livestock. The harvested grass can be processed as hay and stored for the hard times (drought), or milled and used as an ingredient with other feed rations. Cultivating fodder plants is one important component that a farmer must include in a Farm Fodder Flow Plan, thus ensuring a continuous supply or availability of fodder for the animals, and to circumvent the negative impacts of drought?

Picture 2: Grass planted in a garden

Picture 3: Grass planted under bush canopies